

# Rate Constants for Reactions of Peroxyl Radicals in Fluid Solutions

Cite as: Journal of Physical and Chemical Reference Data **19**, 413 (1990); <https://doi.org/10.1063/1.555854>  
Submitted: 30 August 1989 . Published Online: 15 October 2009

P. Neta, Rober E. Huie, and Alberta B. Ross



[View Online](#)



[Export Citation](#)

## ARTICLES YOU MAY BE INTERESTED IN

[Critical Review of rate constants for reactions of hydrated electrons, hydrogen atoms and hydroxyl radicals \( \$\cdot\text{OH}/\cdot\text{O}^-\$  in Aqueous Solution](#)

Journal of Physical and Chemical Reference Data **17**, 513 (1988); <https://doi.org/10.1063/1.555805>

[Rate Constants for Reactions of Inorganic Radicals in Aqueous Solution](#)

Journal of Physical and Chemical Reference Data **17**, 1027 (1988); <https://doi.org/10.1063/1.555808>

[Reactivity of  \$\text{HO}\_2/\text{O}\_2^-\$  Radicals in Aqueous Solution](#)

Journal of Physical and Chemical Reference Data **14**, 1041 (1985); <https://doi.org/10.1063/1.555739>

Where in the world is AIP Publishing?  
*Find out where we are exhibiting next*



# Rate Constants for Reactions of Peroxyl Radicals in Fluid Solutions

P. Neta and Robert E. Huie

Chemical Kinetics Division, National Institute of Standards and Technology, Gaithersburg, MD 20899

and

Alberta B. Ross

Radiation Chemistry Data Center, Radiation Laboratory, University of Notre Dame, Notre Dame, Indiana 46556

Received August 30, 1989; revised manuscript received November 27, 1989

Absolute rate constants for reactions of alkylperoxyl and substituted alkylperoxyl radicals with inorganic and organic compounds in aqueous and non-aqueous fluid solutions have been compiled. The radicals have been generated by radiolysis or photolysis and their rate constants were determined generally by kinetic spectrophotometry or esr. Rate constants are included also for formation of peroxy radicals by reaction of alkyl radicals with oxygen and for decay of peroxy radicals by radical-radical reactions.

Key words: alkyl radicals; alkylperoxyl radicals; aqueous solution; chemical kinetics; oxygen; oxygen radicals; peroxy radicals; photolysis; radiolysis; rate constants.

## Contents

1. Introduction .....	413	with ascorbate, ABTS, chlorpromazine, and	
1.1. Production of Peroxyl Radicals .....	414	TMPD in aqueous solutions .....	422
1.1.1. Production of Alkyl Radicals by Radiolysis .....	414	3. Rate constants for reactions $R + O_2 \rightarrow ROO$ .....	423
1.1.2. Photolytic Production of Alkyl Radicals .....	415	4. Rate constants for proton transfer, hydrolysis,	
1.1.3. Reactions of Alkyl Radical with Oxygen .....	415	and first order decomposition of peroxy radicals	
1.2. Reactions of Peroxyl Radicals .....	415	in aqueous solutions .....	430
1.2.1. Radical-Radical Reactions .....	415	5. Rate constants for radical-radical reactions in-	
1.2.2. Reactions with Molecules .....	416	volving peroxy radicals .....	434
2. Arrangement of Tables 3-7 .....	417	6. Rate constants for reactions of alkylperoxyl rad-	
3. List of Abbreviations and Symbols .....	418	icals with inorganic and organic substrates .....	448
4. List of Peroxyl Radicals .....	418	7. Rate constants for reactions of substituted alkyl-	
5. Acknowledgements .....	420	peroxyl radicals with inorganic and organic sub-	
6. References to Text .....	420	strates .....	461
7. References to Tables .....	494		
8. Indexes .....	499		
8.1. Molecular Formula Index .....	499		
8.2. Chemical Name Index .....	505		

## List of Tables

1. Molar absorptivities of peroxy radicals .....	421
2. Comparison of the reactivity of peroxy radicals .....	

©1990 by the U. S. Secretary of Commerce on behalf of the United States. This copyright is assigned to the American Institute of Physics and the American Chemical Society.

Reprints available from ACS; see Reprints List at back of issue.

## 1. Introduction

Peroxyl radicals,  $ROO\cdot$ , are important reactive intermediates formed in the oxidation of organic and biological materials. They propagate chain reactions and may cause detrimental effects in biological systems. Because of their importance in biological systems, in atmospheric reactions, and in industry, they have been the topic of numerous investigations. Earlier studies have been discussed in several reviews<sup>1</sup> and the kinetic results were summarized in a sizable compilation.<sup>2</sup> This compilation includes a vast number of relative rate constants determined from studies of the autoxidation of hydrocarbons, but only a limited number of absolute rate constants mea-

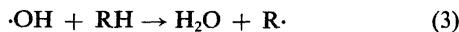
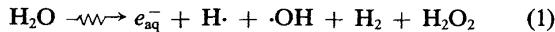
sured by direct time resolved techniques. Since the publication of the above reviews and compilation many direct measurements of absolute rate constants for reactions of peroxy radicals in solution have been reported. In addition, a number of indirect determinations have been carried out with fast kinetic techniques and with reference reactions where absolute rate constants have been accurately determined. The present compilation is intended to evaluate the available rate constants and to present them in a concise and readily accessible form. Rate constants derived from autoxidation studies are omitted since their values depend on the assumed mechanism and rate of termination; most of these are found in the previous compilation.<sup>2</sup> A brief description of the methods of production of peroxy radicals and of determination of their rate constants, as well as the general patterns of peroxy radical reactions, are given below.

### 1.1. Production of Peroxy Radicals

Peroxy radicals generally are produced by reaction of O<sub>2</sub> with alkyl radicals. Since alkyl radicals can be produced via many different reactions, we will discuss first procedures by which different types of alkyl radicals can be produced.

#### 1.1.1. Production of Alkyl Radicals by Radiolysis

Substituted alkyl radicals are produced in irradiated solutions by reaction of primary radiolytic species with the solvent or with solutes. In aqueous solutions the radicals are generated by the reactions of e<sub>aq</sub><sup>-</sup> or ·OH radicals with various organic compounds. If the ·OH radical is to be used, the solutions typically contain N<sub>2</sub>O to convert the e<sub>aq</sub><sup>-</sup> into ·OH, thus increasing the yield of the desired alkyl radical and reducing possible complications arising from other reactions of the electron.



If the e<sub>aq</sub><sup>-</sup> is to be used to produce the desired alkyl radical, the ·OH radical cannot simply be converted to the hydrated electron, but often can be converted to a reducing radical capable of producing more of the desired alkyl radical. Otherwise, secondary products arising from the ·OH must be taken into account in the kinetic analysis.

(a) Many alkyl radicals have been formed by hydrogen abstraction from the solvent or a solute by primary or secondary radiolytic products. This can result in a

mixture of several alkyl radicals, depending upon the selectivity of the reactant radical. The ·OH radical is very non-selective and is used primarily to produce radicals from simple precursors, for example methanol, acetone, or acetonitrile, where essentially all of the alkyl radicals will be identical. For 2-propanol, which is slightly more complex, 86% of the alkyl radicals will be secondary while 13% will be primary. When ·OH is allowed to react with precursors containing aromatic moieties, the situation may be even more complex, with the formation of OH adduct radicals along with radicals formed by abstraction from side chains. Rate constants for a large number of hydroxyl radical reactions are summarized in a recent compilation.<sup>3</sup>

(b) Many simple alkyl radicals can be formed cleanly by the reaction of ·OH with alkyl sulfoxides via an addition/fragmentation mechanism.<sup>4</sup>

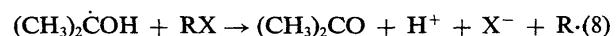


Since the rate constants for reaction of ·OH with the sulfoxides are >10<sup>9</sup> L mol<sup>-1</sup> s<sup>-1</sup> and the lifetime of the OH-adducts are <200 ns, in 0.01 mol L<sup>-1</sup> sulfoxide solutions the radicals R· are produced in <1 μs after the pulse.

(c) Alkyl radicals are also produced by reaction of e<sub>aq</sub><sup>-</sup> with halogenated organic compounds, leading to reductive elimination of a halide ion. The ·OH radicals can be removed by scavenging them with 2-PrOH, Eq. (6), or with formate ions, Eq. (7).



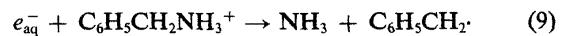
The radical from 2-PrOH will reduce some halogenated compounds (such as CCl<sub>4</sub> or CH<sub>3</sub>I) to produce more of the desired radical.<sup>5</sup>



Many halogenated compounds, however, do not react rapidly with (CH<sub>3</sub>)<sub>2</sub>·COH, which will instead react with O<sub>2</sub> to produce a peroxy radical.<sup>6,7</sup> This may need to be taken into account in the subsequent kinetic analysis.

The CO<sub>3</sub><sup>-</sup> radical formed by reaction (7) reacts rapidly with O<sub>2</sub> to yield O<sub>2</sub><sup>-</sup> and CO<sub>2</sub>.<sup>8</sup> The radical O<sub>2</sub><sup>-</sup> is a very weak oxidant<sup>9</sup> and in most cases does not interfere with the oxidation of organic reductants by the peroxy radicals. Further details on the reactions involved in the preparation of the various substituted alkyl radicals have been given elsewhere.<sup>5,10,11,12</sup>

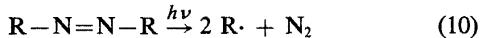
(d) Alkyl radicals have also been produced by reaction of e<sub>aq</sub><sup>-</sup> with alkylammonium derivatives, a reaction that proceeds by reductive elimination of ammonia.<sup>13</sup>



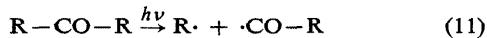
Elimination of ammonia occurs only when the amino group is protonated and the  $\alpha$ -carbon bears an electron withdrawing group such as carbonyl or phenyl. However, the process is not always quantitative, benzylammonium undergoes deamination corresponding to 70% of the  $e_{\text{aq}}^-$  but diphenylmethylammonium deaminates to 95%, the rest of the hydrated electron reactions occur via ring addition and protonation to give an H-adduct.<sup>13</sup> The H-adducts and OH-adducts may also react with  $O_2$  to form peroxy radicals, whose contribution to the observed oxidation processes may have to be taken into account.

### 1.1.2. Photolytic Production of Alkyl Radicals

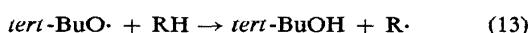
Photolytic methods for production of the alkyl radical precursors of peroxy radicals have been extensively employed, particularly in the studies of the self-reactions of peroxy radicals and in some of the slower reactions of peroxy radicals with other solutes. Techniques include the photolysis of azo compounds,<sup>14</sup> ketones,<sup>15</sup> and, less frequently, the photolysis of compounds containing metal-carbon bonds.<sup>16</sup> Photodecomposition of azo compounds results in formation of two alkyl radicals and, if the azo compound is symmetric, the radicals are identical.



On the other hand, photolysis of ketones yields an alkyl and an acyl radical, both of which may react with  $O_2$  to form peroxy radicals. As a result the kinetic measurements may be for concurrent reactions with different rate constants.



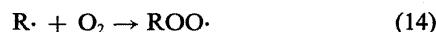
A common photolytic technique is to generate a reactive intermediate which can abstract a hydrogen atom from a solute or the solvent to produce the desired alkyl radical. The photolysis of  $H_2O_2$  has been used to produce  $\cdot\text{OH}$  radicals, but it is more common to employ photolysis to produce more selective reactants. For example, the photolysis of di-*tert*-butyl peroxide (DTBP) is employed to produce *tert*-butoxyl radicals, which are then used to react with the solvent.



Radicals such as *tert*-butoxyl are far more selective than the hydroxyl radical, allowing greater control over the specific alkyl radical produced and the subsequent peroxy radical. Generally, this greater selectivity means that, where possible, tertiary alkylperoxy will predominate over secondary which, in turn, will predominate over primary. Further, this radical does not add to the aromatic ring, reacting only by abstraction from the alkyl substituent.

### 1.1.3. Reaction of Alkyl Radicals with Oxygen

Alkyl radicals react with  $O_2$  rapidly to form peroxy radicals.



The rate constants for these reactions are generally of the order of  $10^9 \text{ L mol}^{-1} \text{ s}^{-1}$  (Table 3). With rate constants  $k_{14}$  of  $2 \times 10^9 \text{ L mol}^{-1} \text{ s}^{-1}$  and  $[\text{O}_2] 3 \times 10^{-4} \text{ mol L}^{-1}$  (corresponding to  $\text{N}_2\text{O}/\text{O}_2$  or  $\text{Ar}/\text{O}_2$  4:1 mixtures), formation of  $\text{ROO}\cdot$  by reaction (14) is complete within  $<10 \mu\text{s}$ , a period much shorter in most cases than that used for observation of subsequent reactions of  $\text{ROO}\cdot$  (see below). Rate constants for the reactions of alkyl radicals with oxygen have also been measured in the gas phase.<sup>17</sup> The rate constants range from  $1.3 \times 10^9$  for methyl radicals to  $9 \times 10^9 \text{ L mol}^{-1} \text{ s}^{-1}$  for isopropyl radicals.

## 1.2. Reactions of Peroxy Radicals

Peroxy radicals are detected by their optical absorption or esr spectra. Peroxy radicals exhibit weak absorptions in the UV, generally with a peak at or below 250 nm, which have been utilized to measure the rates of second-order decay of these radicals. These absorptions, however, do not permit accurate monitoring of the reactions of peroxy radicals with substrates, particularly when the substrates absorb in the UV. Therefore, rates of reaction of peroxy radicals with inorganic and organic compounds were determined in most cases by following the decay of the esr signal of peroxy radicals or the buildup of optical absorption of the product radical. When the product radical exhibits no intense absorption at  $\lambda > 250 \text{ nm}$ , as in the case of fatty acids, the rate constants were determined by competition kinetics using compounds such as ABTS or porphyrins as reference reactants.

### 1.2.1. Radical-Radical Reactions

The derivation of an absolute rate constant for the self-reaction of peroxy radicals requires the determination of the absolute concentration of the radicals corresponding to the signal being measured. Radical concentrations have been followed in one of three ways: by optical absorption, electron spin resonance (esr), or by the change in conductivity.

When optical absorption is used, the molar absorptivity of the radical at the wavelength used is needed. In most cases, this quantity was not determined, but taken from the literature, often from gas-phase work. Table 1 summarizes most of the reported values of the molar absorptivity of peroxy radicals. There is obviously not complete consistency in the values, but where the determinations were fairly direct, the absorptivity at the wavelength of maximum absorption for the smaller radicals appears to be about  $1000 \pm 200 \text{ L mol}^{-1} \text{ cm}^{-1}$ .

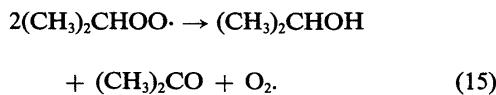
Where there is no other direct information on the absorptivity, we have used this value to derive the second-order rate constant.

The determination of radical concentration by esr is much more straightforward, since the magnitude of the signal is proportional to the number of free spins, but independent of the radical type. The radical concentration, therefore, can be obtained by comparison of the peak area (obtained by double-integrating the first-derivative signal) with the area obtained from a known concentration of a stable free radical.

Rate constants for self-reactions of peroxy radicals also have been obtained by following the change in conductivity of the solution after the generation of the radicals. In this case, information on the mechanism of the reaction must first be obtained, specifically the yields of products which influence the conductivity. Typically, the conductivity change arises from the generation or consumption of protons in the reaction, either directly or indirectly. For example, if  $O_2^-$  is eliminated from a product of the reaction, and the experiment is carried out at low pH,  $O_2^-$  will protonate to form  $HO_2$ , decreasing the conductivity by a known amount.

Rate measurements on the self-reactions of peroxy radicals derived from secondary and tertiary alkyl radicals have been carried out over a range of experimental conditions, particularly over a wide range of temperature. The rate constants for self-reactions of primary alkylperoxy radicals have been carried out only at room temperature and, typically, only in aqueous solutions. This is due to the large difference in reactivity between these classes of radicals. Primary alkylperoxy radicals react by self-reaction very rapidly, near the collision rate; secondary radicals react much more slowly, and tertiary radicals react very slowly. Therefore, rapid kinetic techniques, such as pulse radiolysis or flash photolysis, are required for the study of primary radicals while slower kinetic techniques, such as interrupted photolysis, can be used for secondary and tertiary radicals.

At low temperatures ( $<200$  K), secondary and tertiary peroxy radicals exist in equilibrium with their dimers, the tetroxides. This leads to a much greater apparent temperature dependence in the rate constant at these low temperatures. As the temperature is raised, disproportionation becomes more important. For example, for the 2-propylperoxy radical:



As the temperature is raised further, formation of alkoxy radicals can become important,



leading to a further increase in the measured temperature dependence.

Rate constants for the self-reactions of primary and secondary peroxy radicals have been measured in the

gas-phase.<sup>17</sup> At room temperature their values are similar to those observed for primary and small secondary peroxy radicals in the liquid phase. The most interesting feature of the observations is the temperature dependence. For ethylperoxy radicals the temperature dependence is small, with  $E_a = 910$  J mol<sup>-1</sup>; for methylperoxy radicals the temperature dependence is negative, with  $E_a = -1830$  J mol<sup>-1</sup>. For 2-propylperoxy radicals, the temperature dependence is somewhat stronger than that reported for the liquid phase, with  $E_a = 12$  kJ mol<sup>-1</sup> for reaction (15) and 21.5 kJ mol<sup>-1</sup> for reaction (16).

### 1.2.2. Reactions with Molecules

Rate constants for reaction of peroxy radicals with other molecules are determined by following the decay of the optical or esr signal of the peroxy radicals but more often by following the formation of the product absorption signal. Generally, reactions are monitored under conditions of excess substrate so that the decay follows a first-order rate law. The second-order rate constants are derived from linear plots of the observed first-order rates,  $k_{obs}$ , as a function of substrate concentration. When  $k_{obs}$  is very high, the rate of formation of the peroxy radical may limit the observed rate. Under these conditions the plot of  $k_{obs}$  vs. concentration will curve and approach a plateau, but the second order rate constant can be derived from the initial slope.

Due to the complexity of many of these chemical systems, it is very difficult to establish with confidence the accuracy of the reported rate constants. The precision of the numbers depends basically on the number of measurements taken and the range of concentrations employed. If at least four concentrations are used, varying by an overall factor of at least 4, and the measurement at each concentration repeated several times, and if the above linear plot has a relatively small intercept, the second-order rate constants probably have a precision of  $\pm 10\%$ . Not all measurements reported have been carried out with this level of precision but most are better than  $\pm 25\%$ . The level of precision is not given in the tables, but when the rate constants were only approximations the values are denoted as such.

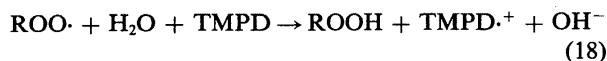
Peroxy radicals react with inorganic and organic compounds predominantly by electron transfer, hydrogen abstraction, or addition. Only a few absolute rate constants have been reported for hydrogen abstraction and addition reactions, and these were generally measured by competition kinetics rather than by direct measurements. Peroxy radicals abstract H only from weak C—H bonds because the  $ROO-H$  bond dissociation energy is 380 kJ mol<sup>-1</sup>,<sup>18</sup> higher than that of allylic or benzylic C—H bonds but lower than that of primary and secondary C—H bonds. The abstraction is relatively slow and, therefore, measurement of rate constants is hampered by the faster radical-radical decay processes.

By far the most studied reactions of peroxy radicals are those involving electron transfer. Typical of the elec-

tron transfer reactions is the oxidation of ascorbate ions<sup>10-12</sup>



and of TMPD (*N,N,N',N'*-tetramethyl-*p*-phenylenediamine).<sup>19,20</sup>



Ascorbate is known to be oxidized very rapidly ( $k$  near  $10^9 \text{ L mol}^{-1} \text{ s}^{-1}$ ) by the polyhalogenated alkylperoxyl radicals but much more slowly ( $k = 2 \times 10^6 \text{ L mol}^{-1} \text{ s}^{-1}$ ) by methylperoxyl.<sup>10-12</sup> However, both the fast and the slow reactions lead to the same product, the ascorbate radical. The very large increase in rate constants upon substitution with halogens suggests that electron withdrawing substituents have a significant effect on the reactivity of peroxy radicals. Correlation of rate constants for reaction of ascorbate ions and TMPD with thirty different substituted methylperoxyl radicals<sup>21</sup> with the polar substituent constants  $\sigma^*$ <sup>22</sup> shows that the reactivity of peroxy radicals increases systematically with increasing electron-withdrawing power of their substituents, evidence for an electron-transfer mechanism.

Rate constants for the reactions of peroxy radicals with ascorbate, Trolox (6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate), and TMPD also have been determined in different solvents<sup>23</sup> and were found generally to increase with increasing water content in the solvent mixture and with increasing solvent polarity. The rate constants were found to correlate well with a two-parameter equation which includes the dielectric constant of the solvent and the coordinate covalency parameter, a measure of the proton-transfer basicity of the solvent. Kinetic isotope effects in  $\text{H}_2\text{O}/\text{D}_2\text{O}$  of about 2 and activation entropies of about  $-10 \text{ J K}^{-1} \text{ mol}^{-1}$  for reduction of  $\text{ROO}\cdot$  by the organic reductants indicate that electron transfer to the peroxy radical is concerted with transfer of proton from the solvent to the incipient hydroperoxide anion.

Oxidation of metalloporphyrins by peroxy radicals also takes place by electron transfer. For these complexes it was concluded that the mechanism is not an outer sphere electron transfer but rather involves an intermediate binding of the peroxy radical to the metal center of the metalloporphyrin.<sup>24</sup>

Because of the strong solvent effect discussed above one should be extremely careful in extrapolating results from aqueous or alcoholic solutions to the biological system, since the exact nature of the microenvironment may change the rate constant by as much as two orders of magnitude. Also, when comparing the reactivities of several compounds or radicals it is necessary to take into account the solvent effect. Table 2 presents a comparison of the reactivities of four compounds with the various peroxy radicals. The values of the rate constants in this Table are taken from Tables 6 and 7 and for each

case they are for the measurement in aqueous or as close to aqueous solution as was available. This Table can serve for comparing the reactivities of the various radicals in electron transfer reactions.

## 2. Arrangement of Tables 3-7

Table 3 contains rate constants of reactions for formation of peroxy radicals by reaction of alkyl radicals with  $\text{O}_2$ . Table 4 contains rate data for radicals which undergo first-order decomposition or hydrolysis in solution. Table 5 contains rate constants for second-order radical-radical reactions. Separate tables are provided for reactions of unsubstituted (Table 6) and substituted (Table 7) alkylperoxyl radicals with various substrates. The order of entries in Table 3 for the formation of peroxy radicals, is the same as the arrangement in Tables 4-7 for the reactions of peroxy radicals. Unsubstituted alkylperoxyl radicals  $\text{ROO}\cdot$ , are given first, arranged by increasing number of carbons in R. Each radical has a separate entry number in each table, e.g. 6.1 for Methylperoxyl in Table 6. For each radical the reactions of inorganic substrates are given first, in alphabetical order of the symbol for the main element, and numbered 6.1.1, etc. Organic substrates follow in alphabetical order by name. Systematic names are used in the table for the substrates, unless the reactant is better known by a common name and has a complex structure. Alternate names are given in the chemical name index.

Table 7 includes reactions of substituted alkylperoxyl radicals with various substrates. Oxygen-, nitrogen- and phosphorus-substituted alkylperoxyl radicals are listed first followed by haloalkyl radicals in the following order: F-containing (by increasing numbers of F), Cl-containing, and Cl + F, (by increasing numbers of Cl), Br-containing, and I-containing. Peroxy radicals derived from compounds of biological importance, e.g. lipids and nucleoside bases, are grouped at the end. The arrangement for each radical's reactions with inorganic and organic substrates is the same as in Table 6.

Section 4 contains a list of radicals in the order of appearance in the tables. The molecular formula index (Sec. 8.1) and chemical name index (Sec. 8.2) include all of the reactant radicals and can be consulted for the entry numbers in Tables 3-7 where reactions of the radicals appear. The indexes also include all of the substrates and the entry numbers in the tables where reactions of the substrates with various radicals appear. The indexes have been generated from the registry file at the Radiation Chemistry Data Center. The chemical name index may contain alternate names to those listed in the tables (systematic names and synonyms); inverted names are also included in the index whenever they were present in the registry file. A molecular formula index is also provided as an aid to locating particular reactants.

The products of the reactions are included when they are known reasonably well or when they have been discussed in the paper reporting the data. In cases where rate constants are given for a series of pH values it

should be understood that a mixture of ionic forms of the substrate (and of the radical and the products) may be present.

For the values of  $k_{\text{obs}}$  the "temperature" column contains the value in Kelvins (K) or RT (room temperature). The temperatures 200 K or 298 K are given in brackets following values of  $k$  which have been calculated from  $\log A$  and  $E_a$  in Tables 5 and 6; in those cases the temperature range of the measurements is given in the comments. When the temperature is not given in the table the measurement was stated or presumed to be carried out at room temperature. In the "solvent" column the main solvent is given first followed by other components amounting to 10% or more of the solvent mixture.

The "method" column contains symbols such as p.r. (pulse radiolysis), and f.p. (flash photolysis), which indicate the method of generation of the radical. The "comment" column briefly describes the means of following the reaction, e.g. p.b.k. indicates product buildup kinetics with optical detection. Other means of detection are given, along with concentrations of solutes, the source of the radical, and other details about the determination. The rate constants for the reference reactions are given for the few rate constants which have been derived by competition. Abbreviations and symbols are identified in Sec. 3.

References to the tables, in Sec. 7 which follows the tables, are listed by serial number assigned by the Radiation Chemistry Data Center and included in the RCDC Bibliographic Data Base.

### 3. List of Abbreviations and Symbols

<i>A</i>	frequency factor
abs.	absorption
ABTS	2,2'-azinobis(3-ethylbenzothiazoline-6-sulfonate)
$\text{AH}^-$	ascorbate ion
<i>tert</i> -BuOH	<i>tert</i> -butyl alcohol (2-methyl-2-propanol)
calcd.	calculated
c.k.	competition kinetics
concn.	concentration
condy.	conductivity
contg.	containing
CZ	chlorpromazine
detc.	determined
d.k.	decay kinetics
DPPH	diphenylpicrylhydrazyl
DTBP	di- <i>tert</i> -butyl peroxide
$\epsilon$	extinction coefficient (molar absorptivity)
$E_a$	activation energy
EtOH	ethanol
esr	electron spin resonance
f.p.	flash photolysis
formn.	formation
<i>G</i>	radiation yield (molecules per 100 eV)
J	joules (4.184 J = 1 cal)

<i>K</i>	equilibrium constant
<i>k</i>	rate constant
<i>k<sub>f</sub></i>	specific rate of the forward reaction
<i>k<sub>r</sub></i>	specific rate of the reverse reaction
meas.	measured
MeOH	methanol
obs.	observed
o.d.	optical density
opt.	optical
Ph	phenyl
p.b.k.	product buildup kinetics
phot.	photolysis
pK <sub>a</sub>	negative logarithm of the acid dissociation constant
p.r.	pulse radiolysis
prod.	product
PrOH	propanol
redn.	reduction
rel.	relative
satd.	saturated
s.f.	stopped-flow
soln.	solution
TMPD	<i>N,N,N',N'</i> -tetramethyl- <i>p</i> -phenylenediamine

### 4. List of Peroxyl Radicals

#### Alkylperoxy

Methylperoxy
Ethylperoxy
2-Propylperoxy
Butylperoxy
<i>sec</i> -Butylperoxy
<i>tert</i> -Butylperoxy
Pentylperoxy
1,1-Dimethylpropylperoxy
2,2-Dimethylpropylperoxy
Peroxy radical from cyclopentene
Cyclopentylperoxy
Hexylperoxy
1,1-Dimethylbutylperoxy
Cyclohexenylperoxy
Cyclohexylperoxy
1-Methylcyclohexylperoxy
Methylcyclohexylperoxy
Heptylperoxy
1,1,2,2-Tetramethylpropylperoxy
Cycloheptylperoxy
Octylperoxy
Cyclooctylperoxy
Peroxy radical from octene
Nonylperoxy
Decylperoxy
Dodecylperoxy
Cyclododecylperoxy
Tridecylperoxy

2,4,6,8-Tetramethylnonylperoxy  
2,4,6,8-Tetramethylnonenylperoxy  
Hexadecylperoxy  
Peroxyl radicals of polypropylene

### Substituted alkylperoxy

Allylperoxy  
Benzylperoxy  
4-Nitrobenzylperoxy  
Diphenylmethylperoxy  
Hydroxycyclohexadienylperoxy  
Dihydroxycyclohexadienylperoxy  
Hydroxymethylperoxy  
1-Hydroxyethylperoxy  
2-Hydroxyethylperoxy  
1-Hydroxy-1-methylethylperoxy  
2-Hydroxy-2,2-dimethylethylperoxy  
Hydroxyclopentylperoxy  
Hydroxycyclohexylperoxy  
Hydroxycyclododecylperoxy  
1-Hydroxy-1,7,7-trimethylbicyclo[2.2.1]heptylperoxy  
Dihydroxymethylperoxy  
1,2-Dihydroxyethylperoxy  
1,2,3-Trihydroxypropylperoxy  
1,2,3,4-Tetrahydroxybutylperoxy  
1,2,3,4,5-Pentahydroxypentylperoxy  
Peroxyl radicals from glucitol  
Peroxyl radicals from inositol  
Peroxyl radicals from glucose  
Peroxyl radicals from methyl  $\alpha$ -D-glucopyranoside  
1,3-Dihydroxycyclopentylperoxy  
1,2-Dihydroxycyclohexylperoxy  
1,3-Dihydroxycyclohexylperoxy  
1,4-Dihydroxycyclohexylperoxy  
1-Ethoxyethylperoxy  
Isopropoxy(dimethyl)methylperoxy  
1,1-Dimethoxyethylperoxy  
Tetrahydro-2-furanylperoxy  
2,5-Dioxacyclohexylperoxy  
2,4,6-Trioxacyclohexylperoxy  
1,3,5-Trimethyl-2,4,6-trioxacyclohexylperoxy  
Tri(methoxy)methoxymethylperoxy  
Acetylperoxy  
2-Oxopropylperoxy  
Pivaloylperoxy  
Peroxyl radicals from 2,6,8-trimethylnonan-4-one  
Carboxymethylperoxy, anion  
Peroxyl radicals from octanoic acid  
Acetoxyethylperoxy  
1-Acetoxyethylperoxy  
1-Acetoxypropylperoxy  
1-Acetoxy-1-methylethylperoxy  
Acetoxybutylperoxy  
Acetoxypentylperoxy  
Acetoxy(phenyl)methylperoxy  
(Ethoxycarbonyl)valeratoethylperoxy  
1,2-Diacetoxyethylperoxy

1,3-Diacetoxy-2,2-dimethylpropylperoxy  
1,3-Dipropanoato-2,2-dimethylpropylperoxy  
1,2,2-Triacetoxy-2-ethylbutylperoxy  
1,1,1-Triacetoxymethyl-2-acetoxyethylperoxy  
1,1,1-Tri(propionatomethyl)-2-propionatoethylperoxy  
1,1,1-Tri(valeratomethyl)-2-valeratoethylperoxy  
1,1,1-Tribenzoatomethyl-2-benzoatoethylperoxy  
Cyanomethylperoxy  
Amino(carboxy)methylperoxy  
Trimethylammoniomethylperoxy  
Dimethylphosphatomethylperoxy

### Haloalkylperoxy

Fluoromethylperoxy  
Carboxy(difluoro)methylperoxy, anion  
Trifluoromethylperoxy  
1,2,2-Trifluoro-2-(difluoromethoxy)ethylperoxy  
2,2,2-Trifluoro-1-difluoromethoxyethylperoxy  
Perfluoropolyetherperoxy from photooxid. of  $C_2F_4$   
Perfluoropolyetherperoxy from photooxid. of  $C_3F_6$   
Chloromethylperoxy  
1-Chloroethylperoxy  
2-Chloroethylperoxy  
Carboxy(chloro)methylperoxy, anion  
Chlorodifluoromethylperoxy  
1-Chloro-2,2,2-trifluoroethylperoxy  
2-Chloro-1,1,2,2-tetrafluoroethylperoxy  
1-Chloro-2,2-difluoro-2-methoxyethylperoxy  
Dichloromethylperoxy  
1,1-Dichloroethylperoxy  
1,2-Dichloroethylperoxy  
Dichloro(cyano)methylperoxy  
Carboxy(dichloro)methylperoxy, anion  
Dichlorofluoromethylperoxy  
1,2-Dichloro-1,2,2-trifluoroethylperoxy  
Trichloromethylperoxy  
1,2,2-Trichloroethylperoxy  
Pentachloroethylperoxy  
Bromomethylperoxy  
Dibromomethylperoxy  
Tribromomethylperoxy  
Iodomethylperoxy

### Peroxyl radicals from biological-type molecules

Peroxyl radicals from linoleate-OH adduct  
Peroxyl radicals from linoleate  
13-Peroxy radical from linoleate  
Peroxyl radicals from linolenate  
13-Peroxy radical from linolenate  
Peroxyl radicals from oleic acid  
 $3\beta$ -3-Hydroxycholest-5-en-7-ylperoxy  
 $3\beta$ -3-Hydroxycholest-7-ylperoxy  
 $3\beta$ -3-Dodecanoyloxycholest-5-en-7-ylperoxy  
 $3\beta$ -3-Dodecanoyloxycholest-7-ylperoxy  
Peroxyl radical of thymine-H adduct

- Peroxyl radical of uracil-H adduct
- Peroxyl radical of uracil-OH adduct
- 6-Peroxyl radical of uracil-5-OH adduct
- 6-Peroxyl radical of cytosine-5-OH adduct
- 6-Peroxyl radical of thymine-5-OH adduct
- Peroxyl radicals of thymine-OH adduct
- Peroxyl radical of thymidine-OH adduct
- Peroxyl radical of deoxyguanosine-OH adduct
- Peroxyl radical of deoxycytidine-OH adduct
- Peroxyl radical of polyuridylic acid-OH adduct
- Peroxyl radical of polyadenylic acid-OH adduct
- Peroxyl radical of single-stranded DNA-OH adduct
- Peroxyl radical of double-stranded DNA-OH adduct

## 5. Acknowledgments

This review was generated at the Chemical Kinetics Division, National Institute of Standards and Technology, with the partial support of the Office of Basic Energy Sciences of the Department of Energy and at the Radiation Laboratory at the University of Notre Dame, which is operated under Contract DE-AC02-76ER0038 with the Department of Energy. The Radiation Chemistry Data Center is supported jointly by the Office of Basic Energy Sciences, Department of Energy, and the Office of Standard Reference Data, National Institute of Standards and Technology. This is Radiation Laboratory Document No. NDRL-3216. We thank Drs. J. A. Howard, C. von Sonntag, and S. Steenken for their comments on the manuscript.

## 6. References to Text

<sup>1</sup>K. U. Ingold, Acc. Chem. Res., **2**, 1 (1969). J.A. Howard, Adv. Free Radical Chem., **4**, 49 (1972).

- <sup>2</sup>J. A. Howard and J. C. Scaiano, in *Landolt-Börnstein. Numerical Data and Functional Relationships in Science and Technology. New Series, Group II; Atomic and Molecular Physics*, K.-H. Hellwege and O. Madelung, eds., (Springer-Verlag, Berlin, 1984), Vol. **13** (H. Fischer, ed.), Part d.
- <sup>3</sup>G. V. Buxton, C. L. Greenstock, W. P. Helman, and A. B. Ross, J. Phys. Chem. Ref. Data, **17**, 513 (1988).
- <sup>4</sup>D. Veltwisch, E. Janata, and K.-D. Asmus, J. Chem. Soc., Perkin Trans. **2**, 146 (1980).
- <sup>5</sup>D. Brault and P. Neta, J. Phys. Chem., **88**, 2857 (1984).
- <sup>6</sup>Y. Ilan, J. Rabani, and A. Henglein, J. Phys. Chem., **80**, 1558 (1976).
- <sup>7</sup>E. Botho, G. Behrens, and D. Schulte-Frohlinde, Z. Naturforsch., **32b**, 886 (1977).
- <sup>8</sup>G. E. Adams and R. L. Willson, Trans. Faraday Soc., **65**, 2981 (1969).
- <sup>9</sup>D. E. Cabelli and B. H. J. Bielski, J. Phys. Chem., **87**, 1809 (1983).
- <sup>10</sup>J. E. Packer, R. L. Willson, D. Bahnemann, and K.-D. Asmus, (a) J. Chem. Soc., Perkin Trans. **2**, 296 (1980); (b) *ibid.*, 1133 (1983).
- <sup>11</sup>R. E. Huie and P. Neta, Int. J. Chem. Kinet., **18**, 1185 (1986).
- <sup>12</sup>R. E. Huie, D. Brault, and P. Neta, Chem.-Biol. Interactions, **62**, 227 (1987).
- <sup>13</sup>L. J. Mittal and J. P. Mittal, Radiat. Phys. Chem., **28**, 363 (1986).
- <sup>14</sup>E. Furimsky and J. A. Howard, J. Am. Chem. Soc., **95**, 369 (1973). J. A. Howard and E. Furimsky, Can. J. Chem., **51**, 3738 (1973).
- <sup>15</sup>D. Griller, J. A. Howard, P. R. Marriott, and J. C. Scaiano, J. Am. Chem. Soc., **103**, 619 (1981). G. W. Burton, T. Doba, E. J. Gabe, L. Hughes, F. L. Lee, L. Prasad, and K. U. Ingold, J. Am. Chem. Soc., **107**, 7053 (1985).
- <sup>16</sup>C.Y. Mok and J.F. Endicott, J. Am. Chem. Soc., **100**, 123 (1978).
- <sup>17</sup>R. Atkinson, D.L. Baulch, R. A. Cox, R. F. Hampson, J. A. Kerr, and J. Troe, Int. J. Chem. Kinet., **21**, 115 (1989); J. Phys. Chem. Ref. Data, **18**, 881 (1989).
- <sup>18</sup>S. W. Benson and R. Shaw, Adv. Chem. Ser., **75**, 288 (1968).
- <sup>19</sup>S. Fujita and S. Steenken, J. Am. Chem. Soc., **103**, 2540 (1981).
- <sup>20</sup>D. K. Hazra and S. Steenken, J. Am. Chem. Soc., **105**, 4380 (1983).
- <sup>21</sup>P. Neta, R. E. Huie, S. Mosseri, L. V. Shastri, J. P. Mittal, P. Maruthamuthu, and S. Steenken, J. Phys. Chem., **93**, 4099 (1989).
- <sup>22</sup>R. W. Taft, In *Steric Effects in Organic Chemistry*, M. S. Newman, ed. (Wiley, New York, 1956) p.556. K. B. Wiberg, *Physical Organic Chemistry* (Wiley, New York, 1964). C. Hansch and A. Leo, *Substituent Constants for Correlation Analysis in Chemistry and Biology*, (Wiley, New York, 1979).
- <sup>23</sup>P. Neta, R.E. Huie, P. Maruthamuthu, and S. Steenken, J. Phys. Chem., **93**, 7654 (1989).
- <sup>24</sup>D. Brault and P. Neta, Chem. Phys. Lett., **121**, 28 (1985). Z.B. Alfassi, S. Mosseri, A. Harriman, and P. Neta, Int. J. Chem. Kinet., **18**, 1315 (1986).

TABLE 1. Molar absorptivities for peroxy radical

Radical	Medium <sup>a,b</sup>	Radical precursor	$\lambda$ (nm)	$\epsilon$ (L mol <sup>-1</sup> cm <sup>-1</sup> )	Ref.
Methylperoxy	aq	Methane	250	1200	751055
	g	Cl <sub>2</sub> /CH <sub>4</sub>	240	1050	89B901
Ethylperoxy	aq	Ethane	250	1250	751055
	g	Ethane	250	1020	88A113
			240	1085	
Propylperoxy	g	Azoalkane/pentane	260	824	82A266
2-Propylperoxy	g	Azoalkane/pentane	240	1273	82A266
		H <sub>2</sub> /propylene	223	1300	86A418
tert-Butylperoxy	liq	Tridecane/(CH <sub>3</sub> ) <sub>3</sub> COOH	290	390	86A525
	g	Azoalkane	250	1040	78A327
Pentylperoxy	liq	Pentane	290	910	741019
Alkylperoxy (C <sub>6</sub> -C <sub>16</sub> )	liq	Alkane	260	650	80A428
Cyclopentylperoxy	aq	Cyclopentane	268	1450	741051
	aq	Cyclopentane	270	1100	84A324
Cyclohexylperoxy	liq	Cyclohexane	255	1900	710136
	liq	Cyclohexane	275	2000	61A003
	liq	Cyclohexane	265	800	80A428
	liq	Cyclohexane	235	330	86A525
			280	645	
Hydroxymethylperoxy	aq	Cyclohexane	260	750	84A324
	aq	MeOH	248	1070	741099
	aq	MeOH	248	1100	761081
			290	500	
1-Hydroxy-1-methylethylperoxy	aq	2-PrOH	248	1100	761081
			290	500	
2-Hydroxy-2,2-dimethylethylperoxy	aq	tert-BuOH	~250	1350	79A295
Hydroxycyclohexylperoxy	liq	Cyclohexanol	246	1600	710136
Hydroxycyclohexadienylperoxy	aq	Benzene	310	690	761212
1-Hydroxy-1,7,7-trimethyl- bicyclo[2.2.1]heptylperoxy	aq	Camphor	260	1060	79A191
Isopropoxy(dimethyl)methylperoxy	aq	Isopropyl ether	240	1000	87G038
	aq	Acetone	280-300	550	86A285
Carboxymethylperoxy, anion	aq	Acetate	305	550	761082
			340	360	
Acetoxymethylperoxy	aq	Acetate	290	900	761207
	aq	Acetate	280	730	85A106
Methoxycarbonylmethylperoxy	aq	Methyl acetate	260	1300	78A402
	aq	Methyl acetate	260	900	78A402
1-Hydroxy-1-carboxyethylperoxy	aq	Lactate	240	1000	731052
Chloromethylperoxy	g	Cl <sub>2</sub> /CH <sub>3</sub> Cl	250	823	88A323
Acetylperoxy	g	Cl <sub>2</sub> /CH <sub>3</sub> CHO	245	970	89A085
2-Chloroethylperoxy	g	Cl <sub>2</sub> /C <sub>2</sub> H <sub>4</sub>	250	954	88A153
Dichloromethylperoxy	liq	Chloroform	255	1380	82B130
Trichloromethylperoxy	aq	2-PrOH/CCl <sub>4</sub>	310	400	89A019
Fluoromethylperoxy	g	Cl <sub>2</sub> /CH <sub>3</sub> F	240	975	88A323
Thymylperoxy	aq	Thymine	240	1300	741151
Peroxyl radical of uracil-OH adduct	aq	Uracil	300	280	710256
Peroxyl radical from arachidonate	aq	Arachidonate (pH 3.4) (pH 10.5)	275	300	82B008
			2900		

<sup>a</sup> aq = aqueous, g = gas, liq = liquid.<sup>b</sup> In the presence of oxygen.

TABLE 2. Comparison of the rate constants,  $k$  ( $\text{L mol}^{-1} \text{s}^{-1}$ ), for oxidation of ascorbate ion ( $\text{AH}^-$ ), 2,2'-azinobis(3-ethylbenzothiazoline-6-sulfonate ion (ABTS), chlorpromazine(CZ) and  $N,N,N',N'$ -tetramethyl-p-phenylenediamine (TMPD), with peroxy radicals in aqueous solution

Radical	$\text{AH}^-$	ABTS	CZ	TMPD
Methylperoxy	$2.0 \times 10^6$	$< 10^6$		$4.3 \times 10^7$
Ethylperoxy				$3.3 \times 10^7$
2-Propylperoxy				$9.2 \times 10^6$
Butylperoxy				$2.9 \times 10^7$
tert-Butylperoxy				$1.1 \times 10^6$
Allylperoxy	$1.4 \times 10^6$			
Benzylperoxy	$2.5 \times 10^6$			
4-Nitrobenzylperoxy	$3.3 \times 10^6$			
Diphenylmethylperoxy	$9 \times 10^6$			
Hydroxymethylperoxy	$4.7 \times 10^6$			$7.2 \times 10^7$
1-Hydroxy-1-methylethylperoxy	$1.2 \times 10^6$			
2-Hydroxy-2,2-dimethylethylperoxy	$2.0 \times 10^6$			
1-Ethoxyethylperoxy				$4.5 \times 10^7$
Tetrahydro-2-furanylperoxy				$4.4 \times 10^7$
2,5-Dioxacyclohexylperoxy		$5.0 \times 10^6$		$3.7 \times 10^7$
2,4,6-Trioxacyclohexylperoxy				$1.6 \times 10^8$
1,3,5-Trimethyl-2,4,6-trioxacyclohexylperoxy				$2.3 \times 10^8$
Tri(methoxy)methoxymethylperoxy				$1.1 \times 10^8$
Acetylperoxy	$8.3 \times 10^6$	$1.8 \times 10^9$		$1.2 \times 10^8$
2-Oxopropylperoxy	$7.5 \times 10^6$		$\sim 2 \times 10^6$	$6.6 \times 10^7$
Carboxymethylperoxy, anion	$2.2 \times 10^6$			$6.0 \times 10^7$
Cyanomethylperoxy	$5.0 \times 10^7$		$6.8 \times 10^6$	$2.9 \times 10^8$
Trimethylammoniomethylperoxy	$4.0 \times 10^8$			
Fluoromethylperoxy	$1.7 \times 10^8$			
Trifluoromethylperoxy	$6.8 \times 10^8$		$1.2 \times 10^9$	
1,2,2-Trifluoro-2-(difluoromethoxy)ethylperoxy	$4.8 \times 10^8$	$5.0 \times 10^8$		
2,2,2-Trifluoro-1-(difluoromethoxy)ethylperoxy	$2.7 \times 10^8$	$1.0 \times 10^9$	$3.1 \times 10^8$	
Chloromethylperoxy	$1.2 \times 10^8$	$4.4 \times 10^7$	$2.5 \times 10^7$	$4.2 \times 10^8$
1-Chloroethylperoxy	$9.2 \times 10^7$	$3.3 \times 10^7$	$8.9 \times 10^8$	
2-Chloroethylperoxy	$5.0 \times 10^6$			
Carboxy(chloro)methylperoxy, anion	$5.1 \times 10^7$			
1-Chloro-2,2,2-trifluoroethylperoxy	$6.1 \times 10^8$	$5 \times 10^8$	$5 \times 10^8$	
1-Chloro-2,2-difluoro-2-methoxyethylperoxy	$3.3 \times 10^8$	$3.4 \times 10^8$	$4.7 \times 10^8$	
Dichloromethylperoxy	$7.0 \times 10^8$	$6.5 \times 10^8$	$3.6 \times 10^8$	$7.4 \times 10^8$
1,1-Dichloroethylperoxy	$4.8 \times 10^8$	$4.3 \times 10^8$	$7.4 \times 10^8$	
1,2-Dichloroethylperoxy	$1.9 \times 10^8$	$1.1 \times 10^8$	$1.4 \times 10^8$	
Dichloro(cyano)methylperoxy	$1.2 \times 10^8$	$5.8 \times 10^8$	$9.1 \times 10^8$	
Carboxy(dichloro)methylperoxy, anion	$9.0 \times 10^7$			
Dichlorofluoromethylperoxy			$1.2 \times 10^8$	
1,2-Dichloro-1,2,2-trifluoroethylperoxy	$6.9 \times 10^8$	$2.2 \times 10^9$	$1.8 \times 10^9$	
Trichloromethylperoxy	$9.1 \times 10^8$	$1.9 \times 10^9$	$1.2 \times 10^9$	$1.9 \times 10^9$
Pentachloroethylperoxy	$> 4 \times 10^7$	$4.3 \times 10^8$	$4.2 \times 10^8$	
Bromomethylperoxy	$1.5 \times 10^8$			
Tribromomethylperoxy	$2.1 \times 10^8$		$7.7 \times 10^8$	
Iodomethylperoxy	$1.3 \times 10^8$			
6-Peroxy radical of uracil-5-OH adduct				$1.4 \times 10^8$
6-Peroxy radical of cytosine-5-OH adduct				$1.6 \times 10^8$
6-Peroxy radical of thymine-5-OH adduct				$\sim 1 \times 10^8$
Peroxy radical of thymidine-OH adduct	$2.5 \times 10^7$	$1.3 \times 10^7$		$8.3 \times 10^7$
Peroxy radical of deoxycytidine-OH adduct	$1.8 \times 10^7$	$1.2 \times 10^7$		$6.8 \times 10^7$
Peroxy radical of deoxyguanosine-OH adduct				$1.5 \times 10^9$

TABLE 3. Rate constants for reactions  $R\cdot + O_2 \rightarrow ROO\cdot$ 

No.	Radical/Reaction	$k$ ( $L \text{ mol}^{-1} \text{ s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>3.1 Methyl</b>	$\cdot CH_3 + O_2 \rightarrow CH_3OO\cdot$	$4.7 \times 10^9$		nat. Water	p.r.	P.b.k. at 260 nm in soln. contg. CH <sub>3</sub> Br, O <sub>2</sub> and SCN <sup>-</sup> ; $E_a = 14.6 \text{ kJ mol}^{-1}$	670041
<b>3.2 Ethyl</b>	$\cdot CH_2CH_3 + O_2 \rightarrow C_2H_5OO\cdot$	$2.9 \times 10^9$		nat. Water	p.r.	P.b.k. at 270 nm in soln. contg. $6 \times 10^{-6} \text{ mol L}^{-1} O_2$ and ethane.	751055
<b>3.3 tert-Butyl</b>	$(CH_3)_3C + O_2 \rightarrow (CH_3)_3COO\cdot$	$4.9 \times 10^9$		c-C <sub>6</sub> H <sub>12</sub>	f.p.	D.k. at 320 nm in N <sub>2</sub> /O <sub>2</sub> satd. soln. contg. di-tert-butyl ketone at 300 K.	83A161
<b>3.4 Cyclopentyl</b>	$c-C_5H_9 + O_2 \rightarrow c-C_5H_9OO\cdot$	$4.9 \times 10^9$	7	Water	p.r.	P.b.k. at 270 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. cyclopentane.	741051
<b>3.5 Hexadecyl</b>	$C_{16}H_{33} + O_2 \rightarrow C_{16}H_{33}OO\cdot$	$1.5 \times 10^9$		n-C <sub>16</sub> H <sub>34</sub>	p.r.	P.b.k. at 270 nm in Ar/O <sub>2</sub> satd. soln.; mixture of radicals from solvent; same $k$ for heptadecyl in n-heptadecane.	87A282
<b>3.6 Cyclohexadienyl</b>	$C_6H_7 + O_2 \rightarrow C_6H_7OO\cdot$	$1.6 \times 10^9$		Benzene	f.p.	D.k. at 315 nm in N <sub>2</sub> /O <sub>2</sub> satd. soln. contg. 20% di-tert-butyl peroxide; at 300 K.	83A161
<b>3.7 2-Hydroxycyclohexadienyl</b>	$C_6H_6OH + O_2 \rightarrow HOCH_6H_6OO\cdot$	$5.0 \times 10^8$ $3.9 \times 10^8$		Water	p.r.	D.k. at 313 nm in oxygen-satd. soln. contg. benzene.	620019
				Water	p.r.	D.k. N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. benzene.	761212
<b>3.8 2,6-Di-tert-butyl-1-hydroxy-4-methylcyclohexadienyl</b>	$DTBMPHOH(H) + O_2 \rightarrow DTBMPHOH(H)OO\cdot$	$9 \times 10^7$		n-C <sub>17</sub> H <sub>36</sub>	p.r.	D.k. at 360 nm in O <sub>2</sub> satd. soln. contg. di-tert-butyl-4-methylphenol.	87A282
<b>3.9 Benzyl</b>	$C_6H_5CH_2 + O_2 \rightarrow C_6H_5CH_2OO\cdot$	$2.8 \times 10^9$ $2.4 \times 10^9$ $1.0 \times 10^9$ $2.9 \times 10^9$ $3.4 \times 10^9$ $2.5 \times 10^9$ $2.0 \times 10^9$		Hexane c-C <sub>6</sub> H <sub>12</sub> n-C <sub>16</sub> H <sub>34</sub> Benzene Acetonitrile 2-PrOH 7	f.p. p.r. p.r. p.r. p.r. p.r.	D.k. at 317 nm in N <sub>2</sub> /O <sub>2</sub> satd. soln. contg. dibenzyl ketone or tert-butyl phenylperacetate; at 300 K. D.k. at 316 nm in N <sub>2</sub> /O <sub>2</sub> satd. coln. contg. 2% tert-BuOH and ~ $10^{-3} \text{ mol L}^{-1}$ benzyl chloride.	83A161 80A165
<b>3.10 4-Nitrobenzyl</b>	$4-NO_2C_6H_4CH_2 + O_2 \rightarrow 4-NO_2C_6H_4CH_2OO\cdot$	$9 \times 10^8$	7	Water/ 2-PrOH	p.r.	D.k. at 360 nm in N <sub>2</sub> /O <sub>2</sub> satd. soln. contg. 10% 2-PrOH and $3 \times 10^{-4} \text{ mol L}^{-1}$ 4-nitrobenzyl bromide.	89A165
<b>3.11 Diphenylmethyl</b>	$(C_6H_5)_2CH + O_2 \rightarrow (C_6H_5)_2CHOO\cdot$	$7.5 \times 10^8$	6.5	Water/ 2-PrOH	p.r.	D.k. at 328 nm in N <sub>2</sub> /O <sub>2</sub> satd. soln. contg. 10% 2-PrOH and $5 \times 10^{-3} \text{ mol L}^{-1}$ diphenylmethylammonium ion.	89A165
<b>3.12 Hydroxymethyl</b>	$\cdot CH_2OH + O_2 \rightarrow HOCH_2OO\cdot$	$4.9 \times 10^9$	7	Water	p.r.	C.k. in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. 0.1 mol L <sup>-1</sup> MeOH and ferricyanide; $k(R + \text{ferricyanide}) = 4.0 \times 10^9$ .	690522

TABLE 3. Rate constants for reactions  $R\cdot + O_2 \rightarrow ROO\cdot$ —Continued

No.	Radical/Reaction	$k$ ( $L \text{ mol}^{-1} \text{ s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>3.12 Hydroxymethyl</b> —Continued							
		$4.2 \times 10^9$	10.7	Water	p.r.	P.b.k. of $O_2^-$ formn. at 248 nm in $N_2O/O_2$ satd. soln. contg. MeOH.	741099
<b>3.13 1-Hydroxyethyl</b>	$\text{CH}_3\dot{\text{C}}\text{HOH} + O_2 \rightarrow \text{CH}_3\text{CH}(\text{OH})\text{OO}\cdot$	$4.6 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.1 mol $L^{-1}$ EtOH and ferricyanide; $k(R + \text{ferricyanide}) = 5.3 \times 10^9$ .	690522
<b>3.14 2-Hydroxyethyl</b>	$\cdot\text{CH}_2\text{CH}_2\text{OH} + O_2 \rightarrow \text{HOCH}_2\text{CH}_2\text{OO}\cdot$	$6.6 \times 10^9$	1	Water	p.r.	P.b.k. at 240 nm; radical from OH addn. in soln. contg. ethylene- $O_2$ (99:1); includes $O_2$ reaction with $\cdot\text{C}_2\text{H}_5$ from H addn.	670269
<b>3.15 1-Hydroxypropyl</b>	$\text{CH}_3\text{CH}_2\dot{\text{C}}\text{HOH} + O_2 \rightarrow \text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{OO}\cdot$	$4.7 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.1 mol $L^{-1}$ 1-PrOH and ferricyanide; $k(R + \text{ferricyanide}) = 3.7 \times 10^9$ .	690522
<b>3.16 1-Hydroxy-1-methylethyl</b>	$(\text{CH}_3)_2\dot{\text{C}}\text{OH} + O_2 \rightarrow (\text{CH}_3)_2\text{C}(\text{OH})\text{OO}\cdot$	$4.2 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.1 mol $L^{-1}$ 2-PrOH and ferricyanide; $k(R + \text{ferricyanide}) = 4.7 \times 10^9$ .	090522
		$3.5 \times 10^9$	5-6	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.1 mol $L^{-1}$ 2-PrOH soln. and <i>p</i> -nitroacetophenone; $k(R + \text{PNAP}) = 3.8 \times 10^9$ .	710618
		$4.5 \times 10^9$	~0.3	Water	p.r.	D.k. at 290-300 nm in air-satd. soln. contg. 1 mol $L^{-1}$ 2-PrOH and 0.5 mol $L^{-1}$ $\text{HClO}_4$ .	741074
		$3.9 \times 10^9$		2-PrOH	f.p.	D.k. at 355 nm in $N_2O/O_2$ satd. soln. contg. acetone; at 300 K.	83A181
<b>3.17 1-Hydroxy-1-methylpropyl</b>	$\text{CH}_3\text{CH}_2\dot{\text{C}}\text{OHCH}_3 + O_2 \rightarrow \text{CH}_3\text{CH}_2\text{C}(\text{CH}_3)(\text{OH})\text{OO}\cdot$	$4.0 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ 2-BuOH with ferricyanide; $k(R + \text{ferricyanide}) = 4.8 \times 10^9$ .	690522
<b>3.18 1-Hydroxy-2-methylpropyl</b>	$(\text{CH}_3)_2\text{CH}\dot{\text{C}}\text{HOH} + O_2 \rightarrow (\text{CH}_3)_2\text{CHCH}(\text{OH})\text{OO}\cdot$	$3.4 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ 2-methyl-1-propanol with ferricyanide; $k(R + \text{ferricyanide}) = 3.0 \times 10^9$ .	690522
<b>3.19 2-Hydroxyethenyl</b>	$\text{HOCH}=\text{CH}\cdot + O_2 \rightarrow \text{HOCH}=\text{CHO}\cdot$	$1.0 \times 10^9$		Water	p.r.	Cond. buildup in soln. contg. $N_2O/O_2$ and acetylene.	81A371
<b>3.20 Dihydroxymethyl</b>	$\cdot\text{CH}(\text{OH})_2 + O_2 \rightarrow \text{CH}(\text{OH})_2\text{OO}\cdot$	$7.7 \times 10^8$	5.7	Water	p.r.	D.k. at 250 nm in $N_2O$ -satd. soln. contg. formaldehyde, as well as condy. increase.	710424
		$4.5 \times 10^9$	3.5- 6.5	Water	p.r.	Increase in condy obs. in $N_2O/O_2$ (80/20 v:v) satd. soln. contg. $5 \times 10^{-3}$ mol $L^{-1}$ formaldehyde and $2-27 \times 10^{-5}$ mol $L^{-1}$ oxygen.	80A282
<b>3.21 1,2-Dihydroxyethyl</b>	$\cdot\text{CHOHCH}_2\text{OH} + O_2 \rightarrow \cdot\text{OOCHOHCH}_2\text{OH}$	$3.2 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ ethylene glycol with ferricyanide; $k(R + \text{ferricyanide}) = 3.6 \times 10^9$ .	690522

TABLE 3. Rate constants for reactions  $R\cdot + O_2 \rightarrow ROO\cdot$ —Continued

No.	Radical/Reaction	$k$ ( $L \text{ mol}^{-1} \text{ s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>3.22 1,2,8-Trihydroxypropyl</b>							
$\cdot\text{CHOHCHOHCH}_2\text{OH} + O_2 \rightarrow$	$3.3 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.4 mol $L^{-1}$ glycerol with ferricyanide; $k(R + \text{ferricyanide}) = 3.3 \times 10^9$ .	690522	
$\cdot\text{OOCHOHCHOHCH}_2\text{OH}$							
<b>3.23 Radicals from deoxyribose</b>							
$dR\cdot + O_2 \rightarrow dROO\cdot$	$2.0 \times 10^9$	5-6	Water	p.r.	C.k. with ferricyanide in $N_2O$ -satd. soln. contg. deoxyribose; rel. to $k(R + \text{ferricyanide}) = 2.8 \times 10^9$ .	710618	
<b>3.24 Radicals from glucose</b>							
$R\cdot + O_2 \rightarrow ROO\cdot$	$1.6 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ glucose and ferricyanide; $k(R + \text{ferricyanide}) = 1.9 \times 10^9$ .	690522	
<b>3.25 Radicals from polyethylene oxide</b>							
$R\cdot + O_2 \rightarrow ROO\cdot$	$2.9 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ polyethylene oxide PEO 200 and ferricyanide; $k(R + \text{ferricyanide}) = 3.2 \times 10^9$ ; $k = 1.9$ and $2.2 \times 10^9$ , resp. for PEO 6,000 and 20,000.	690522	
<b>3.26 2-Oxopropyl</b>							
$\cdot\text{CH}_2\text{COCH}_3 + O_2 \rightarrow$	$3.1 \times 10^9$		Water	p.r.	P.b.k. at 350 nm in $N_2O/O_2$ satd. soln. contg. $10^{-2}$ mol $L^{-1}$ acetone.	86A285	
$\text{CH}_3\text{COCH}_2\text{OO}\cdot$							
<b>3.27 Carboxymethyl, anion</b>							
$\cdot\text{CH}_2\text{CO}_2^- + O_2 \rightarrow \cdot\text{OOCCH}_2\text{CO}_2^-$	$1.7 \times 10^9$	8	Water	p.r.	P.b.k. at 275 nm in $N_2O/O_2$ (4:1 v/v) satd. soln. contg. 0.01 mol $L^{-1}$ acetate ion.	85A106	
	$2.1 \times 10^9$	8.2	Water	p.r.	D.k. at 366 nm in $N_2O/O_2$ satd. soln. contg. 0.01 mol $L^{-1}$ acetate; cor. for $k(R + R) = 5.5 \times 10^8$ .	761082	
	$3 \times 10^9$	8	Water	p.r.	D.k. at 370 nm in $N_2O/O_2$ satd. soln. contg. 0.1 mol $L^{-1}$ acetate.	761207	
<b>3.28 Carboxy(hydroxy)methyl, anion</b>							
$\cdot\text{CHOHCO}_2^- + O_2 \rightarrow$	$1.8 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ glycolate and ferricyanide; $k(R + \text{ferricyanide}) = 5 \times 10^8$ .	690522	
$\cdot\text{OOCHOHCO}_2^-$							
<b>3.29 1-Carboxy-1-hydroxyethyl, anion</b>							
$\text{CH}_3\dot{\text{C}}\text{HOHCO}_2^- + O_2 \rightarrow$	$2.6 \times 10^9$	7	Water	p.r.	C.k. in $N_2O/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ lactate and ferricyanide; $k(R + \text{ferricyanide}) = 1.5 \times 10^9$ .	690522	
$\text{CH}_3\text{C}(\text{OO}\cdot)(\text{OH})\text{CO}_2^-$							
<b>3.30 Acetoxymethyl</b>							
$\text{CH}_3\text{CO}_2\dot{\text{C}}\text{H}_2 + O_2 \rightarrow \text{AcOCH}_2\text{OO}\cdot$	$1.4 \times 10^{10}$	6.4	Water	p.r.	P.b.k. at 260 nm in $N_2O/O_2$ satd. soln. contg. methyl acetate and 6-26 $\times 10^{-5}$ mol $L^{-1}$ oxygen.	78A402	
<b>3.31 Methoxycarbonylmethyl</b>							
$\cdot\text{CH}_2\text{CO}_2\text{CH}_3 + O_2 \rightarrow$	$1.8 \times 10^9$	4	Water	p.r.	D.k. at 340 nm in soln. contg. $1 \times 10^{-3}$ mol $L^{-1}$ methyl chloroacetate, $5 \times 10^{-2}$ mol $L^{-1}$ formate ion and 0.6- $2 \times 10^{-4}$ mol $L^{-1}$ oxygen.	78A402	
$\cdot\text{OOCH}_2\text{CO}_2\text{CH}_3$							

TABLE 3. Rate constants for reactions  $R\cdot + O_2 \rightarrow ROO\cdot$ —Continued

No.	Radical/Reaction	$k$ ( $L \text{ mol}^{-1} \text{ s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
3.82	Dimethylaminomethyl						
	$\cdot\text{CH}_2\text{N}(\text{CH}_3)_2 + O_2 \rightarrow (\text{CH}_3)_2\text{NCH}_2\text{OO}\cdot$	$3.5 \times 10^9$	10.4	Water	p.r.	D.k. at 260 nm in $N_2\text{O}$ -satd. $10^{-3}$ mol $L^{-1}$ trimethylamine soln. contg. $7 \times 10^{-5}$ mol $L^{-1}$ oxygen; products are $\text{O}_2^- + (\text{CH}_3)_2\text{N}^+ - \text{CH}_2$ , which may be formed directly by electron transfer, or by decay of a peroxy radical.	87A128
3.83	Amino(carboxy)methyl, anion						
	$\text{H}_2\dot{\text{N}}\text{CHCO}_2^- + O_2 \rightarrow \text{NH}_2\text{CH}_2(\text{CO}_2^-)\text{OO}\cdot$	$\sim 1 \times 10^9$	7.9	Water	p.r.	D.k. at 307 nm in $N_2\text{O}/O_2$ satd. 0.2 mol $L^{-1}$ glycine soln.; also c.k. with ferricyanide.	761082
3.84	Carboxy(carboxymethylamino)methyl, dianion						
	$\text{O}_2\text{CCH}_2\text{NHCHCO}_2^- + O_2 \rightarrow \text{O}_2\text{CCH}_2\text{NHCH}(\text{OO}\cdot)\text{CO}_2^-$	$8 \times 10^8$	7	Water	p.r.	D.k. in $N_2\text{O}$ -satd. soln. contg. iminodiacetate.	81A023
3.85	2-Amino-2-carboxy-1-hydroxyethyl, anion						
	$\cdot\text{CHOHCH}(\text{NH}_2)\text{CO}_2^- + O_2 \rightarrow \text{OOCCHOHCH}(\text{NH}_2)\text{CO}_2^-$	$2.4 \times 10^9$	7	Water	p.r.	C.k. in $N_2\text{O}/O_2$ satd. soln. contg. 0.3 mol $L^{-1}$ serine and ferricyanide; $k(R + \text{ferricyanide}) = 3.2 \times 10^9$ .	690522
3.86	2,2,2-Trifluoro-1-(difluoromethoxy)ethyl						
	$\text{CHF}_2\dot{\text{O}}\text{CHCF}_3 + O_2 \rightarrow \text{CHF}_2\text{OCH}(\text{OO}\cdot)\text{CF}_3$	$1.4 \times 10^9$		Water	p.r.	Eval. from leveling off of rate of reaction of peroxy radical with ABTS, chlorpromazine, promethazine, ascorbate and propyl gallate at high concn. of substrates in air-satd. soln. contg. 0.5-1 mol $L^{-1}$ <i>tert</i> -BuOH and isoflurane.	88A364
3.87	1,2,2-Trifluoro-2-(difluoromethoxy)ethyl						
	$\text{CHF}_2\text{OCF}_2\dot{\text{CH}}\text{F} + O_2 \rightarrow \text{CHF}_2\text{OCF}_2\text{CHFOO}\cdot$	$1.2 \times 10^9$		Water	p.r.	See entry 3.36; soln. contg. isoflurane	88A364
3.88	Chloromethyl						
	$\cdot\text{CH}_2\text{Cl} + O_2 \rightarrow \text{CH}_2\text{ClOO}\cdot$	$6.3 \times 10^9$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 255 nm.	82B130
3.89	1-Chloroethyl						
	$\text{CH}_3\dot{\text{C}}\text{HCl} + O_2 \rightarrow \text{CH}_3\text{CHClOO}\cdot$	$9.0 \times 10^8$		Water	p.r.	See entry 3.36; soln. contg. 1,1-dichloroethane.	88A364
3.90	1-Chloro-2,2,2-trifluoroethyl						
	$\text{CF}_3\dot{\text{CH}}\text{Cl} + O_2 \rightarrow \text{CF}_3\text{CHClOO}\cdot$	$1.3 \times 10^9$		Water/ <i>tert</i> -BuOH	p.r.	See entry 3.36; soln. contg. 10% <i>tert</i> -BuOH and halothane.	83A195
3.91	1-Chloro-2,2-difluoro-2-methoxyethyl						
	$\text{CH}_3\text{OCF}_2\dot{\text{CH}}\text{Cl} + O_2 \rightarrow \text{CH}_3\text{OCF}_2\text{CHClOO}\cdot$	$1.3 \times 10^9$		Water	p.r.	See entry 3.36; soln. contg. methoxyflurane.	88A364
3.92	Dichloromethyl						
	$\cdot\text{CHCl}_2 + O_2 \rightarrow \text{CHCl}_2\text{OO}\cdot$	$4.7 \times 10^9$		$\text{CHCl}_3$	p.r.	P.b.k. at 255 nm.	82B130
3.93	1,1-Dichloroethyl						
	$\text{CH}_3\dot{\text{C}}\text{Cl}_2 + O_2 \rightarrow \text{CH}_3\text{CCl}_2\text{OO}\cdot$	$1.5 \times 10^9$		Water	p.r.	See entry 3.36; soln. contg. 1,1,1-trichloroethane.	88A364
3.94	1,2-Dichloroethyl						
	$\text{CH}_2\text{Cl}\dot{\text{C}}\text{HCl} + O_2 \rightarrow \text{CH}_2\text{ClCHClOO}\cdot$	$9.7 \times 10^8$		Water	p.r.	See entry 3.36; soln. contg. 1,1,2-trichloroethane.	88A364

TABLE 3. Rate constants for reactions  $R\cdot + O_2 \rightarrow ROO\cdot$ —Continued

No.	Radical/Reaction	$k$ ( $L \text{ mol}^{-1} \text{ s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>3.45</b>	<b>Dichloro(cyano)methyl</b> $\dot{C}Cl_2CN + O_2 \rightarrow CCl_2(CN)OO\cdot$	$3.9 \times 10^8$		Water	p.r.	See entry 3.36; soln. contg. trichloroacetonitrile.	88A364
<b>3.46</b>	<b>1,2-Dichloro-1,2,2-trifluoroethyl</b> $\dot{CCl}_2CClF + O_2 \rightarrow CCl_2CClFOO\cdot$	$1.6 \times 10^9$		Water	p.r.	See entry 3.36; soln. contg. 1,1,2-trichloro-1,2,2-trifluoroethane; includes $CCl_2FCF_2 + O_2 \rightarrow CCl_2FCF_2OO\cdot$ .	88A364
<b>3.47</b>	<b>Trichloromethyl</b> $\cdot CCl_3 + O_2 \rightarrow CCl_3OO\cdot$	$3.3 \times 10^9$		Water/ 2-PrOH	p.r.	See entry 3.36; soln. contg. metiazinic acid, 30% 2-PrOH, 10% acetone and 0.04 mol L <sup>-1</sup> carbon tetrachloride.	83G216
<b>3.48</b>	<b>Pentachloroethyl</b> $CCl_3\dot{C}Cl_2 + O_2 \rightarrow CCl_3CCl_2OO\cdot$	$2.1 \times 10^9$		Water/ <i>tert</i> -BuOH	p.r.	See entry 3.36; soln. contg. 40% <i>tert</i> -BuOH and hexachloroethane.	88A364
<b>3.49</b>	<b>Radicals from oleate</b> $L\cdot + O_2 \rightarrow LOO\cdot$	$1.0 \times 10^9$	13	Water	p.r.	D.k. at 280 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. $1-8 \times 10^{-4}$ mol L <sup>-1</sup> oleate.	78A365
<b>3.50</b>	<b>Radicals from linoleate</b> $L\cdot + O_2 \rightarrow LOO\cdot$	$3 \times 10^8$	10.5, 13	Water	p.r.	D.k. at 280 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. $10^{-2}$ mol L <sup>-1</sup> linoleate and 0.02 mol L <sup>-1</sup> phosphate.	78A365
<b>3.51</b>	<b>Radicals from linolenate</b> $L\cdot + O_2 \rightarrow LOO\cdot$	$3 \times 10^8$	10.5, 13	Water	p.r.	D.k. at 280 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. $\sim 4-8 \times 10^{-4}$ mol L <sup>-1</sup> linolenate.	78A365
		$3.2 \times 10^8$	10.9	Water	p.r.	D.k. at 280 nm of the pentadienyl radical produced (10%) in N <sub>2</sub> O/O <sub>2</sub> satd. soln. of linolenate.	87A277
<b>3.52</b>	<b>Radicals from arachidonate</b> $L\cdot + O_2 \rightarrow LOO\cdot$	$2 \times 10^8$	13	Water	p.r.	D.k. at 280 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. $\sim 4-8 \times 10^{-4}$ mol L <sup>-1</sup> arachidonate.	78A365
<b>3.53</b>	<b>Phenylalanine OH-adduct</b> $PheOH + O_2 \rightarrow PheOH(OO\cdot)$	$4 \times 10^8$		Water	p.r.		81A376
<b>3.54</b>	<b>3,6-Dioxo-2-piperazinyl</b> $-\dot{CH}_2CONH\dot{C}HCONH- + O_2 \rightarrow$ $-NHCH(OO\cdot)CONHCH_2CO-$	$1.2 \times 10^9$ $2.8 \times 10^8$ $2.0 \times 10^9$	5.6 12.0 6.5, 11.7	Water	p.r.	D.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. glycine anhydride.	710554
						D.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. glycine anhydride.	89A245
<b>3.55</b>	<b>2,5-Dimethyl-3,6-dioxo-2-piperazinyl</b> $-\dot{NHCO\dot{C}(Me)NP}COCH(Me)- + O_2 \rightarrow$ $-NHC(Me)(OO\cdot)CONIICH(Me)CO-$	$1.0 \times 10^9$ $1.1 \times 10^9$ $2.3 \times 10^9$ $2.1 \times 10^9$	5.4 12.0 6.2 11.7	Water	p.r.	D.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. alanine anhydride.	710554
						D.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. alanine anhydride.	89A245
<b>3.56</b>	<b>1,4-Dimethyl-3,6-dioxo-2-piperazinyl</b> $-\dot{N}(Me)CO\dot{C}HN(Me)COCH_2- + O_2 \rightarrow$ $-N(Me)CH(OO\cdot)CON(Me)CH_2CO-$	$9 \times 10^8$ $2.0 \times 10^9$	5.2 6.0, 11.7	Water	p.r.	D.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. sarcosine anhydride.	710554
						D.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. sarcosine anhydride.	89A245

TABLE 3. Rate constants for reactions  $R\cdot + O_2 \rightarrow ROO\cdot$ —Continued

No.	Radical/Reaction	$k$ ( $L \text{ mol}^{-1} \text{ s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
3.57	Thymine radical anion						
	$[5\text{-MeU}]^{\cdot-} + O_2 \rightarrow 5\text{-MeU}^{\cdot-}OO\cdot \rightarrow 5\text{-MeU} + O_2^-$	$4.5 \times 10^9$	6.4	Water	p.r.	D.k. at 320 nm in Ar/O <sub>2</sub> satd. soln. contg. 1 mol L <sup>-1</sup> <i>tert</i> -BuOH, 1.1 × 10 <sup>-4</sup> mol L <sup>-1</sup> oxygen and 10 <sup>-2</sup> mol L <sup>-1</sup> thymine.	87A207
3.58	Thymine radical						
	$5\text{-MeU(H)}^{\cdot} + O_2 \rightarrow 5\text{-MeU(H)}OO\cdot \rightarrow 5\text{-MeU} + HO_2$	$2 \times 10^9$	3.8	Water	p.r.	D.k. at 320 nm in Ar-satd. soln. contg. 1 mol L <sup>-1</sup> <i>tert</i> -BuOH, 1.1 × 10 <sup>-4</sup> mol L <sup>-1</sup> oxygen and 10 <sup>-2</sup> mol L <sup>-1</sup> thymine.	87A207
3.59	Uracil-OH adduct						
	$U\text{-OH} + O_2 \rightarrow U(\text{OH})OO\cdot$	$2.1 \times 10^9$		Water	p.r.	D.k. at 400 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. uracil.	700795
		$1.6 \times 10^9$	7	Water	p.r.	D.k. at 420 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. 10 <sup>-3</sup> mol L <sup>-1</sup> uracil.	710256
3.60	Cytosine-OH adduct						
	$Cy(\text{OH}) + O_2 \rightarrow Cy(\text{OH})OO\cdot$	$2.0 \times 10^9$		Water	p.r.	D.k. at 350 or 435 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. cytosine.	700795
3.61	Thymine-OH adduct						
	$5\text{-MeU-OH} + O_2 \rightarrow 5\text{-MeU(OH)}OO\cdot$	$1.5 \times 10^9$		Water	p.r.	D.k. at 320 nm in Ar/O <sub>2</sub> satd. soln. contg. thymine.	701103
		$1.9 \times 10^9$		Water	p.r.	D.k. at 400 nm in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. thymine.	700795
3.62	Dimethyluracil-OH adduct						
	$DMU(\text{OH}) + O_2 \rightarrow DMU(\text{OH})OO\cdot$	$1.9 \times 10^9$		Water	p.r.	D.k. at 400 nm.	700795
3.63	Deoxyadenosine OH-adduct						
	$dA\text{-OH} + O_2 \rightarrow dA(\text{OH})OO\cdot$	$8 \times 10^8$		Water	p.r.	D.k. at 400 nm in soln. contg. oxygen (85–170 × 10 <sup>-6</sup> mol L <sup>-1</sup> ) and 2'-deoxyadenosine.	85R131
3.64	<i>N<sup>6</sup>,N<sup>6</sup></i> -Dimethyladenosine-4-OH adduct						
	$DMA\text{-4-OH} + O_2 \rightarrow DMA(4\text{-OH})OO\cdot$	$<4 \times 10^8$		Water	p.r.	P.b.k. in N <sub>2</sub> O-satd. soln. contg. <i>N<sup>6</sup>,N<sup>6</sup></i> -dimethyladenosine and 1 × 10 <sup>-3</sup> mol L <sup>-1</sup> oxygen.	87A362
3.65	<i>N<sup>6</sup>,N<sup>6</sup></i> -Dimethyladenosine-5-OH adduct						
	$DMA\text{-5-OH} + O_2 \rightarrow DMA(5\text{-OH})OO\cdot$	$>2.2 \times 10^{10}$		Water	p.r.	P.b.k. in N <sub>2</sub> O-satd. soln. contg. <i>N<sup>6</sup>,N<sup>6</sup></i> -dimethyladenosine and 2.2 × 10 <sup>-5</sup> mol L <sup>-1</sup> oxygen.	87A362
3.66	<i>N<sup>6</sup>,N<sup>6</sup></i> -Dimethyladenosine-8-OH adduct						
	$DMA\text{-8-OH} + O_2 \rightarrow DMA(8\text{-OH})OO\cdot$	$>1.6 \times 10^{10}$		Water	p.r.	P.b.k. in N <sub>2</sub> O-satd. soln. contg. <i>N<sup>6</sup>,N<sup>6</sup></i> -dimethyladenosine and 6 × 10 <sup>-6</sup> mol L <sup>-1</sup> oxygen.	87A362
3.67	Thymidine-OH adduct						
	$T\text{-OH} + O_2 \rightarrow T(\text{OH})OO\cdot$	$1.0 \times 10^9$		Water	p.r.	D.k. at 350 nm.	700795
3.68	Thymidine-6-OH adduct						
	$T\text{-OH} + O_2 \rightarrow T(\text{OH})OO\cdot$	$2.5 \times 10^7$		Water	p.r.	Hydration of radical cation from sulfate radical reaction.	87A337
3.69	Cytidine-OH adduct						
	$Cy(\text{OH}) + O_2 \rightarrow Cy(\text{OH})OO\cdot$	$1.2 \times 10^9$		Water	p.r.	D.k. at 350 nm.	700795
3.70	Uridine-OH adduct						
	$Ur(\text{OH}) + O_2 \rightarrow Ur(\text{OH})OO\cdot$	$1.2 \times 10^9$		Water	p.r.	D.k. at 400 nm.	700795

TABLE 3. Rate constants for reactions  $R\cdot + O_2 \rightarrow ROO\cdot$ —Continued

No.	Radical/Reaction	$k$ ( $L \text{ mol}^{-1} \text{ s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>3.71</b>	<b>Thymidylle acid-OH adduct</b>						
	$\text{TMP(OH)} + O_2 \rightarrow \text{TMP(OH)OO}\cdot$	$8.0 \times 10^8$		Water	p.r.	D.k. at 350 or 400 nm.	700795
<b>3.72</b>	<b>Cytidylle acid-OH adduct</b>						
	$\text{CMP-OH} + O_2 \rightarrow \text{CMP(OH)OO}\cdot$	$1.0 \times 10^9$		Water	p.r.	D.k. at 350 nm.	700795
<b>3.73</b>	<b>Deoxycytidylle acid-OH adduct</b>						
	$\text{dCMP(OH)} + O_2 \rightarrow$ $\text{dCMP(OH)OO}\cdot$	$1.1 \times 10^9$		Water	p.r.	D.k. at 350.	700795
<b>3.74</b>	<b>DNA-OH adduct</b>						
	$\text{DNA(OH)} + O_2 \rightarrow \text{ssDNA(OH)OO}\cdot$	$\sim 3 \times 10^8$		Water			84A231
		$5 \times 10^8$	7	Water	p.r.	D.k. at 360 nm in $N_2O/O_2$ satd. soln. contg. denatured DNA.	80A124

TABLE 4. Rate constants for proton transfer, hydrolysis and first-order decomposition of peroxy radicals in aqueous soln.

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	T (K)	log A	E <sub>a</sub> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>4.1 Hydroxymethylperoxy</b>									
<b>4.1.1 First order decomposition</b>									
	$\text{HOCH}_2\text{OO} \rightarrow \text{O}_2^{\cdot-} + \text{HCHO} + \text{H}^+$	$<1 \times 10^1 \text{ s}^{-1}$	6.7	RT			f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $1-40 \times 10^{-3} \text{ mol L}^{-1} \text{ H}_2\text{O}_2$ and $5 \times 10^{-2}-6.5 \text{ mol L}^{-1} \text{ MeOH}$ ; also detd. by esr technique.	777495 78A339
		$<3 \text{ s}^{-1}$		RT			p.r.		741099
<b>4.1.2 Hydrogen phosphate ion</b>									
	$\text{HOCH}_2\text{OO} + \text{HPO}_4^{2-} \rightarrow \text{H}_2\text{PO}_4^- + \text{OCH}_2\text{OO}^{\cdot-}$	$\sim 2 \times 10^6$	7-9	295			p.r.	Calcd. from effect of phosphate ion on p.b.k. at 248 nm in $\text{N}_2\text{O}/\text{O}_2$ satd. soln. contg. 0.1 mol $\text{L}^{-1}$ MeOH.	741099
<b>4.1.3 Hydroxide ion</b>									
	$\text{HOCH}_2\text{OO} + \text{OH}^- \rightarrow \text{H}_2\text{O} + \text{OCH}_2\text{OO}^{\cdot-}$	$1.8 \times 10^{10}$		295			p.r.	Calcd. from effect of pH on p.b.k. at 248 nm in $\text{N}_2\text{O}/\text{O}_2$ satd. soln. contg. 0.1 mol $\text{L}^{-1}$ MeOH.	741099
		$1.5 \times 10^{10}$		295			f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $1-40 \times 10^{-3} \text{ mol L}^{-1} \text{ H}_2\text{O}_2$ and $10^{-2} \text{ mol L}^{-1}$ MeOH.	777495
<b>4.2 1-Hydroxyethylperoxy</b>									
<b>4.2.1 First order decomposition</b>									
	$\text{CH}_3\text{CH}(\text{OH})\text{OO} \rightarrow \text{O}_2^{\cdot-} + \text{CH}_3\text{CHO} + \text{H}^+$	$5.2 \times 10^1 \text{ s}^{-1}$		RT			f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $1-40 \times 10^{-3} \text{ mol L}^{-1} \text{ H}_2\text{O}_2$ and $5 \times 10^{-2}-6.5 \text{ mol L}^{-1}$ EtOH; also detd. by esr technique.	777495
		$5.0 \times 10^1 \text{ s}^{-1}$	5.5	295	12.3	60	f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $2 \times 10^{-3} \text{ mol L}^{-1} \text{ H}_2\text{O}_2$ and $10^{-2} \text{ mol L}^{-1}$ EtOH; calcd. k(298 K) = $6 \times 10^1 \text{ s}^{-1}$ .	78A339
		$5.0 \times 10^1 \text{ s}^{-1}$			12.3	66	p.r.		83A056
<b>4.2.2 Hydroxide ion</b>									
	$\text{CH}_3\text{CH}(\text{OH})\text{OO} + \text{OH}^- \rightarrow \text{CH}_3\text{CH}(\text{O}^-)\text{OO} + \text{H}_2\text{O}$	$4 \times 10^9$	5.3-	293			p.r.	Cond. kinetics in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. 0.1 mol $\text{L}^{-1}$ EtOH.	83A056
		$8 \times 10^9$		295		60	f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $1-40 \times 10^{-3} \text{ mol L}^{-1} \text{ H}_2\text{O}_2$ and $10^{-2} \text{ mol L}^{-1}$ EtOH.	777495
<b>4.2.3 Hydrogen phosphate ion</b>									
	$\text{CH}_3\text{CH}(\text{OH})\text{OO} + \text{HPO}_4^{2-} \rightarrow \text{CH}_3\text{CH}(\text{O}^-)\text{OO} + \text{H}_2\text{PO}_4^-$	$4 \times 10^6$	6.7	RT				D.k. at 244 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. 0.1 mol $\text{L}^{-1}$ EtOH and phosphate buffer.	83A056
<b>4.3 1-Hydroxy-1-methylethylperoxy</b>									
<b>4.3.1 First order decomposition</b>									
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO} \rightarrow \text{O}_2^{\cdot-} + \text{CH}_3\text{COCH}_3 + \text{H}^+$	$6.65 \times 10^2 \text{ s}^{-1}$		RT			f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $1-40 \times 10^{-3} \text{ mol L}^{-1} \text{ H}_2\text{O}_2$ and $5 \times 10^{-2}-6.5 \text{ mol L}^{-1}$ 2-PrOH; also detd. by esr technique.	777495

TABLE 4. Rate constants for proton transfer, hydrolysis and first-order decomposition of peroxy radical in aqueous soln.—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>4.3 1-Hydroxy-1-methylethylperoxy</b> —Continued									
<b>4.3.1 First order decomposition</b> —Continued									
		$6.5 \times 10^2$ s <sup>-1</sup>	5.5	295	12.8	56	f.p.	Buildup of condy. in O <sub>2</sub> satd. soln. contg. 2 × 10 <sup>-3</sup> mol L <sup>-1</sup> H <sub>2</sub> O <sub>2</sub> and 10 <sup>-2</sup> mol L <sup>-1</sup> 2-PrOH; calcd. <i>k</i> (298 K) = 9.15 × 10 <sup>2</sup> s <sup>-1</sup> .	78A339
		$7 \times 10^2$ s <sup>-1</sup>	4	RT			p.r.	P.b.k. at 350 nm (nitroform) in N <sub>2</sub> O/O <sub>2</sub> (1:1) satd. soln. contg. 0.1 mol L <sup>-1</sup> 2-PrOH and 4 × 10 <sup>-5</sup> mol L <sup>-1</sup> tetrinitromethane; cor. for competing first-order loss of ROO <sup>·</sup> .	761081
<b>4.3.2 Hydrogen phosphate ion</b>									
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}^\cdot + \text{HPO}_4^{2-} \rightarrow (\text{CH}_3)_2\text{C}(\text{O}^-)\text{OO}^\cdot + \text{H}_2\text{PO}_4^-$	$1.1 \times 10^7$	7.3	295			p.r.	P.b.k. at 248 nm of O <sub>2</sub> <sup>·-</sup> in N <sub>2</sub> O/O <sub>2</sub> (2:1 v/v) satd. soln. contg. 0.5 mol L <sup>-1</sup> 2-PrOH.	761081
<b>4.3.3 Hydroxide ion</b>									
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}^\cdot + \text{OH}^- \rightarrow (\text{CH}_3)_2\text{C}(\text{O}^-)\text{OO}^\cdot + \text{H}_2\text{O}$	$5.2 \times 10^9$		295			p.r.	P.b.k. at 248 nm of O <sub>2</sub> <sup>·-</sup> in N <sub>2</sub> O/O <sub>2</sub> (2:1 v/v) satd. soln. contg. 0.5 mol L <sup>-1</sup> 2-PrOH at various pH.	761081
		$5 \times 10^9$		295			f.p.	Buildup of condy. in oxygen-satd. soln. contg. 5 × 10 <sup>-2</sup> mol L <sup>-1</sup> 2-PrOH and 10 <sup>-3</sup> mol L <sup>-1</sup> H <sub>2</sub> O <sub>2</sub> .	777495
<b>4.4 Dihydroxymethylperoxy</b>									
<b>4.4.1 First order decomposition</b>									
	$\text{CH}(\text{OH})_2\text{OO}^\cdot \rightarrow \text{O}_2\cdot^- + \text{HCO}_2\text{H}$	$> 10^6$ s <sup>-1</sup>		RT					80A282
<b>4.5 1,2-Dihydroxyethylperoxy</b>									
<b>4.5.1 First order decomposition</b>									
	$\cdot\text{OOCHOHCH}_2\text{OH} \rightarrow \text{O}_2\cdot^- + \text{HOCH}_2\text{CHO} + \text{H}^+$	$1.9 \times 10^2$ s <sup>-1</sup>	5.5	295	8.3	33	f.p.	Buildup of condy. in O <sub>2</sub> satd. soln. contg. 2 × 10 <sup>-3</sup> mol L <sup>-1</sup> H <sub>2</sub> O <sub>2</sub> and 10 <sup>-2</sup> mol L <sup>-1</sup> ethylene glycol; calc. <i>k</i> (298 K) = 3.3 × 10 <sup>2</sup> s <sup>-1</sup> .	78A339
<b>4.6 1,2,3-Trihydroxypropylperoxy</b>									
<b>4.6.1 First order decomposition</b>									
	$\cdot\text{OOCHOHCHOHCH}_2\text{OH} \rightarrow \text{O}_2\cdot^- + \text{HOCH}_2\text{CH(OH)CHO}$	$2.1 \times 10^2$ s <sup>-1</sup>	5.5	295	9.7	41.5	f.p.	Buildup of condy. in O <sub>2</sub> satd. soln. contg. 2 × 10 <sup>-3</sup> mol L <sup>-1</sup> H <sub>2</sub> O <sub>2</sub> and 10 <sup>-2</sup> mol L <sup>-1</sup> glycerol; calc. <i>k</i> (298 K) = 2.7 × 10 <sup>2</sup> s <sup>-1</sup> ; decay rate of 3 × 10 <sup>3</sup> s <sup>-1</sup> obs. for other radical from glycerol.	78A339
<b>4.7 1,2,3,4-Tetrahydroxybutylperoxy</b>									
<b>4.7.1 First order decomposition</b>									
	$\text{HOCH}_2\text{CHOHCHOHCH(OH)OO}^\cdot \rightarrow \text{O}_2\cdot^- + \text{HOCH}_2[\text{CH(OH)}]_2\text{CHO} + \text{H}^+$	$1.9 \times 10^2$ s <sup>-1</sup>	5.5	295			f.p.	Buildup of condy. in O <sub>2</sub> satd. soln. contg. 2 × 10 <sup>-3</sup> mol L <sup>-1</sup> H <sub>2</sub> O <sub>2</sub> and 10 <sup>-2</sup> mol L <sup>-1</sup> meso-erythritol; decay rate of 3 × 10 <sup>3</sup> s <sup>-1</sup> obs. for other radical from erythritol.	78A339

TABLE 4. Rate constants for proton transfer, hydrolysis and first-order decomposition of peroxy radicals in aqueous soln.—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>4.8 1,3,5-Pentahydroxypentylperoxy</b>									
<b>4.8.1 First order decomposition</b>									
	$\text{HOCH}_2[\text{CH}(\text{OH})_3\text{CH}(\text{OH})\text{OO}\cdot \rightarrow \text{O}_2\cdot^- + \text{HOCH}_2[\text{CH}(\text{OH})_3\text{CHO} + \text{H}^+$	$2.2 \times 10^2 \text{ s}^{-1}$	5.5	295	11.4	52	f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{H}_2\text{O}_2$ and $10^{-2}$ mol L <sup>-1</sup> xylitol; decay rate of $2.8 \times 10^3 \text{ s}^{-1}$ obs. for other radical from xylitol.	78A339
<b>4.9 Peroxyl radicals from glucitol</b>									
<b>4.9.1 First order decomposition</b>									
	$\text{ROO}\cdot \rightarrow \text{O}_2\cdot^- + \text{HOCH}_2[\text{CH}(\text{OH})_4\text{CHO} + \text{H}^+$	$2.1 \times 10^2 \text{ s}^{-1}$	5.5	295			f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{H}_2\text{O}_2$ and $10^{-2}$ mol L <sup>-1</sup> glucitol; decay rate of $2.7 \times 10^3 \text{ s}^{-1}$ obs. for other radical from glucitol.	78A339
<b>4.10 Peroxyl radicals from inositol</b>									
<b>4.10.1 First order decomposition</b>									
	$\text{ROO}\cdot \rightarrow \text{O}_2\cdot^- + \text{HOCH}_2[\text{CH}(\text{OH})_4\text{CHO} + \text{H}^+$	$4.7 \times 10^2 \text{ s}^{-1}$	5.5	295	10.7	46	f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{H}_2\text{O}_2$ and $10^{-2}$ mol L <sup>-1</sup> myo-inositol; decay rate of $2.6 \times 10^3 \text{ s}^{-1}$ ( $E_a = 64.5 \text{ kJ mol}^{-1}$ , log A = 14.85) obs. for other radical from myo-inositol.	78A339
<b>4.11 Peroxyl radicals from glucose</b>									
<b>4.11.1 First order decomposition</b>									
	$\text{ROO}\cdot \rightarrow \text{O}_2\cdot^- + \text{H}^+$	$4.0 \times 10^2 \text{ s}^{-1}$	5.5	295	10.7	46	f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{H}_2\text{O}_2$ and $10^{-2}$ mol L <sup>-1</sup> glucose; decay rates of $2.6 \times 10^3 \text{ s}^{-1}$ ( $E_a = 64.5 \text{ kJ mol}^{-1}$ , log A = 14.85) and $>7 \times 10^4 \text{ s}^{-1}$ obs. for other radical from glucose.	78A339
<b>4.12 Peroxyl radicals from methyl α-D-glucopyranoside</b>									
<b>4.12.1 First order decomposition</b>									
	$\text{ROO}\cdot \rightarrow \text{O}_2\cdot^- + \text{H}^+$	$4.0 \times 10^2 \text{ s}^{-1}$	5.5	295			f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{H}_2\text{O}_2$ and $10^{-2}$ mol L <sup>-1</sup> methyl α-D-glucoside; decay rate of $2 \times 10^3 \text{ s}^{-1}$ obs. for other radical from methyl α-D-glucoside.	78A339
<b>4.13 Isopropoxy(dimethyl)methylperoxy</b>									
<b>4.13.1 First order decomposition</b>									
	$(\text{CH}_3)_2\text{CHOC}(\text{CH}_3)_2\text{OO}\cdot \rightarrow \text{O}_2\cdot^- + \text{H}^+$	$<1 \times 10^1 \text{ s}^{-1}$	5.5	295			f.p.	Buildup of condy. in $\text{O}_2$ satd. soln. contg. $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{H}_2\text{O}_2$ and $10^{-2}$ mol L <sup>-1</sup> bis(1-methylethyl) ether.	78A339
<b>4.14 1,1-Dimethoxyethylperoxy</b>									
<b>4.14.1 First order decomposition</b>									
	$\text{CH}_3\text{C}(\text{OCH}_3)_2\text{OO}\cdot \rightarrow \text{O}_2\cdot^- + \text{CH}_3\text{C}(\text{OCH}_3)_2^+$	$6.5 \times 10^4 \text{ s}^{-1}$	5	293			p.r.	Buildup of condy. in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. $2 \times 10^{-3}$ mol L <sup>-1</sup> acetaldehyde dimethyl acetal.	89A902

TABLE 4. Rate constants for proton transfer, hydrolysis and first-order decomposition of peroxy radical in aqueous soln.—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>4.14 1,1-Dimethoxyethylperoxy—Continued</b>									
<b>4.14.1 First order decomposition—Continued</b>									
		$7 \times 10^4$ s <sup>-1</sup>					p.r.	Buildup of condy. in soln. contg. acetaldehyde dimethyl acetal and oxygen.	87A490
<b>4.15 Amino(carboxy)methylperoxy</b>									
<b>4.15.1 First order decomposition</b>									
	$\text{NH}_2\text{CH}_2(\text{CO}_2^-)\text{OO}\cdot \rightarrow \text{O}_2\cdot^-$	$1.5 \times 10^5$ s <sup>-1</sup>	7.9	RT			p.r.	D.k. at 307 nm in $\text{N}_2\text{O}/\text{O}_2$ (1:1) satd. soln. contg. 0.2 mol $\text{L}^{-1}$ glycine.	761082
<b>4.16 8,8-Dioxopiperazinylperoxy, conjugate base</b>									
<b>4.16.1 First order decomposition</b>									
	$-\text{N}^-\text{CH}(\text{OO}\cdot)\text{CONHCH}_2\text{CO}\cdot \rightarrow \text{O}_2\cdot^- + -\text{N}=\text{CHCONHCH}_2\text{CO}\cdot$	$1.6 \times 10^5$ s <sup>-1</sup>	11.7	RT			p.r.	P.b.k. at 270 nm in $\text{N}_2\text{O}/\text{O}_2$ (1:1) satd. soln. contg. glycine anhydride; calcd. from kinetic model; $k < 1.2$ s <sup>-1</sup> estd. from steady-state experiments for protonated radical ( $\text{p}K_a =$ 10.6).	87A490 89A225
<b>4.17 2,5-Dimethyl-8,8-dioxopiperazinylperoxy, conjugate base</b>									
<b>4.17.1 First order decomposition</b>									
	$-\text{N}^-\text{C}(\text{Me})(\text{OO}\cdot)\text{CONHCH}(\text{Me})\text{CO} \rightarrow \text{O}_2\cdot^- + -\text{N}=\text{C}(\text{Me})\text{CONHCH}(\text{Me})\text{CO}\cdot$	$3.7 \times 10^6$ s <sup>-1</sup>		RT			p.r.	Calcd. from kinetic model; $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. alanine anhydride; $\text{p}K_a$ of peroxy radical = 11.2.	87A490 89A225
<b>4.18 Peroxy radical of uracil-H adduct</b>									
<b>4.18.1 First order decomposition</b>									
	$\text{U}(\text{H})\text{OO}\cdot \rightarrow \text{O}_2\cdot^- + \text{U-H}$	$8.3 \times 10^4$ s <sup>-1</sup>		RT			p.r.	P.b.k. at 260 nm, and also decrease in condy., in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. $10^{-3}$ $\text{mol L}^{-1}$ dihydrouracil at various pH; elimination of $\text{HO}_2$ from protonated radical was too slow to measure.	84G025
<b>4.19 Trichloromethylperoxy</b>									
<b>4.19.1 First order decomposition</b>									
	$\text{CCl}_3\text{OO}\cdot \rightarrow$	$3 \times 10^4$ s <sup>-1</sup>		RT			p.r.		89A019

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals

No.	Radical	$2k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>5.1 2-Propylperoxy</b>										
	$(\text{CH}_3)_2\text{CHOO}\cdot$	$1.2 \times 10^6$ [298 K]		c-C <sub>6</sub> H <sub>10</sub>	7.89	10.34	phot.	D.k. (esr) in air-satd. soln. contg. trans-1,1'-azobis(propane); also studied growth curves, see [87A284] for disproportionation/combination ratios in decane at 253-323 K; data from 155-210 K showed stronger T dependence probably due to tetraoxide formation; studied at 210-300 K.	87A283	
		$8.2 \times 10^5$ [298 K]		CF <sub>2</sub> CCl <sub>2</sub>	7.33	8.08				
		$5.6 \times 10^5$ [298 K]		c-C <sub>3</sub> H <sub>6</sub>	7.05	7.42				
		$1.2 \times 10^6$ [298 K]		Pentane	7.68	9.22				
		$1.6 \times 10^6$ [298 K]		c-C <sub>6</sub> H <sub>12</sub>	9.70	20	phot.	D.k. in oxygen-satd. soln. contg. 2,4-dimethylpentanone; also studied growth curves; radical concn. calcd. from gas phase $\epsilon = 1145$ L mol <sup>-1</sup> cm <sup>-1</sup> at 250 nm; studied at 293-396 K.	87A215	
				Decane						
				Dodecane						
		$7.8 \times 10^3$ [200 K]		CF <sub>2</sub> Cl <sub>2</sub>	10.68	26	phot.	D.k. (esr) in oxygen-satd. soln.; radical from 1-methylethylformyl peroxide; studied at 186-229 K.	80A073	
<b>5.2 sec-Butylperoxy</b>										
	$\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{OO}\cdot$	$7.9 \times 10^5$ [200 K]		CF <sub>2</sub> Cl <sub>2</sub>	7.1	4.6	phot.	D.k. (esr) in oxygen-satd. soln.; radical from sec-butylformyl peroxide; studied at 175-200 K.	80A073	
		$1.1 \times 10^6$ [200 K]		Butane	9.0	11.3	phot.	D.k. (esr) in oxygen-satd. soln. contg. DTBP; T dependence greater below 193 K; studied at 193-257 K.	72A025	
<b>5.3 tert-Butylperoxy</b>										
	$(\text{CH}_3)_3\text{COO}\cdot$	$1.7 \times 10^4$		c-C <sub>6</sub> H <sub>12</sub>	293		phot.	D.k. (esr) in oxygen-satd. soln. contg. di-tert-butyl ketone; also studied growth curves; radical concn. calcd. from gas phase $\epsilon = 1042$ L mol <sup>-1</sup> cm <sup>-1</sup> at 250 nm.	87A215	
		$1.3 \times 10^2$ [200 K]		Heptane	9.1	26.8	phot.	D.k. (esr); soln. contg. $(1-7) \times 10^{-2}$ mol L <sup>-1</sup> tert-butyl hydroperoxide; studied at 209-262 K.	81A392	
		4.9 [200 K]		Isobutane	9.2	32.6	phot.	D.k. (esr) in oxygen-satd. soln. contg. DTBP; log $2A = 9.3$ and $E_a = 31.8$ from photolysis of tert-butyl hydroperoxide; T dependence greater below 193 K; studied at 193-257 K.	72A025	
		$8.6 \times 10^2$ [200 K]		3-MP	12.1	35.1	phot.	D.k. (esr) in soln. contg. 2.5% tert-butyl hydroperoxide; studied at 225-249 K.	677255	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.3 <i>tert</i>-Butylperoxyxyl—Continued</b>										
		$1 \times 10^4$		MeOH	295			s.f.	D.k. (esr); radical from $\text{Ce}^{4+}$ and <i>tert</i> -butyl hydroperoxide; phot. (esr) used in oxygen-satd. benzene soln. contg. azobisisobutyronitrile.	655049
		$2.5 \times 10^4$		Water						
		$4 \times 10^3$		Benzene						
<b>5.4 Pentylperoxyxyl</b>										
	$\text{C}_5\text{H}_{11}\text{OO}\cdot$	$4 \times 10^6$ [298 K]		Pentane	233- 310	10.9	p.r.	D.k. at 290 nm in oxygen-satd. soln.; $\epsilon = 910 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; radicals are a mixture of 63% 2-pentylperoxyxyl, 30% 3-pentylperoxyxyl and 7% 1-pentylperoxyxyl.	741019	
<b>5.5 2,2-Dimethylpropylperoxyxyl</b>										
	$(\text{CH}_3)_3\text{CCH}_2\text{OO}\cdot$	$>4 \times 10^8$		Neopentane	253			phot.	From steady-state $[\text{ROO}\cdot] < 5 \times 10^{-8} \text{ mol L}^{-1}$ at known photolysis rate; generation of $\text{ROO}\cdot$ confirmed by product analysis.	707039
<b>5.6 Peroxyxyl radical from cyclopentene</b>										
	$c\text{-C}_5\text{H}_7\text{OO}\cdot$	$5.0 \times 10^6$ [200 K]		$c\text{-C}_5\text{H}_8$	7.8	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. DTBP; $T$ dependence greater below 193 K; studied at 193-257 K.	72A025	
<b>5.7 Cyclopentylperoxyxyl</b>										
	$c\text{-C}_5\text{H}_9\text{OO}\cdot$	$1.5 \times 10^7$		Water	RT			p.r.	D.k. at 270 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. cyclopentane; $\epsilon = 1100 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	84A324
		$1.2 \times 10^7$		Water	296			p.r.	D.k. at 270 nm in $\text{N}_2\text{O}/\text{O}_2$ () satd. soln. contg. $2.5 \times 10^{-3} \text{ mol L}^{-1}$ cyclopentane; $\epsilon = 1450 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; uncertain whether $k$ or $2k$ .	741051
		$5.7 \times 10^6$ [200 K]		$\text{CF}_2\text{Cl}_2$	9.6	10.9	phot.	D.k. (esr) in oxygen-satd. soln.; radical from cyclopentylformyl peroxide; studied at 175-200 K.	80A073	
		$4.0 \times 10^6$ [200 K]		$c\text{-C}_5\text{H}_{10}$	10.0	13	phot.	D.k. (esr) in oxygen-satd. soln. contg. DTBP; $T$ dependence greater below 193 K; studied at 193-257 K.	72A025	
		$1.7 \times 10^7$		$c\text{-C}_5\text{H}_{10}$	298	24.7	p.r.	D.k. (esr) in $\text{O}_2/\text{Ar}$ satd. soln.; $T$ range not given.	680329	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.8 Hexylperoxy</b>										
	$\text{C}_6\text{H}_{13}\text{OO}\cdot$	$9.7 \times 10^5$ [298 K]		Hexane	7.46	8.4	f.p.	D.k. in air- or oxygen-satd. soln. contg. <i>tert</i> -butyl hypochlorite; $\epsilon(280 \text{ nm}) = 320 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mostly <i>sec</i> -alkylperoxy radicals; average for alkylperoxy radicals from eight <i>n</i> -alkanes; studied at 283-320 K.	79B136	
		$1.1 \times 10^7$		Hexane	298		p.r.	D.k. (esr) in $\text{O}_2/\text{Ar}$ satd. soln.; mostly <i>sec</i> -alkylperoxy radicals.	680329	
<b>5.9 1,1-Dimethylbutylperoxy</b>										
	$\text{CH}_3\text{CH}_2\text{CH}_2\text{C}(\text{CH}_3)_2\text{OO}\cdot$	$1.9 \times 10^4$ [298 K]		2-MP	11.1	39	phot.	D.k. (esr) in oxygen-satd. soln. contg. 0.5% DTBP; measured $k$ due primarily to <i>tert</i> -peroxy radicals; above 273 K decay due to <i>sec</i> -radical interferences; studied at 213-273 K.	707039	
<b>5.10 Cyclohexenylperoxy</b>										
	$c\text{-C}_6\text{H}_9\text{OO}\cdot$	$2.0 \times 10^7$ [298 K]		Benzene	8.75	8.3	f.p.	D.k. at 300 nm in air-satd. soln. contg. $1 \times 10^{-2} \text{ mol L}^{-1}$ DTBP and $0.1 \text{ mol L}^{-1}$ cyclohexene; $\epsilon = 800 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; studied at 282-319 K.	85A466	
<b>5.11 Cyclohexylperoxy</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}\cdot$	$3.8 \times 10^6$		Benzene	300		f.p.	D.k. at 300 nm in air-satd. soln. contg. $1 \times 10^{-2} \text{ mol L}^{-1}$ DTBP and $0.1 \text{ mol L}^{-1}$ cyclohexane; $\epsilon = 800 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	85A466	
		$1.2 \times 10^7$		Water	RT		p.r.	D.k. at 260 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. cyclohexane; $\epsilon = 750 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	84A324	
		$2.2 \times 10^6$ [298 K]		$c\text{-C}_6\text{H}_{12}$	7.29	5.4	f.p.	D.k. at 266 nm; air- or oxygen-satd. soln. contg. <i>tert</i> -butyl hypochlorite; $\epsilon$ cor. to $800 \text{ L mol}^{-1} \text{ cm}^{-1}$ [80A428]; studied at 285-333 K.	79A401	
		$2.3 \times 10^6$		$c\text{-C}_6\text{H}_{12}$	295		p.r.	D.k. at 240, 270-90 nm in oxygen-satd. soln. contg. cyclohexane; $\epsilon(255 \text{ nm}) = 1900 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	710136	
		$6.7 \times 10^6$		$c\text{-C}_6\text{H}_{12}$	298	28.9	p.r.	D.k. (esr) in $\text{O}_2/\text{Ar}$ satd. soln.; no $T$ range given.	680329	
		$1.6 \times 10^6$		$c\text{-C}_6\text{H}_{12}$	298-345		p.r.	D.k. at 275 nm in oxygen-satd. soln.; $\epsilon = 2000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; spectrum shows structure not obs. for peroxy radicals; no $T$ dependence obs.	61A003	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.11</b>	<b>Cyclohexylperoxy</b> —Continued									
		$2.8 \times 10^6$		c-C <sub>6</sub> H <sub>12</sub>	298			p.r.	D.k. in oxygen-satd. soln.; calcn. involves product yields and initial peroxy radical concn. of $3.8 \times 10^{-4} \text{ mol L}^{-1}$ .	61A004
<b>5.12</b>	<b>Methylcyclohexylperoxy</b>									
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO·	$3.7 \times 10^6$		MCH	298	24		p.r.	D.k. (esr) in O <sub>2</sub> /Ar satd. soln. of methylcyclohexane; no T range given.	680329
<b>5.13</b>	<b>Heptylperoxy</b>									
	C <sub>7</sub> H <sub>15</sub> OO·	$9.7 \times 10^5$ [298 K]		Heptane	7.46	8.4		f.p.	D.k. (see 5.8); studied at 294-324 K.	79B136
		$4.3 \times 10^5$ [200 K]		Heptane	7.7	7.9		phot.	From steady-state [ROO·]; at 253 K [ROO·] = $7.9 \times 10^{-7} \text{ mol L}^{-1}$ ; photolysis rate assumed independent of T; studied at 190-253 K.	707039
		$2.2 \times 10^6$		Heptane	298			p.r.	D.k. (esr) in O <sub>2</sub> /Ar satd. soln.; mostly sec-alkylperoxy radicals.	680329
<b>5.14</b>	<b>1,1,2,2-Tetramethylpropylperoxy</b>									
	(CH <sub>3</sub> ) <sub>3</sub> CC(CH <sub>3</sub> ) <sub>2</sub> OO·	$5.0 \times 10^3$ [298 K]		2,2,3-Trimethylbutane	9.2	31.4		phot.	D.k. (esr) in oxygen-satd. soln. contg. 0.5% DTBP; measured decay due primarily to <i>tert</i> -peroxy radicals; above 293 K decay of primary radicals interferes; studied at 243-293 K.	707039
<b>5.15</b>	<b>Cycloheptylperoxy</b>									
	c-C <sub>7</sub> H <sub>13</sub> OO·	$8.6 \times 10^6$		c-C <sub>7</sub> H <sub>14</sub>	298			p.r.	D.k. (esr) in O <sub>2</sub> /Ar satd. soln.	680329
<b>5.16</b>	<b>Octylperoxy</b>									
	C <sub>8</sub> H <sub>17</sub> OO·	$9.7 \times 10^5$ [298 K]		Octane	7.46	8.4		f.p.	D.k. (see 5.8); studied at 283-356 K.	79B136
		$7.6 \times 10^6$		Octane	298			p.r.	D.k. (esr) in O <sub>2</sub> /Ar satd. soln.; mostly <i>sec</i> -alkylperoxy radicals.	680329
<b>5.17</b>	<b>Cyclooctylperoxy</b>									
	c-C <sub>8</sub> H <sub>16</sub> OO·	$1.4 \times 10^7$		c-C <sub>8</sub> H <sub>16</sub>	208			p.r.	D.k. (esr) in O <sub>2</sub> /Ar satd. soln.	680329
<b>5.18</b>	<b>Peroxy radical from octene</b>									
	C <sub>8</sub> H <sub>16</sub> OO·	$\sim 1 \times 10^7$		1-Octene	RT			p.r.	D.k. in oxygen-satd. soln.; calcn. involves product yields and initial peroxy radical concn. of $1.3 \times 10^{-4} \text{ mol L}^{-1}$ .	61A004
<b>5.19</b>	<b>Nonylperoxy</b>									
	C <sub>9</sub> H <sub>19</sub> OO·	$9.7 \times 10^5$ [298 K]		Nonane	7.46	8.4		f.p.	D.k. (see 5.8); studied at 283-324 K.	79B136

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.19 Nonylperoxy</b> —Continued										
		$2.2 \times 10^6$		Nonane	298			p.r.	D.k. (esr) in $\text{O}_2/\text{Ar}$ satd. soln.; mostly <i>sec</i> -alkylperoxy radicals.	680329
<b>5.20 Decylperoxy</b>										
	$\text{C}_{10}\text{H}_{21}\text{OO}^\cdot$	$9.7 \times 10^5$ [298 K]		Decane	7.46	8.4	f.p.	D.k. (see 5.8); studied at 283-355 K.	79B136	
		$3.0 \times 10^6$		Decane	298			p.r.	D.k. (esr) in $\text{O}_2/\text{Ar}$ satd. soln.; mostly <i>sec</i> -alkylperoxy radicals.	680329
<b>5.21 Cyclododecylperoxy</b>										
	$c\text{-C}_{12}\text{H}_{23}\text{OO}^\cdot$	$5.7 \times 10^6$ [298 K]		$c\text{-C}_{12}\text{H}_{24}$	8.12	7.8	p.r.	D.k. at 275 nm in oxygen-satd. soln.; $\epsilon$ cor. to $1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; studied at 345-417 K.	84A401	
<b>5.22 Dodecylperoxy</b>										
	$\text{C}_{12}\text{H}_{25}\text{OO}^\cdot$	$9.7 \times 10^5$ [298 K]		Dodecane	7.46	8.4	f.p.	D.k. (see 5.8); studied at 284-355 K.	79B136	
		$6.2 \times 10^6$ [298 K]		Dodecane	8.16	7.8	p.r.	D.k. at 270 nm in $\text{O}_2/\text{Ar}$ satd. soln.; $\epsilon$ cor. to $1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; studied at 275-413 K.	84A401	
<b>5.23 Tridecylperoxy</b>										
	$\text{C}_{13}\text{H}_{27}\text{OO}^\cdot$	$1.7 \times 10^6$		Benzene	300			f.p.	D.k. at 300 nm in air-satd. soln. contg. $1 \times 10^{-2} \text{ mol L}^{-1}$ DTBP and $0.1 \text{ mol L}^{-1}$ tridecane; $\epsilon = 800 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	85A466
		$9.7 \times 10^5$ [298 K]		Tridecane	7.46	8.4	f.p.	D.k. (see 5.8); studied at 293-358 K.	79B136	
		$1.6 \times 10^6$		Tridecane	298			p.r.	D.k. (esr) in $\text{O}_2/\text{Ar}$ satd. soln.; mostly <i>sec</i> -alkylperoxy radicals.	680329
<b>5.24 2,4,6,8-Tetramethylnonylperoxy</b>										
	$\text{C}_{13}\text{H}_{27}\text{OO}^\cdot$	$2.2 \times 10^5$ [298 K]		DTBP/TMN	13.41	46	phot.	D.k. (esr) in air-satd. soln. contg. DTBP and 2,4,6,8-tetramethylnonane (TMN) (2:1 v/v); radical concn. detd. by double integration and comparison with DPPH; studied at 243-293 K.	86A360	
<b>5.25 2,4,6,8-Tetramethylnonenylperoxy</b>										
	$\text{C}_{13}\text{H}_{25}\text{O}_2^\cdot$	$3 \times 10^6$ [298 K]		DTBP/TMN	10.2	21	phot.	D.k. (esr) in air-satd. soln. contg. DTBP and 2,4,6,8-tetramethylnonene (TMN) (2:1 v/v); radical concn. detd. by double integration and comparison with DPPH; studied at 243-293 K.	86A360	
<b>5.26 Hexadecylperoxy</b>										
	$\text{C}_{16}\text{H}_{33}\text{OO}^\cdot$	$9.7 \times 10^5$ [298 K]		Hexadecane	7.46	8.4	f.p.	D.k. (see 5.8); studied at 293-351 K.	79B136	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.27 Peroxyl radicals from polypropylene</b>										
	PPOO·	$6.4 \times 10^5$ [298 K]		Benzene	16.32	60		phot.	D.k. (esr) in air-satd. soln. contg. DTBP and polypropylene (2:1 v/v); radical concn. detd. by double integration and comparison with DPPH; studied at 263-303 K	86A360
<b>5.28 Hydroxymethylperoxy</b>										
	HOCH <sub>2</sub> OO·	$2.1 \times 10^9$	5.1	Water	RT			p.r.	Buildup of condy. in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. soln. contg. 0.1 mol L $^{-1}$ MeOH and perchloric acid; no change in $k$ with CD <sub>3</sub> OH.	78A231
		$3 \times 10^8$	3	Water	296			p.r.	Mixed order, includes $k = 5 \times 10^3 \text{ s}^{-1}$ ; effect of changing pulse intensity, obs. at 290 nm in N <sub>2</sub> O/O <sub>2</sub> (1:1) satd. soln. contg. 0.1 mol L $^{-1}$ MeOH; $\epsilon = 500 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	761081
<b>5.29 1-Hydroxyethylperoxy</b>										
	CH <sub>3</sub> CH(OH)OO·	$7 \times 10^8$	6.8	Water	293			p.r.	Buildup of condy. in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. soln. contg. 0.1 mol L $^{-1}$ EtOH.	83A056
		$1.2 \times 10^8$		Ethanol	RT			p.r.	D.k. at 290 nm in oxygen-satd. soln.; radical concn. for [CH <sub>3</sub> CHOH] used; uncertain whether $k$ or $2k$ .	65A004
<b>5.30 2-Hydroxyethylperoxy</b>										
	HOCH <sub>2</sub> CH <sub>2</sub> OO·	$2.0 \times 10^8$	~6	Water	RT			p.r.	Obs. increase in condy. in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. ethylene; $G(\text{acid}) = 0.9$ .	84A313
<b>5.31 1-Hydroxy-1-methylethylperoxy</b>										
	(CH <sub>3</sub> ) <sub>2</sub> C(OH)OO·	$1.1 \times 10^7$	3	Water	296			p.r.	Mixed order, includes $k = 550 \text{ s}^{-1}$ ; effect of changing pulse intensity, obs. at 290 nm in N <sub>2</sub> O/O <sub>2</sub> (1:1) satd. soln. contg. 2-PrOH; $\epsilon = 500 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; similar results at 248 nm.	761081
<b>5.32 2-Hydroxy-2,2-dimethylethylperoxy</b>										
	(CH <sub>3</sub> ) <sub>2</sub> C(OH)CH <sub>2</sub> OO·	$8 \times 10^8$	9.4	Water	293			p.r.	Obs. condy. decrease in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. soln. contg. 0.01 mol L $^{-1}$ tert-BuOH; $G(\text{O}_2^-) = 1.7$ , $G(\text{ROO}^\cdot) = 5.4$ ; $k = 6 \times 10^8$ for the radical from tert-BuOH- $d_9$ at pH 9.1.	79G027

TABLE 5. Rate constants for radical-radical reactions of peroxy radical—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.32 2-Hydroxy-2,2-dimethylperoxyethyl—Continued</b>										
		$1.8 \times 10^8$	~7	Water	RT			p.r.	D.k. in $\text{N}_2\text{O}/\text{O}_2$ satd. soln. contg. 0.01 mol L $^{-1}$ <i>tert</i> -BuOH; $\epsilon = 1350$ L mol $^{-1}$ cm $^{-1}$ at max. (~250 nm).	79A295
<b>5.33 Hydroxycyclopentylperoxy</b>										
	c-C <sub>5</sub> H <sub>8</sub> (OH)OO·	$2 \times 10^8$	6.8	Water	RT			p.r.	Obs. condy. increase (with dose rate) in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. cyclopentanol; cor. for HO <sub>2</sub> elimination.	87A250
<b>5.34 Hydroxycyclohexylperoxy</b>										
	c-C <sub>6</sub> H <sub>10</sub> (OH)OO·	$7 \times 10^7$	6.8	Water	RT			p.r.	Obs. condy. increase (with dose rate) in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. cyclohexanol; cor. for HO <sub>2</sub> elimination.	87A250
		$1.2 \times 10^7$		c-C <sub>6</sub> H <sub>11</sub> OH	295			p.r.	D.k. at 250-80 nm in oxygen-satd. soln. contg. cyclohexanol; $\epsilon(246 \text{ nm}) = 1600$ L mol $^{-1}$ cm $^{-1}$ .	710136
		$1.8 \times 10^7$		c-C <sub>6</sub> H <sub>11</sub> OH	298			p.r.	D.k. at 302 nm in oxygen-satd. soln.; calcn. involves product yields to derive initial radical concn. = $5 \times 10^{-4}$ mol L $^{-1}$ .	61A004
<b>5.35 Hydroxycyclohexadienylperoxy</b>										
	HOC <sub>6</sub> H <sub>6</sub> OO·	$9.3 \times 10^8$		Water				p.r.	D.k. at 310 nm in $\text{N}_2\text{O}/\text{O}_2$ satd. soln. contg. benzene; $\epsilon = 690$ L mol $^{-1}$ cm $^{-1}$ ; uncertain whether $k$ or $2k$ .	761212
<b>5.36 1-Hydroxy-1,7,7-trimethylbicyclo[2.2.1]heptylperoxy</b>										
	C <sub>10</sub> H <sub>16</sub> (OH)OO·	$3.4 \times 10^8$		Water	RT			p.r.	D.k. at 260 nm in $\text{N}_2\text{O}$ satd. soln. contg. $10^{-3}$ mol L $^{-1}$ camphor and traces of oxygen; $\epsilon = 1060$ L mol $^{-1}$ cm $^{-1}$ .	79A191
<b>5.37 1,3-Dihydroxycyclopentylperoxy</b>										
	c-C <sub>5</sub> H <sub>7</sub> (OH) <sub>2</sub> OO·	$3 \times 10^8$	6.8	Water	RT			p.r.	Obs. condy. increase (with dose rate) in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. 1,3-cyclopentanediol; mixed radicals; cor. for HO <sub>2</sub> elimination.	87A250
<b>5.38 1,2-Dihydroxycyclohexylperoxy</b>										
	c-C <sub>6</sub> H <sub>9</sub> (OH) <sub>2</sub> OO·	$2 \times 10^8$	6.8	Water	RT			p.r.	Obs. condy. increase (with dose rate) in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. 1,2-cyclohexanediol; mixed radicals; cor. for HO <sub>2</sub> elimination.	87A250

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.39 1,3-Dihydroxycyclohexylperoxy</b>										
	c-C <sub>6</sub> H <sub>9</sub> (OH) <sub>2</sub> OO·	$2 \times 10^8$	6.8	Water	RT			p.r.	Obs. condy. increase (with dose rate) in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. soln. contg. 1,3-cyclohexanediol; mixed radicals; cor. for HO <sub>2</sub> elimination.	87A250
<b>5.40 1,4-Dihydroxycyclohexylperoxy</b>										
	c-C <sub>6</sub> H <sub>9</sub> (OH) <sub>2</sub> OO·	$3 \times 10^8$	6.8	Water	RT			p.r.	Obs. condy. increase (with dose rate) in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. soln. contg. 1,4-cyclohexanediol; mixed radicals; cor. for HO <sub>2</sub> elimination.	87A250
<b>5.41 1-Ethoxyethylperoxy</b>										
	CH <sub>3</sub> CH <sub>2</sub> OCH(CH <sub>3</sub> )OO·	$4.4 \times 10^9$	6	Water	RT			p.r.	Condy. buildup in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. ethyl ether.	700039
		$1.7 \times 10^9$	9.8	Water	RT			p.r.	Second-order condy. decrease in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. $10^{-3}$ mol L <sup>-1</sup> Et <sub>2</sub> O; conducting species believed to be H <sup>+</sup> and O <sub>2</sub> <sup>-</sup> ; G(H <sup>+</sup> + O <sub>2</sub> <sup>-</sup> ) = 1.9.	82G045
<b>5.42 Isopropoxy(dimethyl)methylperoxy</b>										
	(CH <sub>3</sub> ) <sub>2</sub> CHOC(CH <sub>3</sub> ) <sub>2</sub> OO·	$\sim 5 \times 10^7$	6.5	Water	RT			p.r.	Computer simulation; mostly cross reactions with other peroxy radicals; oxygen-satd. soln. contg. $10^{-3}$ mol L <sup>-1</sup> diisopropyl ether; results suggest that $k \sim 10^7$ for self-reaction for tert-radicals, $8 \times 10^8$ for primary radicals and $8 \times 10^7$ for cross reactions; 78% tert-radicals, 22% primary radicals.	87G038
<b>5.43 2-Oxopropylperoxy</b>										
	CH <sub>3</sub> COCH <sub>2</sub> OO·	$8 \times 10^8$		Water	RT			p.r.	D.k. at 300 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. $5 \times 10^{-3}$ mol L <sup>-1</sup> acetone soln.; ε ~ 550 L mol <sup>-1</sup> cm <sup>-1</sup> from plot.	86A285
<b>5.44 Peroxy radicals from 2,6,8-trimethylnonan-4-one</b>										
	ROO·	$2.7 \times 10^6$ [298 K]		DTBP/TMN	14.15	44	phot.	D.k. (esr) in air-satd. soln. contg. DTBP and TMN (2,6,8-trimethylnonan-4-one) (2:1 v/v); radical concn. detd. by double integration and comparison with DPPH; studied at 243-293 K.	86A360	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>5.45 Carboxymethylperoxy, anion</b>										
	$\cdot\text{OOCCH}_2\text{CO}_2^-$	$1.4 \times 10^8$	8-10	Water	RT			p.r.	D.k. at 280 nm ( $\epsilon = 730$ L mol <sup>-1</sup> cm <sup>-1</sup> ) in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. soln. contg. $10^{-2}$ mol L <sup>-1</sup> Na acetate; pK <sub>a</sub> ( $\cdot\text{OOCCH}_2\text{CO}_2\text{H}$ ) = 2.1 [89C014].	85A106
		$7.0 \times 10^8$	acid	Water	RT			p.r.	D.k. at 310 nm in oxygen-satd. soln. contg. 0.5 mol L <sup>-1</sup> acetic acid and HClO <sub>4</sub> ; $\epsilon$ not given.	84A270
		$6.5 \times 10^8$	5.7	Water	RT			p.r.	D.k. in N <sub>2</sub> O/O <sub>2</sub> (3:1) satd. soln. contg. 0.01 mol L <sup>-1</sup> acetate; $\epsilon(340 \text{ nm}) = 360$ L mol <sup>-1</sup> cm <sup>-1</sup> .	761082
		$6.5 \times 10^8$	8.2							
		$4 \times 10^8$	10.5							
		$5.6 \times 10^8$	8	Water	RT			p.r.	D.k. at 290 nm ( $\epsilon = 900$ L mol <sup>-1</sup> cm <sup>-1</sup> ) in N <sub>2</sub> O/O <sub>2</sub> (3:7) satd. soln. contg. 0.1 mol L <sup>-1</sup> acetate.	761207
<b>5.46 Acetoxymethylperoxy</b>										
	AcOCH <sub>2</sub> OO·	$3.3 \times 10^8$		Methyl acetate	293-323	<10	f.p.	D.k. at 270-280 nm in air-satd. soln. contg. $5 \times 10^{-3}$ mol L <sup>-1</sup> <i>tert</i> -butyl hypochlorite; $\epsilon = 1000$ L mol <sup>-1</sup> cm <sup>-1</sup> .	84A098	
		$2.9 \times 10^9$	6.4	Water	RT			p.r.	D.k. at 260 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. methyl acetate; $\epsilon = 1300$ L mol <sup>-1</sup> cm <sup>-1</sup> .	78A402
<b>5.47 1-Acetoxyethylperoxy</b>										
	AcOCH(CH <sub>3</sub> )OO·	$3.8 \times 10^8$		Ethyl acetate	293-343	<10	f.p.	D.k. at 270-280 nm in air-satd. soln. contg. $5 \times 10^{-3}$ mol L <sup>-1</sup> <i>tert</i> -butyl hypochlorite; $\epsilon = 1000$ L mol <sup>-1</sup> cm <sup>-1</sup> .	84A098	
<b>5.48 1-Acetoxypropylperoxy</b>										
	AcOCH(C <sub>2</sub> H <sub>5</sub> )OO·	$8 \times 10^7$		Propyl acetate	293-343	<10	f.p.	D.k. at 270-280 nm in air-satd. soln. contg. $5 \times 10^{-3}$ mol L <sup>-1</sup> <i>tert</i> -butyl hypochlorite; $\epsilon = 1000$ L mol <sup>-1</sup> cm <sup>-1</sup> .	84A098	
<b>5.49 1-Acetoxy-1-methylethylperoxy</b>										
	AcOC(CH <sub>3</sub> ) <sub>2</sub> OO·	$1.6 \times 10^8$		Isopropyl acetate	293-343	<10	f.p.	D.k. at 270-280 nm in air-satd. soln. contg. $5 \times 10^{-3}$ mol L <sup>-1</sup> <i>tert</i> -butyl hypochlorite; $\epsilon = 1000$ L mol <sup>-1</sup> cm <sup>-1</sup> ; mixture of radicals from solvent.	84A098	
		$2.0 \times 10^8$		Isopropyl acetate	293-343	<10	f.p.	D.k. at 270-280 nm in air-satd. soln. contg. $1 \times 10^{-2}$ mol L <sup>-1</sup> DTBP; $\epsilon = 1000$ L mol <sup>-1</sup> cm <sup>-1</sup> ; mixture of radicals from solvent.	84A098	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.50 Acetoxylperoxy</b>										
	$\text{AcOCH}(\text{C}_3\text{H}_7)\text{OO}\cdot$	$1 \times 10^7$		Butyl acetate	293-343	<10	f.p.	D.k. at 270-280 nm in air-satd. soln. contg. 5 $\times 10^{-3}$ mol L $^{-1}$ <i>tert</i> -butyl hypochlorite; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent.	84A098	
<b>5.51 Acetoxypentylperoxy</b>										
	$\text{AcOCH}(\text{C}_4\text{H}_9)\text{OO}\cdot$	$7 \times 10^6$		Pentyl acetate	293-343	<10	f.p.	D.k. at 270-280 nm in air-satd. soln. contg. 5 $\times 10^{-3}$ mol L $^{-1}$ <i>tert</i> -butyl hypochlorite; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent.	84A098	
		$1.7 \times 10^7$		Pentyl acetate	293-343		f.p.	D.k. at 270-280 nm in air-satd. soln. contg. 5 $\times 10^{-3}$ mol L $^{-1}$ <i>tert</i> -butyl hypochlorite; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent.	84A098	
<b>5.52 Acetoxy(phenyl)methylperoxy</b>										
	$\text{AcOCH}(\text{C}_6\text{H}_5)\text{OO}\cdot$	$5.1 \times 10^8$		Benzyl acetate	296		f.p.	D.k. at 300 nm; radical initiation by DTBP; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent; $k$ influenced by diffusion rate.	87A292	
<b>5.53 (Ethoxycarbonyl)valeratoethylperoxy</b>										
	$\text{EtOCO}(\text{CH}_2)_4\text{CO}_2\text{CH}(\text{Me})\text{OO}\cdot$	$9.1 \times 10^8$ [298 K]		Diethyl adipate	11.5	14.5	f.p.	D.k. at 275 nm; radical initiation by <i>tert</i> -butyl hypochlorite; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent; $k$ influenced by diffusion rate; studied at 257-296 K.	87A292	
<b>5.54 1,2-Diacetoxyethylperoxy</b>										
	$\text{AcOCH}_2\text{CH}(\text{OAc})\text{OO}\cdot$	$8.3 \times 10^8$		Ethylene glycol diacetate	296		f.p.	D.k. at 310 nm; radical initiation by <i>tert</i> -butyl hypochlorite; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent; $k$ influenced by diffusion rate.	87A292	
<b>5.55 1,3-Diacetoxy-2,2-dimethylpropylperoxy</b>										
	$\text{AcOCH}_2\text{C}(\text{Me})_2\text{CH}(\text{OAc})\text{OO}\cdot$	$9 \times 10^8$ [298 K]		DMPDA	10.2	7.1	f.p.	D.k. at 290 nm; radical initiation by DTBP; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent; DMPDA = 2,2-dimethyl-1,3-propanediol diacetate; $k$ influenced by diffusion rate; studied at 296-338 K.	87A292	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.55 1,8-Diacetoxy-2,2-dimethylpropylperoxy</b> —Continued										
		$1.6 \times 10^9$ [298 K]		Benzene		10.9	9.8	f.p.	D.k. at 290 nm in oxygen-satd. soln. contg. $1.1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.53 mol L $^{-1}$ 2,2-dimethyl-1,3-propanediol diacetate; studied at 296-338 K; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	87A442
<b>5.56 1,8-Dipropanoato-2,2-dimethylpropylperoxy</b>										
	$\text{RCH}_2\text{C}(\text{Me})_2\text{CH}(\text{R})\text{OO}\cdot$ (R = EtCO <sub>2</sub> )	$6.7 \times 10^8$ [298 K]		DMPDP		11.7	16.4	f.p.	D.k. at 345 nm; radical initiation by <i>tert</i> -butyl hypochlorite; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent; DMPDP = 2,2-dimethyl-1,3-propanediol dipropionate; $k$ influenced by diffusion rate; studied at 296-338 K.	87A292
		$2.5 \times 10^9$ [298 K]		Benzene		12.5	17.7	f.p.	D.k. at 310 nm in oxygen-satd. soln. contg. $1.1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.59 mol L $^{-1}$ 2,2-dimethyl-1,3-propanediol dipropionate; studied at 296-338 K; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	87A442
<b>5.57 1,2,2-Triacetoxy-2-ethylbutylperoxy</b>										
	$(\text{AcOCH}_2)_2\text{C}(\text{Et})\text{CH}(\text{OAc})\text{OO}\cdot$	$2.4 \times 10^8$ [298 K]		Erythrol triacetate		13.7	30.3	f.p.	D.k. at 320 nm; radical initiation by DTBP; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent; $k$ limited by diffusion rate; studied at 296-343 K.	87A292
		$2.8 \times 10^9$ [298 K]		Benzene		10.4	5.5	f.p.	D.k. at 295 nm in oxygen-satd. soln. contg. $1.1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.67 mol L $^{-1}$ erythrol triacetate; studied at 296-338 K; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	87A442
<b>5.58 1,1,1-Triacetoxymethyl-2-acetoxyethylperoxy</b>										
	$(\text{AcOCH}_2)_3\text{CCH}(\text{OAc})\text{OO}\cdot$	$5.4 \times 10^9$ [298 K]		Benzene		10.7	5.5	f.p.	D.k. at 295 nm in oxygen-satd. soln. contg. $1.1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.46 mol L $^{-1}$ pentaerythritol tetraacetate; studied at 296-338 K; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ .	87A442
<b>5.59 1,1,1-Tri(propionatomethyl)-2-propionatoethylperoxy</b>										
	$(\text{EtCO}_2\text{CH}_2)_3\text{CCH}(\text{O}_2\text{CET})\text{OO}\cdot$	$7.5 \times 10^8$		Penta-erythritol tetrapropionate	313			f.p.	D.k. at 300 nm; radical initiation by DTBP; $\epsilon = 1000 \text{ L mol}^{-1} \text{ cm}^{-1}$ ; mixture of radicals from solvent; $k$ limited by diffusion rate.	87A292

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.69 1,1,1-Tri(propionatomethyl)-2-propionatoethylperoxy—Continued</b>										
		$2.2 \times 10^9$		Benzene	9.6	~0	f.p.	D.k. at 295 nm in oxygen-satd. soln. contg. $1.1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.20 mol L $^{-1}$ pentaerythritol tetrapropionate; studied at 296-338 K; $\epsilon = 1000$ L mol $^{-1}$ cm $^{-1}$ .	87A442	
<b>5.60 1,1,1-Tri(valeratomethyl)-2-valeratoethylperoxy</b>										
	$(\text{BuCO}_2\text{CH}_2)_3\text{CCH(O}_2\text{CBu)OO}$	$3 \times 10^8$ [208 K]		Penta- erythritol tetravalerate	12.9	27.4	f.p.	D.k. at 305 nm; radical initiation by <i>tart</i> butyl hypochlorite; $\epsilon = 1000$ L mol $^{-1}$ cm $^{-1}$ ; mixture of radicals from solvent; $k$ limited by diffusion rate; studied at 296-338 K.	87A292	
		$1.4 \times 10^9$ [298 K]		Benzene	9.2	~0	f.p.	D.k. at 290 nm in oxygen-satd. soln. contg. $1.1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.26 mol L $^{-1}$ pentaerythritol tetravalerate; studied at 296-338 K; $\epsilon = 1000$ L mol $^{-1}$ cm $^{-1}$ .	87A442	
		$3.2 \times 10^9$ [298 K]		$\text{C}_8\text{F}_{18}$	11.9	13.9	f.p.	D.k. at 265 nm in oxygen-satd. soln. contg. $1 \times 10^{-3}$ mol L $^{-1}$ $\text{Cl}_2$ and 0.01 mol L $^{-1}$ pentaerythritol tetravalerate; studied at 296-338 K; $\epsilon = 1000$ L mol $^{-1}$ cm $^{-1}$ .	87A442	
<b>5.61 1,1,1-Tribenzoatomethyl-2-benzoatoethylperoxy</b>										
	$(\text{BzOCH}_2)_3\text{CCH(OBz)OO}$	$\sim 3 \times 10^9$ [298 K]		Benzene		~10.8	~6.0	f.p.	D.k. at 310 nm in oxygen-satd. soln. contg. $1.1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.12 mol L $^{-1}$ pentaerythritol tribenzoate; studied at 296-338 K; $\epsilon = 1000$ L mol $^{-1}$ cm $^{-1}$ .	87A442
<b>5.62 Dimethylphosphatomethylperoxy</b>										
	$(\text{CH}_3\text{O})_2\text{PO}_2\text{CH}_2\text{OO}$	$9 \times 10^8$	6.5, 10- 11	Water	RT			p.r.	P.b.k.; increase in condy. in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. trimethyl phosphate.	84A088
<b>5.63 Perfluoropolyetherperoxy from photooxid. of <math>\text{C}_2\text{F}_4</math></b>										
	$\text{R}_\text{F}\text{OCF}_2\text{OO}$	$6.7 \times 10^7$		$n\text{-C}_6\text{F}_{14}$	223			phot.	D.k. (esr)	88A416
		$4.6 \times 10^6$		self	223	36		phot.	D.k. (esr)	88A416
<b>5.64 Perfluoropolyetherperoxy from photooxid. of <math>\text{C}_8\text{F}_6</math></b>										
	$\text{R}_\text{F}\text{OCF}(\text{CF}_3)\text{OO}$	$4.2 \times 10^3$		self	223	75		phot.	D.k. (esr)	88A416
<b>5.65 Trichloromethylperoxy</b>										
	$\text{CCl}_3\text{OO}$	$2 \times 10^8$		Water/ 2-PrOH	RT			p.r.	D.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ ; $\epsilon(310) = 400$ L mol $^{-1}$ cm $^{-1}$ .	89A019

TABLE 5. Rate constants for radical-radical reactions of peroxy radical—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.66 Peroxyl radicals from linoleate-OH adduct</b>										
	LH(OH)OO $\cdot$	$2.4 \times 10^7$	7.4-9.4	Water	295	10.94	20.1	p.r.	D.k. at 245 nm in $\text{N}_2\text{O}/\text{O}_2$ (1:1) satd. soln. contg. $1 \times 10^{-4}$ mol L $^{-1}$ linoleate; $\epsilon = 1600$ L mol $^{-1}$ cm $^{-1}$	89G044
<b>5.67 13-Peroxyl radical from linoleate</b>										
	LOO $\cdot$	$3 \times 10^8$	11.5	Water	RT			p.r.	Calcd. from reaction scheme and data from $\text{N}_2\text{O}$ -satd. soln. contg. 13-hydroperoxylinoleate, azide ion and quercetin or kaempferol, or in $\text{N}_2\text{O}/\text{O}_2$ satd. linoleate soln.; average.	87A277
<b>5.68 Peroxyl radicals from linoleate</b>										
	LOO $\cdot$	$\sim 2 \times 10^7$	10.5	Water	RT			p.r.	P.b.k. at 270-300 nm.	78A365
<b>5.69 <math>3\beta</math>-<math>3</math>-Hydroxycholest-5-en-7-ylperoxyl</b>										
	ROO $\cdot$	$6.5 \times 10^6$ [298 K]		Benzene	9.69	16.5	f.p.	D.k. at 300 nm in air-satd. soln. contg. $1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.1 mol L $^{-1}$ cholesterol; $\epsilon = 800$ L mol $^{-1}$ cm $^{-1}$ ; studied at 282-315 K.	85A466	
<b>5.70 <math>3\beta</math>-<math>3</math>-Hydroxycholest-5-en-7-ylperoxyl</b>										
	ROO $\cdot$	$6.0 \times 10^5$ [298 K]		Benzene	8.66	16.5	f.p.	D.k. at 300 nm in air-satd. soln. contg. $1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.1 mol L $^{-1}$ cholestanol; $\epsilon = 800$ L mol $^{-1}$ cm $^{-1}$ ; studied at 282-313 K.	85A466	
<b>5.71 <math>3\beta</math>-<math>3</math>-Dodecanoyloxycholest-5-en-7-ylperoxyl</b>										
	ROO $\cdot$	$2.0 \times 10^6$ [298 K]		Benzene	9.04	15.7	f.p.	D.k. at 300 nm in air-satd. soln. contg. $1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.1 mol L $^{-1}$ cholesteryl laurate; $\epsilon = 800$ L mol $^{-1}$ cm $^{-1}$ ; studied at 281-308 K.	85A466	
		$4 \times 10^8$ [298 K]		Benzene	8.83	13.65	f.p.	D.k. at 300 nm in Ar-satd. soln. contg. di-tert-butyl hydroperoxide and cholesteryl laurate hydroperoxide; $\epsilon = 800$ L mol $^{-1}$ cm $^{-1}$ ; studied at 282-316 K.	85A466	
<b>5.72 <math>3\beta</math>-<math>3</math>-Dodecanoyloxycholest-5-en-7-ylperoxyl</b>										
	ROO $\cdot$	$6 \times 10^5$ [298 K]		Benzene	8.27	14.2	f.p.	D.k. at 300 nm in air-satd. soln. contg. $1 \times 10^{-2}$ mol L $^{-1}$ DTBP and 0.1 mol L $^{-1}$ cholestanyl laurate; $\epsilon = 800$ L mol $^{-1}$ cm $^{-1}$ ; studied at 282-319 K.	85A466	

TABLE 5. Rate constants for radical-radical reactions of peroxy radicals—Continued

No.	Radical	$2k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log 2A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>5.73 8,6-Dioxo-2-piperazinylperoxy</b>										
	-NHCH(OO·)CONHCH <sub>2</sub> CO-	$7 \times 10^8$	<7	Water				p.r.	D.k. in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. glycine anhydride; elimination of $\text{O}_2^-$ important in basic soln.	87A490
<b>5.74 Peroxyl radical of thymine-H adduct</b>										
	5-MeU(H)OO·	$6.0 \times 10^6$	6-7	Water	RT			p.r.	D.k. at 270 nm in $\text{N}_2\text{O}/\text{O}_2$ (1:1) satd. soln. contg. dihydrothymine; $\epsilon(240 \text{ nm}) = 1300 \text{ L}$ $\text{mol}^{-1} \text{cm}^{-1}$ .	741151
<b>5.75 Peroxyl radical of uracil-H adduct</b>										
	U(H)OO·	$2 \times 10^7$	3	Water	RT			p.r.	D.k. at 280 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. $10^{-3} \text{ mol}$ $\text{L}^{-1}$ dihydrouracil; 5- and 6-peroxy radicals present, 6-peroxy is predominant.	84G025
<b>5.76 Peroxyl radical of uracil-OH adduct</b>										
	U(OH)OO·	$\sim 1 \times 10^9$	6.5	Water	RT			p.r.	Cond. buildup in $\text{N}_2\text{O}/\text{O}_2$ (4:1 v/v) satd. soln. contg. $5 \times 10^{-4}$ $\text{mol L}^{-1}$ uracil from $\text{O}_2^-$ formn., suggested to be for the 5-peroxy-6- hydroxy radical; $G(\text{H}^+ +$ anion) = 1.1; reaction is approximately second order.	83G100
		$\sim 2 \times 10^8$	7	Water	RT			p.r.	D.k. in oxygen-satd. soln. contg. $10^{-3} \text{ mol L}^{-1}$ uracil; $\epsilon(300 \text{ nm}) = 280$ $\text{L mol}^{-1} \text{cm}^{-1}$ .	710256

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates

No.	Radical/Reactant	$k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	$\log A$	$E_a$ (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.1 Methylperoxy</b>										
6.1.1	<b>2,3,9,10-Tetramethyl-1,4,8,11-tetraazacyclotetradeca-1,3,8,10-tetraenecobalt(II) ion</b>	$1.2 \times 10^8$	~3	Water	RT			f.p.	D.k. at 542 nm in air- or oxygen-satd. soln. contg. $1-2 \times 10^{-5}$ mol L <sup>-1</sup> [Co(tetraeneN <sub>4</sub> )CH <sub>3</sub> ] <sup>+</sup> ; radical from Co-CH <sub>3</sub> homolysis of complex.	78A001
	$\text{CH}_3\text{OO}^\cdot + \text{Co}(\text{tetraeneN}_4)^{2+} \rightarrow \text{Co}(\text{tetraeneN}_4)\text{OOCH}_3^{2+}$									
6.1.2	<b>Nitrilotriacetatocobalt(II) ion</b>	$1.0 \times 10^8$	6.3	Water	RT			p.r.	P.b.k. at 310 nm in soln. contg. $2-10 \times 10^{-4}$ CoNTA <sup>-</sup> , $7 \times 10^{-4}$ mol L <sup>-1</sup> O <sub>2</sub> , $1.1 \times 10^{-2}$ mol L <sup>-1</sup> N <sub>2</sub> O, and 0.1 mol L <sup>-1</sup> DMSO.	89A204
	$\text{CH}_3\text{OO}^\cdot + \text{CoNTA}^- \rightarrow \text{NTACoOOCH}_3^-$									
6.1.3	<b>Ascorbate ion</b>									
	$\text{CH}_3\text{OO}^\cdot + \text{AH}^- \rightarrow \text{CH}_3\text{OOH} + \text{A}^-$	$1.8 \times 10^6$	7	Water/ DMSO	RT			p.r.	P.b.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. 40% DMSO.	89A165
		$1.8 \times 10^6$		Water/ 2-PrOH	RT			p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% CCl <sub>4</sub> .	89A019
		$1.7 \times 10^6$	7	Water	RT			p.r.	P.b.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. 1 mol L <sup>-1</sup> DMSO.	86A291
		$2.2 \times 10^6$	7	Water	RT			p.r.	P.b.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. 1 mol L <sup>-1</sup> DMSO.	80A053
6.1.4	<b>Ascorbic acid</b>									
	$\text{CH}_3\text{OO}^\cdot + \text{AH}_2 \rightarrow \text{CH}_3\text{OOH} + \text{A}^-$	$3 \times 10^5$		Water/ DMSO	RT			p.r.	P.b.k. at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. 10% DMSO; $k_{\text{obs}}$ at pH 3.1 = $4 \times 10^5$ .	89A165
6.1.5	<b>2,2'-Azinobis(8-ethylbenzothiazoline-6-sulfonate) ion</b>	$<1 \times 10^5$		Water	RT			p.r.	No change in absorption in N <sub>2</sub> O/O <sub>2</sub> satd. soln. contg. DMSO.	82A196
	$\text{CH}_3\text{OO}^\cdot + \text{ABTS} \rightarrow \text{CH}_3\text{OO}^- + \text{ABTS}^\cdot+$									
6.1.6	<b>Bilirubin dianion</b>									
	$\text{CH}_3\text{OO}^\cdot + \text{BR}^{2-} \rightarrow \text{CH}_3\text{OO}^- + \text{BR}^\cdot-$	$5.7 \times 10^7$	11	Water/ tert-BuOH	RT			p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol L <sup>-1</sup> tert-BuOH, CH <sub>3</sub> Cl and bilirubin.	89A901
6.1.7	<b>Hydroquinone</b>									
	$\text{CH}_3\text{OO}^\cdot + 1,4-\text{C}_6\text{H}_4(\text{OH})_2 \rightarrow$	$<1 \times 10^6$	7	Water	RT			p.r.	P.b.k. at 430 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. 1 mol L <sup>-1</sup> DMSO.	86A291
6.1.8	<b>6-Hydroxy-2,5,7,8-tetramethyl-1-benzopyran-2-carboxylic acid</b>	$<1 \times 10^5$	~4	Water/ DMSO	RT			p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 10% DMSO.	89A384
	$\text{CH}_3\text{OO}^\cdot + \text{HTxOH} \rightarrow$									

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>6.1 Methylperoxy—Continued</b>										
<b>6.1.9 5-Hydroxytryptophan, conjugate base</b>										
	$\text{CH}_3\text{OO}\cdot + 5\text{-OTrpH} \rightarrow$ $\text{CH}_3\text{OO}^- + \cdot\text{OTrpH}$	$7.0 \times 10^6$	13	Water	RT			p.r.	P.b.k. at 400 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 1 mol L $^{-1}$ DMSO.	86A291
<b>6.1.10 Isobarbiturate ion</b>										
	$\text{CH}_3\text{OO}\cdot + \text{IBO}^- \rightarrow \text{CH}_3\text{OO}^- + \text{IBO}\cdot$	$4.7 \times 10^7$	13	Water	RT			p.r.	P.b.k. at 360 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 1 mol L $^{-1}$ DMSO.	86A291
<b>6.1.11 Phenoxide ion</b>										
	$\text{CH}_3\text{OO}\cdot + \text{C}_6\text{H}_5\text{O}^- \rightarrow$ $\text{CH}_3\text{OO}^- + \text{C}_6\text{H}_5\text{O}\cdot$	$<1 \times 10^6$	12	Water	RT			p.r.	P.b.k. at 400 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 1 mol L $^{-1}$ DMSO.	80A053
<b>6.1.12 <i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>										
	$\text{CH}_3\text{OO}\cdot + \text{TMPD} \rightarrow \text{CH}_3\text{OO}^- + \text{TMPD}\cdot^+$	$3.7 \times 10^7$		Water/ 2-PrOH	RT			p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2- PrOH and 4% $\text{CCl}_4$ .	89A019
		$4.3 \times 10^7$	8	Water	RT	12.1	27	p.r.	P.b.k. at 565 nm in air-satd. soln. contg. 1 mol L $^{-1}$ DMSO and $0.4-1 \times 10^{-3}$ mol L $^{-1}$ TMPD; $k_{11}/k_D = 2.6$ ; studied at 273-313 K.	89A384 89A165
<b>6.1.13 Tyrosine, negative ion</b>										
	$\text{CH}_3\text{OO}\cdot + \text{TyrO}^- \rightarrow \text{CH}_3\text{OO}^- + \text{TyrO}\cdot$	$<1 \times 10^6$	12	Water	RT			p.r.	P.b.k. at 400 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 1 mol L $^{-1}$ DMSO.	80A053
<b>6.1.14 Urate ion</b>										
	$\text{CH}_3\text{OO}\cdot + \text{UrO}^- \rightarrow \text{CH}_3\text{OO}^- + \text{UrO}\cdot$	$8.8 \times 10^6$	13	Water	RT			p.r.	P.b.k. at 360 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 1 mol L $^{-1}$ DMSO.	86A291
<b>6.1.15 Xanthine, negative ion</b>										
	$\text{CH}_3\text{OO}\cdot + \text{XO}^- \rightarrow \text{CH}_3\text{OO}^- + \text{XO}\cdot$	$3 \times 10^6$	13	Water	RT			p.r.	P.b.k. at 350 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 1 mol L $^{-1}$ DMSO.	80A291
<b>6.2 Ethylperoxy</b>										
<b>6.2.1 Bilirubin dianion</b>										
	$\text{C}_2\text{H}_5\text{OO}\cdot + \text{BR}^{2-} \rightarrow \text{C}_2\text{H}_5\text{OO}^- + \text{BR}\cdot^-$	$4.1 \times 10^7$	11	Water/ tert-BuOH	RT			p.r.	P.b.k. at 590 nm in aerated soin. contg. 2.0 mol L $^{-1}$ tert- BuOH, $\text{CH}_3\text{CH}_2\text{Cl}$ and bilirubin.	89A901
<b>6.2.2 <i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>										
	$\text{C}_2\text{H}_5\text{OO}\cdot + \text{TMPD} \rightarrow$ $\text{C}_2\text{H}_5\text{OOH} + \text{TMPD}\cdot^+ + \text{OH}^-$	$3.3 \times 10^7$	~8	Water	RT			p.r.	P.b.k. at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. diethyl sulfoxide.	89A165

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.3 2-Propylperoxy</b>										
<b>6.3.1 <i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>										
$(\text{CH}_3)_2\text{CHOO} \cdot + \text{TMPD} \rightarrow$ $9.2 \times 10^6$ ~8      Water      RT      p.r.      P.b.k at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. diisopropyl sulfoxide.										
$(\text{CH}_3)_2\text{CHOOH} + \text{TMPD} \cdot^+ + \text{OH}^-$										
<b>6.4 Butylperoxy</b>										
<b>6.4.1 <i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>										
$\text{CH}_3(\text{CH}_2)_3\text{OO} \cdot + \text{TMPD} \rightarrow$ $2.9 \times 10^7$ ~8      Water      RT      p.r.      P.b.k at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. dibutyl sulfoxide.										
$\text{CH}_3(\text{CH}_2)_3\text{OOH} + \text{TMPD} \cdot^+ + \text{OH}^-$										
<b>6.5 <i>tert</i>-Butylperoxy</b>										
<b>6.5.1 Bis(acetylacetonato)cobalt(II)</b>										
$(\text{CH}_3)_3\text{COO} \cdot + \text{Co}(\text{acac})_2 \rightarrow$ $4.8 \times 10^3$ [200 K]      Toluene      8.0      20      phot.      D.k. (esr) in oxygen- or air-satd. soln. contg. di- <i>tert</i> -butyl ketone; studied at 183-213 K.										
<b>6.5.2 Nickel(II) dibutylidithiocarbamate</b>										
$(\text{CH}_3)_3\text{COO} \cdot +$ $\sim 2 \times 10^4$ $[(\text{C}_4\text{H}_9)_2\text{NCS}_2]_2\text{Ni} \rightarrow$ CFCl <sub>3</sub> 179-258      phot.      D.k. (esr) in oxygen- satd. soln. contg. azoisobutane.										
$[(\text{C}_4\text{H}_9)_2\text{NCS}_2]_2\text{Ni} \rightarrow$										
<b>6.5.3 Phosphorus tribromide</b>										
$(\text{CH}_3)_3\text{COO} \cdot + \text{PBr}_3 \rightarrow$ $4.0 \times 10^0$ Isopentane      178      phot.      D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane.										
<b>6.5.4 Phosphorus trichloride</b>										
$(\text{CH}_3)_3\text{COO} \cdot + \text{PCl}_3 \rightarrow$ $5.0 \times 10^0$ Isopentane      178      phot.      D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane.										
<b>6.5.5 Hexaphenyldilead</b>										
$(\text{CH}_3)_3\text{COO} \cdot + [(\text{C}_6\text{H}_5)_3\text{Pb}]_2 \rightarrow$ $9.4 \times 10^2$ [200 K]      Cumene      9.5      25      phot.      D.k. (esr) in oxygen- satd. soln. contg. 4- $100 \times 10^{-2}$ mol L <sup>-1</sup> hexaphenyldilead and azoisobutane; studied at 173-203 K.										
<b>6.5.6 Hexaphenylditin</b>										
$(\text{CH}_3)_3\text{COO} \cdot + [(\text{C}_6\text{H}_5)_3\text{Sn}]_2 \rightarrow$ $2.1 \times 10^1$ [200 K]      Cumene      5.5      16      phot.      D.k. (esr) in oxygen- satd. soln. contg. 4- $100 \times 10^{-2}$ mol L <sup>-1</sup> hexaphenylditin and azoisobutane; studied at 173-203 K.										
<b>6.5.7 Bis(acetylacetonato)oxovanadium(IV)</b>										
$(\text{CH}_3)_3\text{COO} \cdot + \text{VO}(\text{acac})_2 \rightarrow$ $3.1 \times 10^4$ $[(\text{CH}_3)_3\text{COO} \cdot + \text{VO}(\text{acac})_2]^+$ [200 K]      Toluene      6.0      5.8      phot.      D.k. (esr) in air-satd. soln. contg. 2.5 or 8.6 $\times 10^{-5}$ mol L <sup>-1</sup> VO(acac) <sub>2</sub> and azoisobutane or di- <i>tert</i> -butyl ketone; studied at 178-208 K.										
<b>6.5.8 Zinc(II) diisopropyldithiophosphate</b>										
$(\text{CH}_3)_3\text{COO} \cdot + \text{Zn}[(\text{CH}_3)_2\text{CHO}]_2\text{PS}_2\text{I}_2 \rightarrow$ $4.4 \times 10^1$ [200 K]      Isobutane      6.0      16.7      phot.      D.k. (esr); studied at 183-273 K.										

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.5 <i>tert</i>-Butylperoxy—Continued</b>										
<b>6.5.9 Zinc(II) di-<i>sec</i>-butyldithiophosphate</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{Zn}[(\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{O}]_2\text{PS}_2]_2 \rightarrow$	$3.4 \times 10^1$ [200 K]			Isobutane	6.0	17.1	phot.	D.k. (esr); studied at 183–273 K.	739058	
<b>6.5.10 Zinc(II) diisobutyldithiophosphate</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{Zn}[(\text{CH}_3)_2\text{CHCH}_2\text{O}]_2\text{PS}_2]_2 \rightarrow$	$4.3 \times 10^1$ [200 K]			Isobutane	6.1	17.1	phot.	D.k. (esr); studied at 183–273 K.	739058	
<b>6.5.11 Zinc(II) isopropylxanthate</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{Zn}[(\text{CH}_3)_2\text{CHOCS}_2]_2 \rightarrow$	$1.1 \times 10^3$ [200 K]			Isobutane	7.2	15.9	phot.	D.k. (esr); studied at 170–220 K.	739058	
<b>6.5.12 Aniline</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{C}_6\text{H}_5\text{NH}_2 \rightarrow (\text{CH}_3)_3\text{COOH} + \text{C}_6\text{H}_5\text{NH}$	$1.4 \times 10^1$ [200 K]			Isopentane	6.6	20.9	phot.	D.k. (esr) in oxygen-satd. soln. contg. 5–10% <i>tert</i> -butyl peroxide; same <i>k</i> for 1,1-dimethylpropylperoxy; studied at 183–243 K.	745265	
<b>6.5.13 <i>sec</i>-Butyl hydroperoxide</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{O}_2\text{H} \rightarrow$	$4.9 \times 10^2$			Isopentane	294		phot.	D.k. (esr) in oxygen-satd. soln. contg. 0.02 mol L <sup>-1</sup> 2,2'-azoisobutane.	757053	
<b>6.5.14 4-(<i>tert</i>-Butyl)phenol</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + (\text{CH}_3)_3\text{CC}_6\text{H}_4\text{OH} \rightarrow (\text{CH}_3)_3\text{COOH} + (\text{CH}_3)_3\text{C}_6\text{H}_4\text{O}^\bullet$	$1.8 \times 10^3$ [200 K]			Heptane	7.7	17	phot.	D.k. (esr); soln. contg. $(1\text{--}7) \times 10^{-2}$ mol L <sup>-1</sup> <i>tert</i> -butyl hydroperoxide; studied at 209–241 K.	81A392	
<b>6.5.15 Chlorodiphenylphosphine</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + (\text{C}_6\text{H}_5)_2\text{PCl} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{DABCO}(-\text{H})$	$2.6 \times 10^1$ [200 K]			Isopentane	3.7	5.4	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; T range not given, 173–243 (?).	737013	
<b>6.5.16 1,4-Diazabicyclo[2.2.2]octane</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{DABCO} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{DABCO}(-\text{H})$	$4.8 \times 10^0$			3-MP	303		phot.	D.k. (esr) in oxygen-satd. soln. contg. di- <i>tert</i> -butyl ketone and 0.02–0.2 mol L <sup>-1</sup> DABCO.	81A016	
<b>6.5.17 2,6-Di-<i>tert</i>-butyl-4-carbo-<i>tert</i>-butoxyphenol</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{ArOH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{ArO}^\bullet$	$2.0 \times 10^2$ [200 K]			Isopentane	3.8	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 172–232 K.	737428	
<b>6.5.18 2,6-Di-<i>tert</i>-butyl-4-chlorophenol</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{ArOH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{ArO}^\bullet$	$5.6 \times 10^3$ [200 K]			Isopentane	4.3	2.1	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 174–236 K.	737428	
<b>6.5.19 O-<i>d</i>-2,6-Di-<i>tert</i>-butyl-4-chlorophenol</b>										
$(\text{CH}_3)_3\text{COO}^\bullet + \text{ArOD} \rightarrow (\text{CH}_3)_3\text{COOD} + \text{ArO}^\bullet$	$8.1 \times 10^2$ [200 K]			Isopentane	5.1	8.4	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 174–235 K.	737428	

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	log A	$E_a$ (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.5 <i>tert</i>-Butylperoxy—Continued</b>										
<b>6.5.20 2,6-Di-<i>tert</i>-butyl-4-cyanophenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{ArOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{ArO}^\cdot$	$8.0 \times 10^2$ [200 K]		Isopentane	4.0	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 175-236 K.	737428	
<b>6.5.21 O-d-2,6-Di-<i>tert</i>-butyl-4-cyanophenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{ArOD} \rightarrow$ $(\text{CH}_3)_3\text{COOD} + \text{ArO}^\cdot$	$1 \times 10^2$ $3 \times 10^1$		Isopentane	239 176		phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane.	737428	
<b>6.5.22 3,5-Di-<i>tert</i>-butyl-4-hydroxybenzaldehyde</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{ArOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{ArO}^\cdot$	$8.9 \times 10^2$ [200 K]		Isopentane	3.7	3.3	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 177-237 K.	737428	
<b>6.5.23 3,5-Di-<i>tert</i>-butyl-4-hydroxybenzoic acid</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{ArOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{ArO}^\cdot$	$5.1 \times 10^2$ [200 K]		Isopentane	3.8	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane. studied at 177-237 K.	737428	
<b>6.5.24 2,6-Di-<i>tert</i>-butyl-4-methoxyphenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{ArOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{ArO}^\cdot$	$1.1 \times 10^6$		CP or decane	297		f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L <sup>-1</sup> di- <i>tert</i> -butyl ketone.	85A380	
		$1.8 \times 10^4$ [200 K]		Isopentane	4.7	1.7	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane. studied at 175-237 K.	737428	
<b>6.5.25 O-d-2,6-Di-<i>tert</i>-butyl-4-methoxyphenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{ArOD} \rightarrow$ $(\text{CH}_3)_3\text{COOD} + \text{ArO}^\cdot$	$1.4 \times 10^3$ [200 K]		Isopentane	3.7	2.1	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 176-235 K.	737428	
<b>6.5.26 2,6-Di-<i>tert</i>-butyl-4-methylphenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{DTBMPHOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{DTBMPHO}^\cdot$	$2.4 \times 10^4$		CP or decane	297		f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L <sup>-1</sup> di- <i>tert</i> -butyl ketone.	85A380	
		$5.4 \times 10^3$ [200 K]		Isopentane	4.6	3.3	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 173-241 K.	737428	
<b>6.5.27 O-d-2,6-Di-<i>tert</i>-butyl-4-methylphenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{DTBMPHO}^\cdot \rightarrow$ $(\text{CH}_3)_3\text{COOD} + \text{DTBMPHO}$	$4.6 \times 10^2$ [200 K]		Isopentane	4.2	5.9	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 175-251 K.	737428	
<b>6.5.28 2,6-Di-<i>tert</i>-butylphenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot +$ $[(\text{CH}_3)_3\text{C}]_2\text{C}_6\text{H}_3\text{OH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} +$ $[(\text{CH}_3)_3\text{C}]_2\text{C}_6\text{H}_3\text{O}^\cdot$	$1.6 \times 10^3$ [200 K]		Isopentane	4.3	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 175-237 K.	737428	
<b>6.5.29 O-d-2,6-Di-<i>tert</i>-butylphenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot +$ $[(\text{CH}_3)_3\text{C}]_2\text{C}_6\text{H}_3\text{OD} \rightarrow$ $(\text{CH}_3)_3\text{COOD} +$ $[(\text{CH}_3)_3\text{C}]_2\text{C}_6\text{H}_3\text{O}^\cdot$	$9.9 \times 10^1$ [200 K]		Isopentane	3.3	5.0	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 178-237 K.	737428	

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>6.5 <i>tert</i>-Butylperoxy—Continued</b>										
<b>6.5.80 <i>N,N</i>-Diethylaniline</b>	$(\text{CH}_3)_3\text{COO}\cdot + \text{C}_6\text{H}_5\text{N}(\text{C}_2\text{H}_5)_2 \rightarrow (\text{CH}_3)_3\text{COOH} + \text{C}_6\text{H}_5\text{N}(\text{C}_2\text{H}_5)\dot{\text{C}}\text{HCH}_3$	$4.8 \times 10^1$		3-MP	303			phot.	D.k. (esr) in oxygen-satd. soln. contg. di- <i>tert</i> -butyl ketone and 0.02–0.2 mol L $^{-1}$ amine	81A016
<b>6.5.81 9,10-Dihydro-9-anthracenyl hydroperoxide</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + \text{AnO}_2\text{H} \rightarrow$	$7.4 \times 10^2$		Isopentane	294			phot.	D.k. (esr) in oxygen-satd. soln. contg. 0.02 mol L $^{-1}$ 2,2'-azoisobutane.	757053
<b>6.5.82 3,4-Dihydro-6-hydroxy-5,7,8-trimethylbenzothiopyran</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + \text{ArOH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{ArO}\cdot$	$1.8 \times 10^6$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L $^{-1}$ di- <i>tert</i> -butyl ketone.	85A380
<b>6.5.83 Diphenylphosphine</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_6\text{H}_5)_2\text{PH} \rightarrow [200 \text{ K}]$	$1.8 \times 10^2$		Isopentane	5.0	10.5	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; T range not given, 173–243 (?).	737013	
<b>6.5.84 1-Ethyl-1,2,3,4-tetrahydro-6-hydroxy-5,7,8-trimethylquinoline</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + \text{ArOH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{ArO}\cdot$	$2.0 \times 10^6$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L $^{-1}$ di- <i>tert</i> -butyl ketone.	85A380
<b>6.5.85 6-Hydroxy-2,2,5,7,8-pentamethylchromene</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + \text{ArOH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{ArO}\cdot$	$2.0 \times 10^8$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L $^{-1}$ di- <i>tert</i> -butyl ketone.	85A380
<b>6.5.86 2-Methoxy-1,3,2-dioxaphospholane</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + -\text{CH}_2\text{OP}(\text{OCH}_3)\text{OCH}_2\cdot \rightarrow [200 \text{ K}]$	$1.1 \times 10^1$		Isopentane	6.0	19	phot.	D.k. (esr) in air satd. soln. contg. 2,2'-azoisobutane studied at 173–243 K.	737013	
<b>6.5.87 Methoxydiphenylphosphine</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_6\text{H}_5)_2\text{POCH}_3 \rightarrow [200 \text{ K}]$	$1.9 \times 10^2$		Isopentane	3.7	5.4	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; T range not given, 173–243 (?).	737013	
<b>6.5.88 4-Methoxy-2,8,5,6-tetramethylphenol</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + \text{CH}_3\text{O}(\text{CH}_2)_4\text{C}_6\text{OH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{CH}_3\text{O}(\text{CH}_2)_4\text{C}_6\text{O}\cdot$	$2.8 \times 10^5$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L $^{-1}$ di- <i>tert</i> -butyl ketone.	85A380
<b>6.5.89 <i>N</i>-Methylaniline</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + \text{C}_6\text{H}_5\text{NHCH}_3 \rightarrow (\text{CH}_3)_3\text{COOH} + \text{C}_6\text{H}_5\text{NCH}_3$	$5.7 \times 10^2$		Heptane	5.5	10.5	phot.	D.k. (esr) in soln. contg. <i>tert</i> -butyl hydroperoxide (1–7) $\times 10^{-2}$ mol L $^{-1}$ ; studied at 198–230 K.	81A392	
<b>6.5.40 Methylidiphenylphosphine</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_6\text{H}_5)_2\text{PCH}_3 \rightarrow [200 \text{ K}]$	$2.8 \times 10^3$		Isopentane	5.1	6.3	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; T range not given, 173–243 (?).	737013	

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.5 <i>tert</i>-Butylperoxyl—Continued</b>										
<b>6.5.41 2-Naphthalenethiol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{NpSH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{NpS}^\cdot$	$1.4 \times 10^3$ [200 K]		Isopentane	4.8	6.3	phot.	D.k. (esr) in oxygen-satd. soln. contg. 5-10% <i>tert</i> -butyl peroxide; same <i>k</i> for 1,1-dimethylpropylperoxyl; studied at 177-313 K.	745265	
<b>6.5.42 1-Naphthylamine</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + 1\text{-NpNH}_2 \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{NpNH}^\cdot$	$1.3 \times 10^3$ [200 K]		Isopentane	4.2	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 189-238 K.	737428	
<b>6.5.43 1-Naphthylamine-<i>N</i>-d<sub>3</sub></b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{NpND}_2 \rightarrow$ $(\text{CH}_3)_3\text{COOD} + 1\text{-NpND}$	$8.0 \times 10^1$ [200 K]		Isopentane	3.0	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 189-238 K.	737428	
<b>6.5.44 2-Naphthylamine</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + 2\text{-NpNH}_2 \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{NpNH}^\cdot$	$3.1 \times 10^2$ [200 K]		Isopentane	5.0	9.6	phot.	D.k. (esr) in oxygen-satd. soln. contg. 5-10% <i>tert</i> -butyl peroxide; same <i>k</i> for 1,1-dimethylpropylperoxyl; studied at 183-243 K.	745265	
<b>6.5.45 1-Naphthol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + 1\text{-NpOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{NpO}^\cdot$	$3.5 \times 10^4$ [200 K]		Isopentane	6.4	7.1	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 158-199 K.	737428	
<b>6.5.46 1-Naphthol-O-d</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{NpOD} \rightarrow$ $(\text{CH}_3)_3\text{COOD} + \text{NpO}^\cdot$	$2.8 \times 10^3$ [200 K]		Isopentane	6.4	11.3	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 168-199 K.	737428	
<b>6.5.47 2-Naphthol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + 2\text{-NpOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{NpO}^\cdot$	$3.8 \times 10^3$ [200 K]		Isopentane	6.4	10.8	phot.	D.k. (esr) in oxygen-satd. soln. contg. 0.01-0.02 mol L <sup>-1</sup> 2,2'-azoisobutane in isopentane:toluene (90:1 v/v); studied at 183-241 K.	745265	
<b>6.5.48 Phenol</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{C}_6\text{H}_5\text{OH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{C}_6\text{H}_5\text{O}^\cdot$	$3.2 \times 10^1$ [200 K]		Isopentane	7.2	21.8	phot.	D.k. (esr) in oxygen-satd. soln. contg. 5-10% <i>tert</i> -butyl peroxide; same <i>k</i> for 1,1-dimethylpropylperoxyl; studied at 176-294 K.	745265	
<b>6.5.49 N-Phenyl-1-naphthylamine</b>										
	$(\text{CH}_3)_3\text{COO}^\cdot + \text{NpNH}_C_6\text{H}_5 \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{NpNC}_6\text{H}_5^\cdot$	$1.0 \times 10^4$ [200 K]		Isopentane	5.1	4.2	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 174-235 K.	737428	

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.5 <i>tert</i>-Butylperoxy—Continued</b>										
<b>6.5.50 <i>N</i>-Phenyl-1-naphthylamine-<i>N</i>-d<sub>1</sub></b>	$(\text{CH}_3)_3\text{COO}^\bullet + \text{NpND}_6\text{H}_5 \rightarrow$ $(\text{CH}_3)_3\text{COOD} + \text{NpNC}_6\text{H}_5$	$1.1 \times 10^3$ [200 K]		Isopentane	3.8	2.9		phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 176-235 K.	737428
<b>6.5.51 Piperidine</b>										
<b>6.5.52 Propionaldehyde</b>	$(\text{CH}_3)_3\text{COO}^\bullet + \text{C}_2\text{H}_5\text{CHO} \rightarrow$	$2.1 \times 10^1$ [200 K]		3-MP	303			phot.	D.k. (esr) in oxygen-satd. soln. contg. di- <i>tert</i> -butyl ketone and 0.02-0.2 mol L <sup>-1</sup> amine.	81A018
<b>6.5.53 Pyrrolidine</b>	$(\text{CH}_3)_3\text{COO}^\bullet + -\text{NH}(\text{CH}_2)_4^- \rightarrow$ $(\text{CH}_3)_3\text{COOH} + -\text{NH}\overset{\cdot}{\text{C}}(\text{CH}_2)_3^-$	$3.8 \times 10^2$		3-MP	303			phot.	D.k. (esr) in oxygen-satd. soln. contg. di- <i>tert</i> -butyl ketone and 0.02-0.2 mol L <sup>-1</sup> amine.	81A016
<b>6.5.54 α-Tetralin hydroperoxide</b>	$(\text{CH}_3)_3\text{COO}^\bullet + \alpha\text{-T-OOH} \rightarrow$	$1.2 \times 10^1$ [200 K]		Isopentane	6.0	18.8		phot.	D.k. (esr) in oxygen-satd. soln. contg. 0.02 mol L <sup>-1</sup> 2,2'-azoisobutane; studied at 190-252 K.	757053
<b>6.5.55 α-Tetralin hydroperoxide, deuterated (OOD)</b>	$(\text{CH}_3)_3\text{COO}^\bullet + \alpha\text{-T-OOD} \rightarrow$	$\sim 0.5$ $\sim 2 \times 10^1$ $7.0 \times 10^1$		Isopentane	190 239 252			phot.	D.k. (esr) in oxygen-satd. soln. contg. 0.02 mol L <sup>-1</sup> 2,2'-azoisobutane.	757053
<b>6.5.56 2,3,5,6-Tetramethylphenol</b>	$(\text{CH}_3)_3\text{COO}^\bullet + (\text{CH}_3)_4\text{C}_6\text{HOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + (\text{CH}_3)_4\text{C}_6\text{HO}^\cdot$	$6.9 \times 10^4$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L <sup>-1</sup> di- <i>tert</i> -butyl ketone.	85A380
<b>6.5.57 <i>N,N,N',N'</i>-Tetramethyl-p-phenylenediamine</b>	$(\text{CH}_3)_3\text{COO}^\bullet + \text{TMPD} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{TMPD}^\cdot + \text{OH}^-$	$1.1 \times 10^6$	~8	Water	RT			p.r.	P.b.k at 565 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. di- <i>tert</i> -butyl sulfoxide.	89A165
<b>6.5.58 Thiophenol</b>	$(\text{CH}_3)_3\text{COO}^\bullet + \text{C}_6\text{H}_5\text{SH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{C}_6\text{H}_5\text{S}^\cdot$	$2.0 \times 10^3$ [200 K]		Isopentane	4.5	4.6		phot.	D.k. (esr) in oxygen-satd. soln. contg. 5-10% <i>tert</i> -butyl peroxide; same <i>k</i> for 1,1-dimethylpropylperoxy; studied at 178-233 K.	745265
<b>6.5.59 α-Tocopherol</b>	$(\text{CH}_3)_3\text{COO}^\bullet + \text{ArOH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{ArO}^\cdot$	$2.6 \times 10^6$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L <sup>-1</sup> di- <i>tert</i> -butyl ketone.	85A380

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	$\log A$	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>6.5 <i>tert</i>-Butylperoxyl—Continued</b>										
<b>6.5.60 <math>\gamma</math>-Tocopherol</b>	$(\text{CH}_3)_3\text{COO}\cdot + \text{ArOH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{ArO}\cdot$	$7.0 \times 10^5$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L $^{-1}$ di- <i>tert</i> -butyl ketone.	85A380
<b>6.5.61 <math>\delta</math>-Tocopherol</b>										
	$(\text{CH}_3)_3\text{COO}\cdot + \text{ArOH} \rightarrow (\text{CH}_3)_3\text{COOH} + \text{ArO}\cdot$	$3.3 \times 10^5$		CP or decane	297			f.p.	D.k. (esr) in oxygen-satd. soln. contg. 0.9 mol L $^{-1}$ di- <i>tert</i> -butyl ketone.	85A380
<b>6.5.62 Triallyl phosphite</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{H}_2\text{C}=\text{CHCH}_2\text{O})_3\text{P} \rightarrow$	$4.5 \times 10^1$ [200 K]		Isopentane	5.7	15.5	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; studied at 173-243 K.	737013	
<b>6.5.63 2,4,6-Tri-<i>tert</i>-butylphenol</b>	$(\text{CH}_3)_3\text{COO}\cdot + [(\text{CH}_3)_3\text{C}]_3\text{C}_6\text{H}_2\text{OH} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + [(\text{CH}_3)_3\text{C}]_3\text{C}_6\text{H}_2\text{O}\cdot$	$4.5 \times 10^3$ [200 K]		Isopentane	4.2	2.1	phot.	D.k. (esr) in oxygen-satd. soln. contg. 2,2'-azoisobutane; studied at 172-236 K.	737428	
<b>6.5.64 Tri(<i>tert</i>-butyl) phosphite</b>	$(\text{CH}_3)_3\text{COO}\cdot + [(\text{CH}_3)_3\text{CO}]_3\text{P} \rightarrow$	$5.1 \times 10^{-1}$ [200 K]		Isopentane	6.3	23	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; studied at 173-243 K.	737013	
<b>6.5.65 Tri(4-chlorophenyl)phosphine</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{ClC}_6\text{H}_4)_3\text{P} \rightarrow$	$2.3 \times 10^2$ [200 K]		Toluene	6.8	17	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; T range not given, 173-243 (?).	737013	
<b>6.5.66 Triethylamine</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_2\text{H}_5)_3\text{N} \rightarrow$ $(\text{CH}_3)_3\text{COOH} + \text{CH}_3\text{CHN}(\text{C}_2\text{H}_5)_2$	$2.3 \times 10^1$		3-MP	303			phot.	D.k.; oxygen-satd. soln. contg. di- <i>tert</i> -butyl ketone and 0.02-0.2 mol L $^{-1}$ amine	81A016
<b>6.5.67 Triethyl phosphite</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_2\text{H}_5\text{O})_3\text{P} \rightarrow$	$2.2 \times 10^1$ [200 K]		Isopentane	5.0	14	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; studied at 173-243 K.	737013	
<b>6.5.68 Tri(4-fluorophenyl)phosphine</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{FC}_6\text{H}_4)_3\text{P} \rightarrow$	$1.6 \times 10^1$ [200 K]		Toluene	5.9	13	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; T range not given, 173-243 (?).	737013	
<b>6.5.69 Trisopropyl phosphite</b>	$(\text{CH}_3)_3\text{COO}\cdot + [(\text{CH}_3)_2\text{CHO}]_3\text{P} \rightarrow$	$3.2 \times 10^1$ [200 K]		Isopentane	6.2	18	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; studied at 173-243 K.	737013	
<b>6.5.70 Tri(4-methoxyphenyl)phosphine</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{CH}_3\text{OC}_6\text{H}_4)_3\text{P} \rightarrow$	$3.2 \times 10^2$ [200 K]		Toluene	5.9	13	phot.	D.k. (esr) in air-satd. soln. contg. 2,2'-azoisobutane; T range not given, 173-243 (?).	737013	

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	T (K)	log A	$E_a$ (kJ mol $^{-1}$ )	Method	Comment	Ref.
<b>6.5 <i>tert</i>-Butylperoxy—Continued</b>										
<b>6.5.71 Tri(4-methylphenyl)phosphine</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{CH}_3\text{C}_6\text{H}_4)_3\text{P} \rightarrow$ $[200 \text{ K}]$	$1.3 \times 10^2$		Toluene	6.3	16		phot.	D.k. (esr) in air-satd. soln. contg. 2,2'- azoisobutane; T range not given, 173-243 (?).	737013
<b>6.5.72 Trimethyl phosphite</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{CH}_3\text{O})_3\text{P} \rightarrow$ $[200 \text{ K}]$	$3.3 \times 10^1$		Isopentane	5.7	16		phot.	D.k. (esr) in air-satd. soln. contg. 2,2'- azoisobutane; studied at 177.5-226 K.	737013
<b>6.5.73 Triphenylmethyl hydroperoxide</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_6\text{H}_5)_3\text{COOH} \rightarrow$ $[200 \text{ K}]$	$7.0 \times 10^2$		Isopentane	294			phot.	D.k. (esr) in oxygen- satd. soln. contg. 0.02 mol L $^{-1}$ 2,2'- azoisobutane.	757053
<b>6.5.74 Triphenylphosphine</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_6\text{H}_5)_3\text{P} \rightarrow$ $[200 \text{ K}]$	$4.3 \times 10^2$		Isopentane	5.9	12.5		phot.	D.k. (esr) in air-satd. soln. contg. 2,2'- azoisobutane; studied at 153-213 K.	737013
<b>6.5.75 Triphenyl phosphite</b>	$(\text{CH}_3)_3\text{COO}\cdot + (\text{C}_6\text{H}_5\text{O})_3\text{P} \rightarrow$ $[200 \text{ K}]$	$1.2 \times 10^2$		Isopentane	7.3	20		phot.	D.k. (esr) in air-satd. soln. contg. 2,2'- azoisobutane; studied at 173-243 K.	737013
<b>6.6 1,1-Dimethylpropylperoxy</b>										
<b>6.6.1 2-Naphthol</b>	$\text{C}_2\text{H}_5\text{C}(\text{CH}_3)_2\text{OO}\cdot + 2\text{-NpOH} \rightarrow$ $\text{C}_2\text{H}_5\text{C}(\text{CH}_3)_2\text{OOH} + \text{NpO}\cdot$ $[200 \text{ K}]$	$3.8 \times 10^3$		Isopentane	6.4	10.8		phot.	D.k. (esr) in oxygen- satd. soln. contg. 5- 10% <i>tert</i> -butyl peroxide; studied at 180-293 K.	745265
<b>6.6.2 2-Naphthol-O-d</b>	$\text{C}_2\text{H}_5\text{C}(\text{CH}_3)_2\text{OO}\cdot + 2\text{-NpOD} \rightarrow$ $\text{C}_2\text{H}_5\text{C}(\text{CH}_3)_2\text{OOD} + \text{NpO}\cdot$ $[200 \text{ K}]$	$2.1 \times 10^2$		Isopentane	6.5	16		phot.	D.k. (esr) in oxygen- satd. soln. contg. 5- 10% <i>tert</i> -butyl peroxide; T range not given.	745265
<b>6.6.3 <math>\alpha</math>-Tetralin hydroperoxide</b>	$\text{C}_2\text{H}_6\text{C}(\text{CH}_3)_2\text{OO}\cdot + \alpha\text{-T-OOH} \rightarrow$ $[200 \text{ K}]$	$1.2 \times 10^1$		Isopentane	6.0	18.8		phot.	D.k. (esr) in oxygen- satd. soln. contg. 5% di- <i>tert</i> -butyl peroxide; studied at 193-298 K	757053
<b>6.7 Cyclopentylperoxy</b>										
<b>6.7.1 3,7-Dioctylphenothiazine</b>	$c\text{-C}_5\text{H}_9\text{OO}\cdot + \text{DOPZH} \rightarrow$ $c\text{-C}_5\text{H}_9\text{OOH} + \text{DOPZ}\cdot$	$2.1 \times 10^7$		CP	RT			p.r.	P.b.k. at 400 and 590 nm in air-satd. soln.	731011
<b>6.7.2 Phenothiazine</b>	$c\text{-C}_5\text{H}_9\text{OO}\cdot + \text{PZH} \rightarrow$ $c\text{-C}_5\text{H}_9\text{OOH} + \text{PZ}\cdot$	$3.4 \times 10^6$		CP	RT			p.r.	P.b.k. at 370 and 590 nm in air-satd. soln.; $k_{\text{H}}/k_{\text{D}} = 1.7$ .	731011

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	$\log A$	$E_a$ (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.8 Cyclohexylperoxy</b>										
<b>6.8.1 3-<i>tert</i>-Butyl-4-hydroxyanisole</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}^\cdot + \text{ArOH} \rightarrow$ $c\text{-C}_6\text{H}_{11}\text{OOH} + \text{ArO}^\cdot$	$3.4 \times 10^6$		CH	RT			p.r.	P.b.k. in air-satd. soln.	82Z341
<b>6.8.2 2,6-Di-<i>tert</i>-butyl-4-methylphenol</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}^\cdot + \text{DTBMPHOH} \rightarrow$ $c\text{-C}_6\text{H}_{11}\text{OOH} + \text{DTBMPHO}^\cdot$	$\sim 1 \times 10^4$		CH	RT			p.r.	P.b.k. in air-satd. soln.	82Z341
<b>6.8.3 3,7-Dioctylphenothiazine</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}^\cdot + \text{DOPZH} \rightarrow$ $c\text{-C}_6\text{H}_{11}\text{OOH} + \text{DOPZ}^\cdot$	$2.4 \times 10^7$		CH	RT			p.r.	P.b.k. at 380 and 590 nm in air-satd. soln.	731011
<b>6.8.4 Diphenylamine</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}^\cdot + (\text{C}_6\text{H}_5)_2\text{NH} \rightarrow$ $c\text{-C}_6\text{H}_{11}\text{OOH} + (\text{C}_6\text{H}_5)_2\text{N}^\cdot$	$\sim 3 \times 10^6$		CH	RT			p.r.	P.b.k. in oxygen-satd. soln.	65A004
<b>6.8.5 N,N'-Diphenyl-p-phenylenediamine</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}^\cdot + \text{DPPD} \rightarrow$ $c\text{-C}_6\text{H}_{11}\text{OOH} + \text{DPPD}^\cdot$	$\sim 4 \times 10^7$		CH	RT			p.r.	P.b.k. in oxygen-satd. soln.	65A004
<b>6.8.6 Phenothiazine</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}^\cdot + \text{PZH} \rightarrow$ $c\text{-C}_6\text{H}_{11}\text{OOH} + \text{PZ}^\cdot$	$3.9 \times 10^6$		CH	RT			p.r.	P.b.k. at 380 and 600 nm in air-satd. soln.	731011
<b>6.8.7 <math>\alpha</math>-Tocopherol</b>										
	$c\text{-C}_6\text{H}_{11}\text{OO}^\cdot + \text{ArOH} \rightarrow$ $c\text{-C}_6\text{H}_{11}\text{OOH} + \text{ArO}^\cdot$	$7.9 \times 10^6$		CH	RT	12		p.r.	P.b.k. in air-satd. soln.; $E_a$ from measurements at 282-300 K.	82A452 82Z341
<b>6.9 1-Methylcyclohexylperoxy</b>										
<b>6.9.1 4-<i>tert</i>-Butyl-N-(4-<i>tert</i>-butylphenyl)-1-naphthylamine</b>										
	$c\text{-C}_6\text{H}_{10}(\text{CH}_3)\text{OO}^\cdot + \text{R-NpNAr} \rightarrow$ $c\text{-C}_6\text{H}_{10}(\text{CH}_3)\text{OOH} +$ $\text{R-NpNAr}$	$1.2 \times 10^4$ [200 K]		Toluene	6.23	8.3	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1-methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241	
<b>6.9.2 4-<i>tert</i>-Butyl-N-(4-<i>tert</i>-butylphenyl)-1-naphthylamine-N-oxyl</b>										
	$c\text{-C}_6\text{H}_{10}(\text{CH}_3)\text{OO}^\cdot +$ $\text{R-NpN(O)Ar} \rightarrow$	$1.4 \times 10^3$		Toluene	253			f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1-methylcyclohexyl hydroperoxide.	83A241
<b>6.9.3 N-<i>tert</i>-Butyl-2-naphthylamine</b>										
	$c\text{-C}_6\text{H}_{10}(\text{CH}_3)\text{OO}^\cdot +$ $\text{NpNHC(CH}_3)_3 \rightarrow$ $c\text{-C}_6\text{H}_{10}(\text{CH}_3)\text{OOH} +$ $\text{NpNC(CH}_3)_3$	$2.5 \times 10^2$ [200 K]		Toluene	4.28	7.2	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1-methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241	

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	log A	E <sub>a</sub> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.9 1-Methylcyclohexylperoxy—Continued</b>										
<b>6.9.4 <i>N-tert-Butyl-N-hydroxy-2-naphthylamine</i></b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + NpN(OH)C(CH <sub>3</sub> ) <sub>3</sub> → c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OOH + NpNH(O)C(CH <sub>3</sub> ) <sub>3</sub>	1.7 × 10 <sup>4</sup>		Toluene	5.44	4.6	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241	
<b>6.9.5 <i>N-(4-tert-Butylphenyl)-1-naphthylamine</i></b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + NpNAr → c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OOH + NpNAr [200 K]	8.5 × 10 <sup>3</sup>		Toluene	7.74	14.6	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241	
<b>6.9.6 <i>N-(4-tert-Butylphenyl)-1-naphthylamine-N-oxyl</i></b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + NpN(O)Ar → 3.4 × 10 <sup>3</sup>			Toluene	263		f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide.	83A241	
<b>6.9.7 <i>3,8-Di-tert-butyl-N-(4-tert-butylphenyl)-1-naphthylamine</i></b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + R <sub>2</sub> NpNAr → [200 K] c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OOH + R <sub>2</sub> NpNAr	1.2 × 10 <sup>4</sup>		Toluene	7.71	13.9	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241	
<b>6.9.8 <i>3,8-Di-tert-butyl-N-phenyl-1-naphthylamine</i></b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + R <sub>2</sub> NpNAr → [200 K] c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OOH + R <sub>2</sub> NpNAr	2.3 × 10 <sup>4</sup>		Toluene	7.26	11.1	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241	
<b>6.9.9 <i>3,8-Di-tert-butyl-N-(4-tert-butylphenyl)-1-naphthylamine-N-oxyl</i></b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + R <sub>2</sub> NpN(O)Ar →	3.3 × 10 <sup>3</sup>		Toluene	253		f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241	
<b>6.9.10 Diphenylamine</b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + (C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> NH → 9.2 × 10 <sup>2</sup> c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OOH + [200 K] (C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> N			Toluene	4.66	6.5	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K	83A241	

TABLE 6. Rate constants for reactions of alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	T (K)	log A	<i>E<sub>a</sub></i> (kJ mol <sup>-1</sup> )	Method	Comment	Ref.
<b>6.9 1-Methylcyclohexylperoxy—Continued</b>										
<b>6.9.11 <i>N</i>-Phenyl-1-naphthylamine</b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + NpNH <sub>2</sub> C <sub>6</sub> H <sub>5</sub> →	1.5 × 10 <sup>3</sup> [200 K]		Toluene		6.05	11.0	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OOH + NpNC <sub>6</sub> H <sub>5</sub>									
<b>6.9.12 <i>N</i>-Phenyl-2-naphthylamine</b>										
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OO· + NpNH <sub>2</sub> C <sub>6</sub> H <sub>5</sub> →	7.9 × 10 <sup>2</sup> [200 K]		Toluene		5.38	9.5	f.p.	D.k. (esr) in soln. contg. 4% di- <i>tert</i> -butyl peroxide and 1% 1- methylcyclohexyl hydroperoxide; T range not given, generally starting at 200 K.	83A241
	c-C <sub>6</sub> H <sub>10</sub> (CH <sub>3</sub> )OOH + NpNC <sub>6</sub> H <sub>5</sub>									
<b>6.10 Octylperoxy</b>										
<b>6.10.1 α-Tocopherol</b>										
	C <sub>8</sub> H <sub>17</sub> OO· + ArOH →	1.4 × 10 <sup>7</sup>		2,3,4- Trimethyl- pentane	RT			p.r.	P.b.k. in oxygen-satd. soln. (mixture of radicals from solvent).	79G405
	C <sub>8</sub> H <sub>17</sub> OOH + ArO·									
<b>6.11 Dodecylperoxy</b>										
<b>6.11.1 α-Tocopherol</b>										
	C <sub>12</sub> H <sub>25</sub> OO· + ArOH →	1.5 × 10 <sup>7</sup>		n-Dodecane	RT			p.r.	P.b.k. in oxygen-satd. soln. (mixture of radicals from solvent).	79G405
	C <sub>12</sub> H <sub>25</sub> OOH + ArO·									

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.	
<b>7.1 Allylperoxy</b>								
<b>7.1.1 Ascorbate ion</b>								
$\text{CH}_2=\text{CHCH}_2\text{OO}\cdot + \text{AH}^- \rightarrow$	$1.4 \times 10^6$	9	Water/ 2-PrOH	p.r.	P.b.k at 360 nm in air-satd. soln. contg. 40% 2-PrOH and 0.2% allyl bromide.	89A165		
$\text{CH}_2=\text{CHCH}_2\text{OOH} + \cdot\text{A}^-$								
<b>7.2 Benzylperoxy</b>								
<b>7.2.1 Ascorbate ion</b>								
$\text{C}_6\text{H}_5\text{CH}_2\text{OO}\cdot + \text{AH}^- \rightarrow$	$2.5 \times 10^6$	7	Water	p.r.	P.b.k at 360 nm in air-satd. soln. contg. 0.2 mol $\text{L}^{-1}$ benzylammonium ion.	89A165		
$\text{C}_6\text{H}_5\text{CH}_2\text{OOH} + \cdot\text{A}^-$								
		$1.3 \times 10^6$	7	Water/ 2-PrOH	p.r.	P.b.k at 360 nm in air-satd. soln. contg. 40% 2-PrOH and 0.05% benzyl chloride.	89A165	
<b>7.3 4-Nitrobenzylperoxy</b>								
<b>7.3.1 Ascorbate ion</b>								
$4\text{-NO}_2\text{C}_6\text{H}_4\text{CH}_2\text{OO}\cdot + \text{AH}^- \rightarrow$	$3.3 \times 10^6$	7	Water/ 2-PrOH	p.r.	P.b.k at 360 nm in air-satd. soln. contg. 20% 2-PrOH and $10^{-3}$ $\text{mol L}^{-1}$ 4-nitrobenzyl bromide	89A165		
$4\text{-NO}_2\text{C}_6\text{H}_4\text{CH}_2\text{OOH} + \cdot\text{A}^-$								
<b>7.4 Diphenylmethylperoxy</b>								
<b>7.4.1 Ascorbate ion</b>								
$(\text{C}_6\text{H}_5)_2\text{CHOO}\cdot + \text{AH}^- \rightarrow$	$9 \times 10^6$	7	Water	p.r.	P.b.k at 360 nm in air satd. coln. contg. 0.02 mol $\text{L}^{-1}$ diphenylmethylammonium ion.	80A165		
$(\text{C}_6\text{H}_5)_2\text{CHOOH} + \cdot\text{A}^-$								
<b>7.5 Hydroxymethylperoxy</b>								
<b>7.5.1 Iron(III) deuteroporphyrin, dimethyl ester</b>								
$\text{HOCH}_2\text{OO}\cdot + \text{DPDMEFe}^{\text{III}} \rightarrow$	$1.0 \times 10^7$	0-3	Water/ MeOH	p.r.	P.b.k. at 680 nm in air-satd. soln. contg. 50% MeOH and $1.4 \times 10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{\text{III}}$ deuteroporphyrin dimethyl ester.	85A311		
$[\text{DPDMEFe}^{\text{III}}]^{+} + \text{HOCH}_2\text{OO}^-$								
<b>7.5.2 Pentabromoplatinate(III) ion</b>								
$\text{HOCH}_2\text{OO}\cdot + \text{PtBr}_6^{2-} \rightarrow$	$2.5 \times 10^8$		MeOH	f.p.	D.k. ( $\text{Pt}^{\text{III}}$ ) at 680 in air-satd. soln. contg. $\text{PtBr}_6^{2-}$ (+ $\text{h}\nu \rightarrow$ $\text{PtBr}_6^{2-}$ )	87A441		
$\text{PtBr}_6\text{CH}_3\text{OH}^- + \text{HOCH}_2\text{OO}^-$								
<b>7.5.3 Pentachloroplatinate(III) ion</b>								
$\text{HOCH}_2\text{OO}\cdot + \text{PtCl}_6^{2-} \rightarrow$	$3.0 \times 10^8$		MeOH	f.p.	D.k. ( $\text{Pt}^{\text{III}}$ ) at 530 in air-satd. soln. contg. $\text{PtCl}_6^{2-}$ (+ $\text{h}\nu \rightarrow$ $\text{PtCl}_5^{2-}$ )	87A441		
$\text{PtCl}_6\text{CH}_3\text{OH}^- + \text{HOCH}_2\text{OO}^-$								
<b>7.5.4 Ascorbate ion</b>								
$\text{HOCH}_2\text{OO}\cdot + \text{AH}^- \rightarrow \cdot\text{A}^- +$	$4.7 \times 10^6$	7	Water	p.r.	P.b.k. in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 2 mol $\text{L}^{-1}$ MeOH.	86A291		
$\text{HOCH}_2\text{OOH}$								
<b>7.5.5 N,N,N',N'-Tetramethyl-p-phenylenediamine</b>								
$\text{HOCH}_2\text{OO}\cdot + \text{TMPD} \rightarrow \text{HOCH}_2\text{OOH}$	$7.2 \times 10^7$	~8	Water	p.r.	P.b.k at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. MeOH.	89A165		
$+ \text{TMPD}^{+} + \text{OH}^-$								
<b>7.6 1-Hydroxyethylperoxy</b>								
<b>7.6.1 Copper(I) ion</b>								
$\text{CH}_3\text{CH}(\text{OH})\text{OO}\cdot + \text{Cu}^+ \rightarrow$	$>1 \times 10^9$		Ethanol	p.r.	P.b.k. in oxygen-satd. soln.; $\text{Cu}^+$ from redn. of $\text{CuCl}_2$ in deoxygenated soln. by $e^-$ irradiation.	670618		
$\text{CH}_3\text{CH}(\text{OH})\text{OO}^- + \text{Cu}^{2+}$								
<b>7.6.2 Copper(II) ion</b>								
$\text{CH}_3\text{CH}(\text{OH})\text{OO}\cdot + \text{Cu}^{2+} \rightarrow$			Ethanol	p.r.	No reaction in oxygen-satd. soln. contg. $2 \times 10^{-4}$ mol $\text{L}^{-1}$ $\text{CuCl}_2$ or $\text{Cu}(\text{OAc})_2$ .	670618		

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.6 1-Hydroxyethylperoxyl—Continued</b>							
<b>7.6.6 <i>N,N</i>-Dimethyl-4-nitrosoaniline</b>							
	$\text{CH}_3\text{CH}(\text{OH})\text{OO}\cdot + \text{Me}_2\text{NC}_6\text{H}_4\text{NO} \rightarrow$	$2.7 \times 10^8$		Water	p.r.	D.k. at 440 nm in oxygen-satd. soln. contg. EtOH.	680066
<b>7.6.4 <math>\alpha</math>-Tocopherol</b>							
	$\text{CH}_3\text{CH}(\text{OH})\text{OO}\cdot + \text{ArOH} \rightarrow \text{ArO}\cdot + \text{CH}_3\text{CH}(\text{OH})\text{OOH}$	$9.4 \times 10^4$		Ethanol	p.r.	P.b.k. at 400 nm in oxygen-satd. soln. contg. $2.8-47 \times 10^{-3}$ mol L <sup>-1</sup> tocopherol.	87A475
		$9.1 \times 10^4$		Ethanol	$\gamma$ -r.	Calcd. by data fitting of product formn. in aerated soln. contg. $7.9-540 \times 10^{-6}$ mol L <sup>-1</sup> tocopherol.	87A475
		$9.5 \times 10^4$		Ethanol	p.r.	P.b.k. at 400 nm in oxygen-satd. soln. contg. $3 \times 10^{-2}$ mol L <sup>-1</sup> tocopherol.	86A464
							86A554
<b>7.7 1-Hydroxy-1-methylethylperoxyl</b>							
<b>7.7.1 Copper(I) ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}\cdot + \text{Cu}^+ \rightarrow$ [( $\text{CH}_3)_2\text{C}(\text{OH})\text{OOCu}]^+$	$\sim 2 \times 10^8$		2-PrOH	f.p.	P.b.k. at 415 nm in air-satd. soln. contg. $\text{CuCl}_2$ .	86A175
<b>7.7.2 Iron(II) ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}\cdot + \text{Fe}^{2+} \rightarrow$ [( $\text{CH}_3)_2\text{C}(\text{OH})\text{OOFe}]^{2+}$	$1.7 \times 10^6$	<1	Water	p.r.	P.b.k. at 270 nm in air-satd. soln. contg. 1 mol L <sup>-1</sup> 2-PrOH, 0.5 mol L <sup>-1</sup> $\text{HClO}_4$ , and 1.86 or 4.36 $\times 10^{-2}$ mol L <sup>-1</sup> ferrous perchlorate; $E_a = 70 \text{ kJ mol}^{-1}$ for meas. from 291-307 K.	741074
<b>7.7.3 Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub></b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}\cdot +$ DPDMEFe <sup>III</sup> (HOCH(CH <sub>3</sub> ) <sub>2</sub> ) <sub>2</sub> →	$2.7 \times 10^7$	1	Water/ 2-PrOH	p.r.	P.b.k. at 655 nm in air-satd. soln. contg. 50% 2-PrOH, 0.1 mol L <sup>-1</sup> $\text{HClO}_4$ and $0.5-1 \times 10^{-4}$ mol L <sup>-1</sup> Fe <sup>III</sup> deuteroporphyrin dimethyl ester.	85A341
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}^- +$ [DPDMEFe <sup>III</sup> (HOCH(CH <sub>3</sub> ) <sub>2</sub> ) <sub>2</sub> ] <sup>+</sup>						
		$6 \times 10^7$	<0	Water/ 2-PrOH	p.r.	P.b.k. at 655 nm in air-satd. soln. contg. 50% 2-PrOH, 5% acetone, 0.01-1 mol L <sup>-1</sup> $\text{HClO}_4$ and $0.5-1 \times 10^{-4}$ mol L <sup>-1</sup> Fe <sup>III</sup> deuteroporphyrin dimethyl ester.	85A311
		$1 \times 10^7$	2				
<b>7.7.4 Ascorbate ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}\cdot + \text{AH}^- \rightarrow$ $(\text{CH}_3)_2\text{C}(\text{OH})\text{OOH} + \cdot\text{A}^-$	$1.0 \times 10^6$	7	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 40%, 60% and 80% 2-PrOH.	89A165
		$1.3 \times 10^6$	7	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 20% 2-PrOH.	89A165
		$1.1 \times 10^6$	7	Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 0.2% acetone.	89A165
<b>7.7.5 Linoleic acid</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}\cdot + \text{LH} \rightarrow$	$\sim 6 \times 10^3$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 0.1 mol L <sup>-1</sup> $\text{HClO}_4$ and $0.5-1 \times 10^{-4}$ mol L <sup>-1</sup> Fe <sup>III</sup> deuteroporphyrin dimethyl ester; rel. to $k((\text{CH}_3)_2\text{C}(\text{OH})\text{OO}\cdot + \text{DPDMEFe}^{\text{III}}) = 2.7 \times 10^7$ .	85A341

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	Method	Comment	Ref.
<b>7.7 1-Hydroxy-1-methylethylperoxy—Continued</b>							
<b>7.7.6 Oleic acid</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}^\bullet + \text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{CO}_2\text{H} \rightarrow$	$<3 \times 10^3$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 0.1 mol L <sup>-1</sup> $\text{HClO}_4$ and 0.5–1 $\times 10^{-4}$ mol L <sup>-1</sup> $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester; rel. to $k(\text{CH}_3)_2\text{C}(\text{OH})\text{OO}^\bullet +$ $\text{DPDMEFe}^{III}) = 2.7 \times 10^7$ .	85A341
<b>7.8 2-Hydroxy-2,2-dimethylethylperoxy</b>							
<b>7.8.1 Nitrilotriacetatocobaltate(II) ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{CoNTA}^- \rightarrow$ $[\text{Co}(\text{NTA})\text{OOCH}_2\text{C}(\text{CH}_3)_2\text{OH}]^-$	$9.5 \times 10^7$ $7.3 \times 10^8$ $7.0 \times 10^8$	5.0 7.0 9.0	Water	p.r.	P.b.k. in soln. contg. $\text{N}_2\text{O}$ -air (1:1) and 0.1 mol L <sup>-1</sup> <i>tert</i> -BuOH.	78A436
<b>7.8.2 Ethylenediaminetetraacetatocobaltate(II) ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{CoEDTA}^{2-} \rightarrow$ $[\text{Co}(\text{EDTA})\text{OOCH}_2\text{C}(\text{CH}_3)_2\text{OH}]^2-$	$2.5 \times 10^6$ $2.0 \times 10^6$ $1.8 \times 10^6$	5.0 7.0 9.0	Water	p.r.	P.b.k. in soln. contg. $\text{N}_2\text{O}$ -air (1:1) and 0.1 mol L <sup>-1</sup> <i>tert</i> -BuOH.	78A436
<b>7.8.3 Nitrilotriacetatomanganate(II) ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{MnNTA}^- \rightarrow$ $[\text{Mn}(\text{NTA})\text{OOCH}_2\text{C}(\text{CH}_3)_2\text{OH}]^-$	$1.5 \times 10^8$ $1.5 \times 10^8$ $2.2 \times 10^8$ $1.1 \times 10^8$	4.5 5.5 7.0 9.0	Water	p.r.	P.b.k. in soln. contg. $\text{N}_2\text{O}$ -air (1:1) and 0.1 mol L <sup>-1</sup> <i>tert</i> -BuOH.	78A436
<b>7.8.4 Ethylenediaminetetraacetatomanganate(II) ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{MnEDTA}^{2-} \rightarrow$ $[\text{Mn}(\text{EDTA})\text{OOCH}_2\text{C}(\text{CH}_3)_2\text{OH}]^{2-}$	$6.5 \times 10^6$ $6.0 \times 10^6$ $1.7 \times 10^7$	5.5 7.0 9.0	Water	p.r.	P.b.k. in soln. contg. $\text{N}_2\text{O}$ -air (1:1) and 0.1 mol L <sup>-1</sup> <i>tert</i> -BuOH.	78A436
<b>7.8.5 Pentaamminenitrosylruthenium(III) ion, electron adduct</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{Ru}(\text{NH}_3)_5\text{NO}^{2+} \rightarrow$	$3 \times 10^9$	7.5	Water	p.r.	D.k. in air-satd. soln. contg. $\text{Ru}(\text{NH}_3)_5\text{NO}^{3+}$ and 0.1 mol L <sup>-1</sup> <i>tert</i> -BuOH.	751077
<b>7.8.6 Ascorbate ion</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{AH}^- \rightarrow \cdot\text{A}^-$ $+ (\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OOH}$	$1.8 \times 10^6$ $2.1 \times 10^6$	9 7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 360 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 10% <i>tert</i> -BuOH.	89A165
						P.b.k. at 360 nm in air-satd. soln. contg. 3 mol L <sup>-1</sup> <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> phosphate buffer.	80A053
<b>7.8.7 Superoxide dismutase</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{CuZnSOD} \rightarrow$	$<1 \times 10^8$	9.0	Water	p.r.	D.k. at 680 nm in oxygenated soln. contg. $4.5 \times 10^{-6}$ mol L <sup>-1</sup> SOD and 0.5 mol L <sup>-1</sup> <i>tert</i> -BuOH; peroxy radical reacts slowly if at all.	80A391
<b>7.8.8 <i>N,N,N',N'</i>-Tetramethyl-p-phenylenediamine</b>							
	$(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OO}^\bullet + \text{TMPD} \rightarrow$ $(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{OOH} + \text{TMPD}^\cdot+$ $+ \text{OH}^-$	$3.4 \times 10^7$ $5.5 \times 10^7$	~8	Water	p.r.	P.b.k. at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. <i>tert</i> -BuOH.	89A165
						P.b.k. in soln. contg. $3 \times 10^{-4}$ mol L <sup>-1</sup> oxygen, $5-10 \times 10^{-5}$ mol L <sup>-1</sup> TMPD, and <i>tert</i> -BuOH.	81A122
<b>7.9 1-Ethoxyethylperoxy</b>							
<b>7.9.1 <i>N,N,N',N'</i>-Tetramethyl-p-phenylenediamine</b>							
	$\text{CH}_3\text{CH}_2\text{OCH}(\text{CH}_3)\text{OO}^\bullet + \text{TMPD} \rightarrow$ $\text{CH}_3\text{CH}_2\text{OCH}(\text{CH}_3)\text{OOH} + \text{TMPD}^\cdot+$ $+ \text{OH}^-$	$4.4 \times 10^7$	~8	Water	p.r.	P.b.k. at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. diethyl ether.	89A165

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.10 Tetrahydro-2-furanylperoxy</b>							
7.10.1	<i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i>						
	-O(CH <sub>2</sub> ) <sub>3</sub> CH(OO <sup>·</sup> ) + TMPD →	3.7 × 10 <sup>7</sup>	~8	Water	p.r.	P.b.k at 565 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. tetrahydrofuran.	89A165
	-O(CH <sub>2</sub> ) <sub>3</sub> CH(OOH) <sup>·</sup> + TMPD <sup>+</sup> + OH <sup>-</sup>						
<b>7.11 2,5-Dioxacyclohexylperoxy</b>							
7.11.1	<i>2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</i>						
	-O(CH <sub>2</sub> ) <sub>2</sub> OCH <sub>2</sub> CH(OO <sup>·</sup> ) + ABTS →	5.0 × 10 <sup>6</sup>	7	Water	p.r.	P.b.k. at 565 nm in air-satd. soln. contg. 1 mol L <sup>-1</sup> dioxane; $k_{\text{H}_2\text{O}}/k_{\text{D}_2\text{O}} = 1.8$ ; studied at 273-313 K; $E_a = 14 \text{ kJ mol}^{-1}$ , $\log A = 9.2$ .	89A384
	ABTS <sup>+</sup>						
7.11.2	<i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i>						
	-O(CH <sub>2</sub> ) <sub>2</sub> OCH <sub>2</sub> CH(OO <sup>·</sup> ) + TMPD →	1.6 × 10 <sup>8</sup>	8	Water	p.r.	P.b.k. at 565 nm in air-satd. soln. contg. 1 mol L <sup>-1</sup> dioxane and 1-4 × 10 <sup>-4</sup> mol L <sup>-1</sup> TMPD; $k_{\text{H}_2\text{O}}/k_{\text{D}_2\text{O}} = 1.7$ ; studied at 273-313 K; $E_a = 17 \text{ kJ mol}^{-1}$ , $\log A = 11.3$ .	89A384 89A165
	TMPD <sup>+</sup>						
<b>7.12 2,4,6-Trioxacyclohexylperoxy</b>							
7.12.1	<i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i>						
	-OCH <sub>2</sub> OCH <sub>2</sub> OCH(OO <sup>·</sup> ) + TMPD →	2.3 × 10 <sup>8</sup>	~8	Water	p.r.	P.b.k at 565 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. trioxane.	89A165
	-OCH <sub>2</sub> OCH <sub>2</sub> OCH(OOH) <sup>·</sup> + TMPD <sup>+</sup> + OH <sup>-</sup>						
<b>7.13 1,3,5-Trimethyl-2,4,6-trioxacyclohexylperoxy</b>							
7.13.1	<i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i>						
	-OCH(Me)OCH(Me)OC(Me)(OO <sup>·</sup> ) + TMPD →	1.1 × 10 <sup>8</sup>	~8	Water	p.r.	P.b.k at 565 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. trimethyltrioxane.	89A165
	TMPD						
	-OCH(CH <sub>3</sub> )OCH(CH <sub>3</sub> )OC(CH <sub>3</sub> )(OOH) <sup>·</sup> + TMPD <sup>+</sup> + OH <sup>-</sup>						
<b>7.14 Tri(methoxy)methoxymethylperoxy</b>							
7.14.1	<i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i>						
	(CH <sub>3</sub> O) <sub>3</sub> COCH <sub>2</sub> OO <sup>·</sup> + TMPD →	1.2 × 10 <sup>8</sup>	~8	Water	p.r.	P.b.k at 565 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. (CH <sub>3</sub> O) <sub>3</sub> COCH <sub>3</sub> .	89A165
	(CH <sub>3</sub> O) <sub>3</sub> COCH <sub>2</sub> OOH + TMPD <sup>+</sup> + OH <sup>-</sup>						
<b>7.15 Acetylperoxy</b>							
7.15.1	<i>Ascorbate ion</i>						
	CH <sub>3</sub> C(O)OO <sup>·</sup> + AH <sup>-</sup> →	8.3 × 10 <sup>8</sup>		Water	p.r.		88A266
7.15.2	<i>2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</i>						
	CH <sub>3</sub> C(O)OO <sup>·</sup> + ABTS → ABTS <sup>+</sup> + CH <sub>3</sub> C(O)OO <sup>-</sup>	1.8 × 10 <sup>9</sup>		Water	p.r.	P.b.k. in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. acetaldehyde soln. contg. ABTS.	88A266
7.15.3	<i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i>						
	CH <sub>3</sub> C(O)OO <sup>·</sup> + TMPD → TMPD <sup>+</sup>	1.9 × 10 <sup>9</sup>	7.6	Water	p.r.	P.b.k. at 565 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1 v/v) satd. acetaldehyde soln. contg. 3.3-17 × 10 <sup>-5</sup> mol L <sup>-1</sup> TMPD.	88A266
	+ CH <sub>3</sub> C(O)OO <sup>-</sup>		8.2				
<b>7.16 2-Oxopropylperoxy</b>							
7.16.1	<i>Ascorbate ion</i>						
	CH <sub>3</sub> COCH <sub>2</sub> OO <sup>·</sup> + AH <sup>-</sup> →	7.5 × 10 <sup>0</sup>	9	Water	p.r.	P.b.k at 360 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. 7% acetone.	89A165
	CH <sub>3</sub> COCH <sub>2</sub> OOH + ·A <sup>-</sup>						
7.16.2	<i>Chlorpromazine, conjugate acid</i>						
	CH <sub>3</sub> COCH <sub>2</sub> OO <sup>·</sup> + CZH <sup>+</sup> →	~2 × 10 <sup>6</sup>		Water	p.r.	P.b.k at 525 nm in N <sub>2</sub> O/O <sub>2</sub> (4:1) satd. soln. contg. acetone.	89A165
	CH <sub>3</sub> COCH <sub>2</sub> OO <sup>-</sup> + CZ <sup>+</sup>						

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.16 2-Oxopropylperoxy—Continued</b>							
<b>7.16.3 <i>N,N,N',N'</i>-Tetramethyl-p-phenylenediamine</b>							
	$\text{CH}_3\text{COCH}_2\text{OO}\cdot + \text{TMPD} \rightarrow$	$6.6 \times 10^7$	~8	Water	p.r.	P.b.k at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. acetone.	89A165
	$\text{CH}_3\text{COCH}_2\text{OOH} + \text{TMPD}\cdot^+ + \text{OH}^-$	$\sim 6 \times 10^7$	11	Water	p.r.	P.b.k. at 565 nm in oxygen-satd. soln. contg. $0.1 \text{ mol L}^{-1}$ acetone to which was added to Ar-satd. soln. contg. $4.5-10 \times 10^{-6} \text{ mol L}^{-1}$ TMPD.	86A285
<b>7.17 Pivaloylperoxy</b>							
<b>7.17.1 2,6-Di-tert-butyl-4-methoxyphenol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{ArOH} \rightarrow$	$1.1 \times 10^5$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.2 2,6-Di-tert-butyl-4-methylphenol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{DTBMPHOH} \rightarrow$	$2.4 \times 10^4$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.3 8,4-Dihydro-6-hydroxy-5,7,8-trimethylbenzothiopyran</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{ArOH} \rightarrow$	$1.8 \times 10^6$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.4 1-Ethyl-1,2,3,4-tetrahydro-6-hydroxy-5,7,8-trimethylquinoline</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{ArOH} \rightarrow$	$2.0 \times 10^6$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.5 2,2,5,7,8-Pentamethylbenzopyran-6-ol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{ArOH} \rightarrow$	$2.0 \times 10^6$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.6 4-Methoxy-2,3,5,6-tetramethylphenol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{CH}_3\text{O}(\text{CH}_3)_4\text{C}_6\text{OH} \rightarrow$	$2.8 \times 10^5$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.7 2,3,5,6-Tetramethylphenol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + (\text{CH}_3)_4\text{C}_6\text{HOH} \rightarrow$	$6.9 \times 10^4$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.8 <math>\alpha</math>-Tocopherol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{ArOH} \rightarrow$	$2.6 \times 10^6$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.9 <math>\gamma</math>-Tocopherol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{ArOH} \rightarrow$	$7.0 \times 10^5$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.17.10 <math>\delta</math>-Tocopherol</b>							
	$(\text{CH}_3)_3\text{CC(O)OO}\cdot + \text{ArOH} \rightarrow$	$3.3 \times 10^5$		CP or decane	f.p.	D.k. (esr) in oxygen-satd. soln. contg. $0.9 \text{ mol L}^{-1}$ di-tert-butyl ketone.	85A380
<b>7.18 Carboxymethylperoxy, anion</b>							
<b>7.18.1 Sulfite ion</b>							
	$\cdot\text{OOCH}_2\text{CO}_2^- + \text{SO}_3^{2-} \rightarrow$	$<4 \times 10^5$	8	Water	p.r.	D.k. at 305 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. acetate ion.	86A291

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.18 Carboxymethylperoxyl, anion—Continued</b>							
<b>7.18.2 Ascorbate ion</b>	$\cdot\text{OOCCH}_2\text{CO}_2^- + \text{AH}^- \rightarrow$ $\text{HOOCCH}_2\text{CO}_2^- + \cdot\text{A}^-$	$2.2 \times 10^6$	7	Water	p.r.	P.b.k. in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. acetate ion.	86A291
<b>7.18.3 Isobarbiturate ion</b>	$\cdot\text{OOCCH}_2\text{CO}_2^- + \text{IBO}^- \rightarrow$ $\text{HOOCCH}_2\text{CO}_2^- + \text{IBO}^\cdot$	$3.9 \times 10^7$	13	Water	p.r.	P.b.k. in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. acetate ion	86A291
<b>7.18.4 <i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>	$\cdot\text{OOCCH}_2\text{CO}_2^- + \text{TMPD} \rightarrow$ $\text{HOOCCH}_2\text{CO}_2^- + \text{TMPD}^\cdot + \text{OH}^-$	$6.0 \times 10^7$	~8	Water	p.r.	P.b.k at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. acetate ion.	89A185
<b>7.19 Peroxyl radicals from octanoic acid</b>							
<b>7.19.1 <math>\alpha</math>-Tocopherol</b>	$\text{R}(\text{CO}_2\text{H})\text{OO}^\cdot + \text{ArOH} \rightarrow$ $\text{R}(\text{CO}_2\text{H})\text{OOH} + \text{ArO}^\cdot$	$2.8 \times 10^6$		Octanoic acid	p.r.	P.b.k. in oxygen-satd. soln. (mixture of radicals from solvent).	79G405
<b>7.20 Cyanomethylperoxyl</b>							
<b>7.20.1 Ascorbate ion</b>	$\text{NCCH}_2\text{OO}^\cdot + \text{AH}^- \rightarrow \text{NCCH}_2\text{OOH}$	$5.0 \times 10^7$	9	Water/ Acetonitrile	p.r.	P.b.k at 360 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 10% acetonitrile.	89A185
<b>7.20.2 Chlorpromazine, conjugate acid</b>	$\text{NCCH}_2\text{OO}^\cdot + \text{CZH}^+ \rightarrow \text{NCCH}_2\text{OO}^-$	$6.8 \times 10^6$		Water/ Acetonitrile	p.r.	P.b.k at 525 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. 10% acetonitrile.	89A185
<b>7.20.3 6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid</b>	$\text{NCCH}_2\text{OO}^\cdot + \text{HTxOH} \rightarrow$	$\sim 2 \times 10^6$		Acetonitrile	p.r.	P.b.k. at 360 nm in air-satd. soln.	89A384
<b>7.20.4 <i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>	$\text{NCCH}_2\text{OO}^\cdot + \text{TMPD} \rightarrow \text{NCCH}_2\text{OOH}$	$2.9 \times 10^8$	~8	Water	p.r.	P.b.k at 565 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. acetonitrile.	89A185
<b>7.21 Trimethylammoniomethylperoxyl</b>							
<b>7.21.1 Ascorbate ion</b>	$(\text{CH}_3)_3\text{N}^+\text{CH}_2\text{OO}^\cdot + \text{AH}^- \rightarrow$ $(\text{CH}_3)_3\text{N}^+\text{CH}_2\text{OOH} + \cdot\text{A}^-$	$4.0 \times 10^8$	7	Water	p.r.	P.b.k at 360 nm in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln. contg. $0.6 \text{ mol L}^{-1}$ $(\text{CH}_3)_4\text{N}^+$ .	89A165
<b>7.22 Fluoromethylperoxyl</b>							
<b>7.22.1 Ascorbate ion</b>	$\text{CH}_2\text{FOO}^\cdot + \text{AH}^- \rightarrow \text{CH}_2\text{FOOH} +$ $\cdot\text{A}^-$	$1.7 \times 10^8$	8	Water	p.r.	P.b.k at 360 nm in soln. contg. 5% 2-PrOH and $\text{CH}_2\text{FCl}/\text{O}_2$ (4:1).	89A165
		$7.7 \times 10^7$	8	Water/ 2-PrOH	p.r.	P.b.k at 360 nm in soln. contg. 40% 2-PrOH and $\text{CH}_2\text{FCl}/\text{O}_2$ (4:1).	89A165
<b>7.23 Carboxy(difluoro)methylperoxyl, anion</b>							
<b>7.23.1 Phenoxide ion</b>	$\cdot\text{OCOF}_2\text{CO}_2^- + \text{C}_6\text{H}_5\text{O}^- \rightarrow$ $\text{OCOF}_2\text{CO}_2^- + \text{C}_6\text{H}_5\text{O}^\cdot$	$1.5 \times 10^7$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and $\text{CF}_2\text{ClCO}_2^-$ .	80A053
<b>7.23.2 Promethazine, conjugate acid</b>	$\cdot\text{OCOF}_2\text{CO}_2^- + \text{PZH}^+ \rightarrow$ $\text{OCOF}_2\text{CO}_2^- + \text{PZ}^\cdot$	$5.6 \times 10^7$	6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 510 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH, 0.01 mol $\text{L}^{-1}$ phosphate buffer and $\text{CClF}_2\text{CO}_2^-$ .	80A053

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	Method	Comment	Ref.
<b>7.23 Carboxy(difluoro)methylperoxy, anion—Continued</b>							
<b>7.23.3 Tyrosine, negative ion</b>							
	$\cdot\text{OOCF}_2\text{CO}_2^- + \text{TyrO}^- \rightarrow$	$3.0 \times 10^7$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and $\text{CCl}_2\text{CO}_2^-$ .	80A053
	$\cdot\text{OOCF}_2\text{CO}_2^- + \text{TyrO}\cdot$						
<b>7.24 Trifluoromethylperoxy</b>							
<b>7.24.1 Iron(III) deuteroporphyrin IX</b>							
	$\text{CF}_3\text{OO}\cdot + \text{DPFe}^{\text{III}} \rightarrow [\text{DPFe}^{\text{III}}]\cdot^+ +$	$3.9 \times 10^8$	12.7	Water/ 2-PrOH	p.r.	P.b.k. at 700 nm in soln. contg. 50% 2-PrOH, 0.05 mol L <sup>-1</sup> NaOH and satd. with a mixture of $\text{CF}_3\text{Br}$ and $\text{O}_2$ (4:1).	87A232
	$\text{CF}_3\text{OO}^-$						
<b>7.24.2 Ascorbate ion</b>							
	$\text{CF}_3\text{OO}\cdot + \text{AH}^- \rightarrow \text{CF}_3\text{OOH} + \cdot\text{A}^-$	$1.9 \times 10^8$	7	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 50% 2-PrOH.	89A384
		$6.8 \times 10^8$	7	Water/ MeOH	p.r.	P.b.k. at 360 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 10% MeOH	89A384
							87A480
<b>7.24.3 Chlorpromazine, conjugate acid</b>							
	$\text{CF}_3\text{OO}\cdot + \text{CZH}^+ \rightarrow \text{CF}_3\text{OO}^- +$	$1.2 \times 10^9$	5.4	Water/ MeOH	p.r.	P.b.k. in air-satd. soln. contg. 10% MeOH and $\text{CF}_3\text{Br}/\text{air}$ .	87A480
	$\text{CZ}\cdot^+$						
<b>7.24.4 Hydroquinone</b>							
	$\text{CF}_3\text{OO}\cdot + 1,4\text{-C}_6\text{H}_4(\text{OH})_2 \rightarrow$	$7.9 \times 10^7$	7	Water/ MeOH	p.r.	P.b.k. in air-satd. soln. contg. 10% MeOH and $\text{CF}_3\text{Cl}/\text{air}$ or $\text{CF}_3\text{Br}/\text{air}$ .	87A480
	$\text{CF}_3\text{OO}^- + 4\text{-OC}_6\text{H}_4\text{O}\cdot + \text{H}^+$						
<b>7.24.5 6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion</b>							
	$\text{CF}_3\text{OO}\cdot + \text{TxOH}^- \rightarrow \text{CF}_3\text{OO}^- +$	$5.4 \times 10^8$	~4	Water/ MeOH	p.r.	P.b.k. at 420 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 10%, 25% and 50% MeOH, respectively.	89A384
	$\text{HTxO}\cdot$	$7.0 \times 10^8$					
		$7.4 \times 10^8$					
		$4.7 \times 10^8$	~4	Water/ 2-PrOH	p.r.	P.b.k. at 420 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 10% 2-PrOH.	89A384
		$4.2 \times 10^8$	~4	MeOH/ Water	p.r.	P.b.k. at 420 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 75% MeOH.	89A384
		$1.5 \times 10^8$		MeOH	p.r.	P.b.k. at 420 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln.	89A384
<b>7.24.6 Linolenic acid</b>							
	$\text{CF}_3\text{OO}\cdot +$	$6.9 \times 10^6$	12.7	Water/ 2-PrOH	p.r.	C.k.; obs. 700 nm buildup for $[\text{DPFe}^{\text{III}}]\cdot^+$ in water contg. 50% 2-PrOH, 0.05 mol L <sup>-1</sup> NaOH, 7 $\times 10^{-5}$ mol L <sup>-1</sup> iron(III) deuteroporphyrin, and 0-0.02 mol L <sup>-1</sup> linolenic acid, satd. with $\text{CF}_3\text{Br}/\text{O}_2$ (4:1), rel. to $[\text{CF}_3\text{OO}\cdot + \text{DPFe}^{\text{III}}] = 3.9 \times 10^8$ .	87A232
	$\text{CH}_3(\text{CH}_2\text{CH}=\text{CH})_3(\text{CH}_2)_7\text{CO}_2\text{H} \rightarrow$						
<b>7.24.7 4-Methoxyphenol</b>							
	$\text{CF}_3\text{OO}\cdot + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{OH} \rightarrow$	$5.2 \times 10^7$	7	Water/ MeOH	p.r.	P.b.k. in soln. contg. 10% MeOH and $\text{CF}_3\text{Br}/\text{air}$ .	87A480
	$\text{CF}_3\text{OO}^- + \text{H}^+ + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{O}\cdot$						
<b>7.24.8 Phenol</b>							
	$\text{CF}_3\text{OO}\cdot + \text{C}_6\text{H}_5\text{OH} \rightarrow \text{CF}_3\text{OO}^- +$	$2 \times 10^6$	7	Water/ MeOH	p.r.	P.b.k. in soln. contg. 10% MeOH and $\text{CF}_3\text{Br}/\text{air}$ .	87A480
	$\text{H}^+ + \text{C}_6\text{H}_5\text{O}\cdot$						
<b>7.24.9 Urate ion</b>							
	$\text{CF}_3\text{OO}\cdot + \text{UrO}^- \rightarrow \text{CF}_3\text{OO}^- +$	$1.0 \times 10^9$	13	Water/ MeOH	p.r.	P.b.k. in soln. contg. 10% MeOH and $\text{CF}_3\text{Br}/\text{air}$ .	87A480
	$\text{UrO}\cdot$						

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.24 Trifluoromethylperoxy—Continued</b>							
<b>7.24.9 Urate ion—Continued</b>							
		$1.3 \times 10^9$	13	Water/ MeOH	p.r.	P.b.k. at 360 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 50% MeOH and 0.1 mol $\text{L}^{-1}$ KOH.	89A384
		$1.0 \times 10^9$	13	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 10% and 50% 2-PrOH, respectively, and 0.1 mol $\text{L}^{-1}$ KOH.	89A384
		$2.9 \times 10^8$					
		$1.4 \times 10^8$	13	2-PrOH/ Water	p.r.	P.b.k. at 360 nm in $\text{CF}_3\text{Br}/\text{O}_2$ (4:1) satd. soln. contg. 70% 2- PrOH and 0.1 mol $\text{L}^{-1}$ KOH.	89A384
<b>7.24.10 Xanthine, negative ion</b>							
	$\text{CF}_3\text{OO}^\cdot + \text{XO}^- \rightarrow \text{CF}_3\text{OO}^- + \text{XO}^\cdot$	$1.0 \times 10^9$	13	Water/ MeOH	p.r.	P.b.k. in soln. contg. 10% MeOH and $\text{CF}_3\text{Br}/\text{air}$ .	87A480
<b>7.25 1,2,2-Trifluoro-2-(difluoromethoxy)ethylperoxy</b>							
<b>7.25.1 Ascorbate ion</b>							
	$\text{CHF}_2\text{OCF}_2\text{CHFOO}^\cdot + \text{AH}^- \rightarrow$ $\text{CHF}_2\text{OCF}_2\text{CHFOOH} + \cdot\text{A}^-$	$4.8 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and enflurane.	88A364
<b>7.25.2 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>							
	$\text{CHF}_2\text{OCF}_2\text{CHFOO}^\cdot + \text{ABTS} \rightarrow$ $\text{CHF}_2\text{OCF}_2\text{CHFOO}^- + \text{ABTS}^\cdot+$	$5.0 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and enflurane.	88A364
<b>7.25.3 Chlorpromazine, conjugate acid</b>							
	$\text{CHF}_2\text{OCF}_2\text{CHFOO}^\cdot + \text{CZH}^+ \rightarrow$ $\text{CHF}_2\text{OCF}_2\text{CHFOOH} + \text{CZ}^\cdot+$	$7.5 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and enflurane.	88A364
<b>7.25.4 Promethazine, conjugate acid</b>							
	$\text{CHF}_2\text{OCF}_2\text{CHFOO}^\cdot + \text{PZH}^+ \rightarrow$ $\text{CHF}_2\text{OCF}_2\text{CHFOOH} + \text{PZ}^\cdot+$	$3.4 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and enflurane.	88A364
<b>7.25.5 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CHF}_2\text{OCF}_2\text{CHFOO}^\cdot +$ $(\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$ $\text{CHF}_2\text{OCF}_2\text{CHFOOH} +$ $\cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$5.4 \times 10^7$ $1.1 \times 10^9$	5-6 8-9	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and enflurane.	88A364
<b>7.26 2,2,2-Trifluoro-1-difluoromethoxyethylperoxy</b>							
<b>7.26.1 Ascorbate ion</b>							
	$\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^\cdot + \text{AH}^- \rightarrow$ $\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OOH} + \cdot\text{A}^-$	$2.7 \times 10^9$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and isoflurane.	88A364
<b>7.26.2 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>							
	$\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^\cdot + \text{ABTS} \rightarrow$ $\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^- + \text{ABTS}^\cdot+$	$1.0 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and isoflurane.	88A364
<b>7.26.3 Chlorpromazine, conjugate acid</b>							
	$\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^\cdot + \text{CZH}^+ \rightarrow$ $\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^- + \text{CZ}^\cdot+$	$3.1 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and isoflurane.	88A364
<b>7.26.4 Promethazine, conjugate acid</b>							
	$\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^\cdot + \text{PZH}^+ \rightarrow$ $\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^- + \text{PZ}^\cdot+$	$1.2 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and isoflurane.	88A364
<b>7.26.5 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OO}^\cdot +$ $(\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$ $\text{CHF}_2\text{OCH}(\text{CF}_3)\text{OOH} +$ $\cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$2.1 \times 10^7$ $4.5 \times 10^8$	5-6 8-9	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and isoflurane.	88A364

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.27 Chloromethylperoxy</b>							
<b>7.27.1 Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub></b>							
$\text{CH}_2\text{ClOO}\cdot + \text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2 \rightarrow$	$7.7 \times 10^7$	<3	Water/ 2-PrOH	p.r.	P.b.k. at 660 nm in air-satd. soln. contg. 50% 2-PrOH, $2 \times 10^{-3}$ $\text{mol L}^{-1}$ $\text{HClO}_4$ , and 0.2-0.3 mol $\text{L}^{-1}$ methylene chloride.	84A178	
$\text{CH}_2\text{ClOO}^- + [\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2]^\cdot+$							
<b>7.27.2 5,10,15,20-Tetrakis(4-methylphenyl)porphinatoiron(II)</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{ZnTPP} \rightarrow \text{CH}_2\text{ClOO}^- + [\text{ZnTPP}]^\cdot+$	$\sim 1 \times 10^9$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 640 nm in air-satd. soln. contg. $> 5 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	89A059	
<b>7.27.3 5,10,15,20-Tetrakis(4-methylphenyl)porphinatoiron(II) pyridine complex</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{ZnTPP(py)} \rightarrow$	$2.6 \times 10^7$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 640 nm in air-satd. soln. contg. $5-15 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP and 1% pyridine.	89A059	
$\text{CH}_2\text{ClOO}^- + [\text{ZnTPP(py)}]^\cdot+$							
<b>7.27.4 Aniline</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{C}_6\text{H}_5\text{NH}_2 \rightarrow$	$\sim 5 \times 10^4$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 370 nm in air-satd. soln. contg. 1 mol $\text{L}^{-1}$ aniline.	89A059	
$\text{CH}_2\text{ClOOH} + \text{C}_6\text{H}_5\text{NH}$							
<b>7.27.5 Ascorbate ion</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{AH}^- \rightarrow \text{CH}_2\text{ClOOH} + \text{A}^-$	$1.2 \times 10^8$	8	Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 5% 2-PrOH and 0.02% $\text{CH}_2\text{Cl}_2$ .	89A165	
	$9.2 \times 10^7$	7	Water/ tert-BuOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 30% tert-BuOH and 0.01 $\text{mol L}^{-1}$ phosphate buffer and $\text{CH}_2\text{Cl}_2$ .	80A053	
<b>7.27.6 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{ABTS} \rightarrow \text{CH}_2\text{ClOO}^- + \text{ABTS}^\cdot+$	$4.4 \times 10^7$	6.6	Water/ tert-BuOH	p.r.	P.b.k. at 415 nm in air-satd. soln. contg. 20% tert-BuOH and 0.02 $\text{mol L}^{-1}$ $\text{CH}_2\text{Cl}_2$ .	82A196	
<b>7.27.7 Bilirubin dianion</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{BR}^{2-} \rightarrow \text{CH}_2\text{ClOO}^- + \text{BR}^\cdot-$	$1.5 \times 10^8$	11	Water/ tert-BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol $\text{L}^{-1}$ tert-BuOH, $\text{CH}_2\text{Cl}_2$ and bilirubin.	89A901	
<b>7.27.8 Chlorpromazine, conjugate acid</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{CZH}^\cdot \rightarrow \text{CZ}^\cdot+ + \text{CH}_2\text{ClOO}^-$	$1.5 \times 10^5$		2-PrOH/ Water	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 60% 2-PrOH, and 10% $\text{CH}_2\text{Cl}_2$ .	87A173	
$\text{CH}_2\text{ClOO}^-$							
	$2.5 \times 10^7$		Water/ 2-PrOH	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 11% 2-PrOH, and 0.1% $\text{CH}_2\text{Cl}_2$ .	87A173	
<b>7.27.9 6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{TxOH}^- \rightarrow \text{CH}_2\text{ClOO}^- + \text{HTxO}^\cdot$	$1.6 \times 10^7$	7	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% tert-BuOH, $10^{-2}$ mol $\text{L}^{-1}$ $\text{CH}_2\text{Cl}_2$ and 0.01 mol $\text{L}^{-1}$ Trolox C.	88A436	
<b>7.27.10 4-Methoxyphenol</b>							
$\text{CH}_2\text{ClOO}\cdot + 4-\text{CH}_3\text{OC}_6\text{H}_4\text{OH} \rightarrow$	$2 \times 10^5$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 0.10 mol $\text{L}^{-1}$ 4-methoxyphenol.	89A059	
$\text{CH}_2\text{ClOOH} + 4-\text{CH}_3\text{OC}_6\text{H}_4\text{O}^\cdot$							
<b>7.27.11 Phenoxide ion</b>							
$\text{CH}_2\text{ClOO}\cdot + \text{C}_6\text{H}_5\text{O}^- \rightarrow \text{CH}_2\text{ClOO}^- + \text{C}_6\text{H}_5\text{O}^\cdot$	$1.1 \times 10^7$	12	Water/ tert-BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% tert-BuOH and $\text{CH}_2\text{Cl}_2$ .	80A053	

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	Method	Comment	Ref.
<b>7.27 Chloromethylperoxy—Continued</b>							
<b>7.27.12 Promethazine, conjugate acid</b>							
	$\text{CH}_2\text{ClOO}^\cdot + \text{PZH}^+ \rightarrow \text{CH}_2\text{ClOO}^- + \text{PZ}^\cdot$	$3.3 \times 10^7$ $3.6 \times 10^7$	6 7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 510 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> phosphate buffer and CH <sub>2</sub> Cl <sub>2</sub> .	80A053
<b>7.27.13 N,N,N',N'-Tetramethyl-p-phenylenediamine</b>							
	$\text{CH}_2\text{ClOO}^\cdot + \text{TMPD} \rightarrow \text{CH}_2\text{ClOOH} + \text{TMPD}^\cdot + \text{OH}^-$	$4.2 \times 10^8$	~8	Water	p.r.	P.b.k. at 565 nm in air-satd. soln. CH <sub>2</sub> Cl <sub>2</sub> .	89A165
<b>7.27.14 Tyrosine, negative ion</b>							
	$\text{CH}_2\text{ClOO}^\cdot + \text{TyrO}^- \rightarrow \text{CH}_2\text{ClOO}^- + \text{TyrO}^\cdot$	$2.1 \times 10^7$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and CH <sub>2</sub> Cl <sub>2</sub> .	80A053
<b>7.28 1-Chloroethylperoxy</b>							
<b>7.28.1 Ascorbate ion</b>							
	$\text{CH}_3\text{CHClOO}^\cdot + \text{AH}^- \rightarrow \text{CH}_3\text{CHClOOH} + \text{A}^\cdot$	$9.2 \times 10^7$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1-dichloroethane.	88A364
<b>7.28.2 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>							
	$\text{CH}_3\text{CHClOO}^\cdot + \text{ABTS} \rightarrow \text{CH}_3\text{CHClOO}^- + \text{ABTS}^\cdot$	$3.3 \times 10^7$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1-dichloroethane.	88A364
<b>7.28.3 Chlorpromazine, conjugate acid</b>							
	$\text{CH}_3\text{CHClOO}^\cdot + \text{CZH}^+ \rightarrow \text{CH}_3\text{CHClOOH} + \text{CZ}^\cdot$	$8.9 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1-dichloroethane.	88A364
<b>7.28.4 Promethazine, conjugate acid</b>							
	$\text{CH}_3\text{CHClOO}^\cdot + \text{PZH}^+ \rightarrow \text{CH}_3\text{CHClOOH} + \text{PZ}^\cdot$	$8.9 \times 10^7$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1-dichloroethane.	88A364
<b>7.28.5 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CH}_3\text{CHClOO}^\cdot + (\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CHClOOH} + \text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$2.9 \times 10^7$ $7.3 \times 10^8$	5-6 8-9	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1-dichloroethane.	88A364
<b>7.29 2-Chloroethylperoxy</b>							
<b>7.29.1 Ascorbate ion</b>							
	$\text{ClCH}_2\text{CH}_2\text{OO}^\cdot + \text{AH}^- \rightarrow \text{ClCH}_2\text{CH}_2\text{OOH} + \text{A}^\cdot$	$5.0 \times 10^6$	7	Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 0.1% 1,2-dichloroethane.	89A165
<b>7.29.2 Bilirubin dianion</b>							
	$\text{ClCH}_2\text{CH}_2\text{OO}^\cdot + \text{BR}^{2-} \rightarrow \text{ClCH}_2\text{CH}_2\text{OO}^- + \text{BR}^-$	$8.4 \times 10^7$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol L <sup>-1</sup> <i>tert</i> -BuOH, CH <sub>2</sub> Cl <sub>2</sub> Cl and bilirubin.	89A901
<b>7.30 Carboxy(chloro)methylperoxy, anion</b>							
<b>7.30.1 Ascorbate ion</b>							
	$\text{-OOCCHClCO}_2^- + \text{AH}^- \rightarrow \text{HOOCHClCO}_2^- + \text{A}^\cdot$	$5.1 \times 10^7$	7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH, 0.01 mol L <sup>-1</sup> phosphate buffer and CHCl <sub>2</sub> CO <sub>2</sub> <sup>-</sup> .	80A053
<b>7.30.2 Phenoxide ion</b>							
	$\text{-OOCCHClCO}_2^- + \text{C}_6\text{H}_5\text{O}^- \rightarrow \text{-OOCCHClCO}_2^- + \text{C}_6\text{H}_5\text{O}^\cdot$	$7.1 \times 10^6$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and CHCl <sub>2</sub> CO <sub>2</sub> <sup>-</sup> .	80A053

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	Method	Comment	Ref.
<b>7.30 Carboxy(chloro)methylperoxy, anion—Continued</b>							
<b>7.30.3 Promethazine, conjugate acid</b>							
$\cdot\text{OOCCHClCO}_2^- + \text{PZH}^+ \rightarrow$	$3.0 \times 10^7$	6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 510 nm in air-satd. soln.	80A053	
$\cdot\text{OOCCHClCO}_2^- + \text{PZ}\cdot^+ \rightarrow$	$2.7 \times 10^7$	7			contg. 30% <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> phosphate buffer and $\text{CHCl}_2\text{CO}_2^-$ .		
<b>7.30.4 Tyrosine, negative ion</b>							
$\cdot\text{OOCCHClCO}_2^- + \text{TyrO}^- \rightarrow$	$1.2 \times 10^7$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln.	80A053	
$\cdot\text{OOCCHClCO}_2^- + \text{TyrO} \cdot \rightarrow$					contg. 30% <i>tert</i> -BuOH and $\text{CHCl}_2\text{CO}_2^-$ .		
<b>7.31 Chlorodifluoromethylperoxy</b>							
<b>7.31.1 Bilirubin dianion</b>							
$\text{CF}_2\text{ClOO} \cdot + \text{BR}^{2-} \rightarrow \text{CF}_2\text{ClOO}^- + \text{BR}\cdot^-$	$9.9 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln.	89A901	
					contg. 2.0 mol L <sup>-1</sup> <i>tert</i> -BuOH, $\text{CF}_2\text{CCl}_2$ and bilirubin.		
<b>7.32 1-Chloro-2,2,2-trifluoroethylperoxy</b>							
<b>7.32.1 Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub></b>							
$\text{CF}_3\text{CHClOO} \cdot + \text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2 \rightarrow$	$9 \times 10^7$	1	Water/ 2-PrOH	p.r.	P.b.k. at 655 nm in air-satd. soln.	85A341	
$\text{CF}_3\text{CHClOO}^- + [\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2]^+$	$6.0 \times 10^7$	<3	Water/ 2-PrOH	p.r.	contg. 50% 2-PrOH, 3% halothane, and 0.1 mol L <sup>-1</sup> $\text{HClO}_4$ .		
					P.b.k. at 655 nm in air-satd. soln.	84A178	
					contg. 50% 2-PrOH, 3% halothane, and $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{HClO}_4$ .		
<b>7.32.2 Iron(III) deuteroporphyrin IX (2-propoxy)(2-propanol)</b>							
$\text{CF}_3\text{CHClOO} \cdot + \text{DPF}^{\text{III}}\text{e}^{\text{III}}\text{OCH}(\text{CH}_3)_2(\text{HOCH}(\text{CH}_3)_2) \rightarrow$	$3.5 \times 10^7$	12.7	Water/ 2-PrOH	p.r.	P.b.k. at 700 nm in air-satd. soln.	84A178	
$\text{CF}_3\text{CHClOO}^- + [\text{DPF}^{\text{III}}\text{e}^{\text{III}}\text{OCH}(\text{CH}_3)_2(\text{HOCH}(\text{CH}_3)_2)]^+$					contg. 50% 2-PrOH, 3% halothane, and 0.05 mol L <sup>-1</sup> NaOH.		
<b>7.32.3 Arachidonic acid</b>							
$\text{CF}_3\text{CHClOO} \cdot + \text{CH}_3(\text{CH}_2)_3(\text{CH}_2\text{CH}=\text{CH})_4(\text{CH}_2)_3\text{CO}_2\text{H} \rightarrow$	$1.5 \times 10^6$		Water/ <i>tert</i> -BuOH	p.r.	C.k. in 50% <i>tert</i> -BuOH soln.	83A364	
					contg. 0.1 mol L <sup>-1</sup> halothane; rel. to $k(\text{CF}_3\text{CHClOO} \cdot + \text{ABTS}) =$		
					$3.9 \times 10^8$		
<b>7.32.4 Ascorbate ion</b>							
$\text{CF}_3\text{CHClOO} \cdot + \text{AII}^- \rightarrow$	$6.1 \times 10^8$	7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 380 nm in soln. contg.	83A195	
$\text{CF}_3\text{CHClOOH} + \cdot\text{A}^- \rightarrow$	$2 \times 10^8$	4			10% <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> halothane.		
<b>7.32.5 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate) ion</b>							
$\text{CF}_3\text{CHClOO} \cdot + \text{ABTS} \rightarrow$	$5 \times 10^8$		Water	p.r.	P.b.k. at 415 nm in air-satd. soln.	83A195	
$\text{CF}_3\text{CHClOO}^- + \text{ABTS}\cdot^+ \rightarrow$					contg. 2% <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> halothane.		
					$3.9 \times 10^8$		
					P.b.k. at 415 nm in air-satd. soln.	83A195	
					contg. 10% <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> halothane; overall rate.		
					$2.5 \times 10^8$		
					P.b.k. at 415 nm in air-satd. soln.	83A195	
					contg. 30% <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> halothane.		
<b>7.32.6 Chlorpromazine, conjugate acid</b>							
$\text{CF}_3\text{CHClOO} \cdot + \text{CZH}^+ \rightarrow \text{CZ}\cdot^+ +$	$3.5 \times 10^6$		2-PrOH/ Water/ $\text{CF}_3\text{CHClBr}$	p.r.	P.b.k. at 525 nm in soln. contg.	87A173	
$\text{CF}_3\text{CHClOO}^-$					60% 2-PrOH, and 10% halothane.		
					$5 \times 10^8$		
					P.b.k. at 525 nm in soln. contg.	83A195	
					10% <i>tert</i> -BuOH and 0.01 mol L <sup>-1</sup> halothane.		

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.82 1-Chloro-2,2,2-trifluoroethylperoxy—Continued</b>							
<b>7.82.7 Cholesterol</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{C}_{27}\text{H}_{46}\text{O} \rightarrow$	$\sim 5 \times 10^4$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% halothane, 0.5-1 $\times$ $10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester, and 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ ; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{DPDMEFe}^{III})$ $= 9 \times 10^7$ .	85A341
<b>7.82.8 Cysteine</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{CysSH} \rightarrow$ $\text{CF}_3\text{CHClOOH} + \text{CysS}\cdot$	$2.9 \times 10^7$	7	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% tert-BuOH and 0.01 mol $\text{L}^{-1}$ halothane.	83A385
<b>7.82.9 Dimethyl sulfide</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{CH}_3\text{SCH}_3 \rightarrow$ $\text{CF}_3\text{CHClOO}^- + (\text{CH}_3)_2\text{S}\cdot^+$	$6.0 \times 10^6$		Water/ tert-BuOH	p.r.	P.b.k. at 465 nm in air-satd. soln. contg. 30% tert-BuOH and 0.03 mol $\text{L}^{-1}$ halothane.	85A123
<b>7.82.10 Linoleic acid</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{LH} \rightarrow$	$8 \times 10^5$		Water/ tert-BuOH	p.r.	C.k. in air-satd. soln. contg. 50% tert-BuOH and 0.1 mol $\text{L}^{-1}$ halothane; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{ABTS}) = 3.9 \times 10^8$ .	83A364
		$8 \times 10^4$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% halothane, 0.5-1 $\times$ $10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester, and 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ ; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{DPDMEFe}^{III})$ $= 9 \times 10^7$ .	85A341
<b>7.82.11 Linolenic acid</b>							
	$\text{CF}_3\text{CHClOO}\cdot +$ $\text{CH}_3(\text{CH}_2\text{CH}=\text{CH})_3(\text{CH}_2)_7\text{CO}_2\text{H} \rightarrow$	$1.3 \times 10^6$		Water/ tert-BuOH	p.r.	C.k. in air-satd. soln. contg. 50% tert-BuOH and 0.1 mol $\text{L}^{-1}$ halothane; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{ABTS}) = 3.9 \times 10^8$ .	83A364
		$3 \times 10^5$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% halothane, 0.5-1 $\times$ $10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester, and 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ ; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{DPDMEFe}^{III})$ $= 9 \times 10^7$ .	85A341
<b>7.82.12 Methionine</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{Met} \rightarrow$	$1.4 \times 10^6$	10	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 30% 2-PrOH and 0.03 mol $\text{L}^{-1}$ halothane; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{ABTS}) = 3.9 \times 10^8$ .	85A123
<b>7.82.13 Metiasinic acid, conjugate base</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{MZ}^- \rightarrow$ $\text{CF}_3\text{CHClOO}^- + \text{MZ}\cdot$	$1.1 \times 10^9$	7	Water/ tert-BuOH	p.r.	P.b.k. at 530 nm in air-satd. soln. contg. 10% tert-BuOH and 0.01 mol $\text{L}^{-1}$ halothane.	83A195
<b>7.82.14 Oleic acid</b>							
	$\text{CF}_3\text{CHClOO}\cdot +$ $\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{CO}_2\text{H} \rightarrow$	$3 \times 10^5$		Water/ tert-BuOH	p.r.	C.k. in air-satd. soln. contg. 50% tert-BuOH and 0.1 mol $\text{L}^{-1}$ halothane; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{ABTS}) = 3.9 \times 10^8$ .	83A364

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.32 1-Chloro-2,2,2-trifluoroethylperoxy</b> —Continued							
<b>7.32.14 Oleic acid</b> —Continued							
		$2 \times 10^4$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% halothane, 0.5-1 $\times$ $10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester, and 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ ; rel. to $k(\text{CF}_3\text{CHClOO}\cdot + \text{DPDMEFe}^{III})$ $= 9 \times 10^7$ .	85A341
<b>7.32.15 Promethazine, conjugate acid</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{PZH}^+ \rightarrow$ $\text{CF}_3\text{CHClOOO}^- + \text{PZ}^+$	$2.4 \times 10^8$	7	Water/ tert-BuOH	p.r.	P.b.k. at 505 nm in air-satd. soln. contg. 10% tert-BuOH and 0.01 mol $\text{L}^{-1}$ halothane.	83A195
<b>7.32.16 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CF}_3\text{CHClOO}\cdot + (\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$ $\text{CF}_3\text{CHClOOH} + \text{H}^+ +$ $\cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$9.4 \times 10^7$ $9 \times 10^8$	7 3.6	Water/ tert-BuOH	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 10% tert-BuOH and 0.01 mol $\text{L}^{-1}$ halothane.	83A195
<b>7.32.17 <math>\alpha</math>-Tocopherol</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{ArOH} \rightarrow \text{ArO}\cdot +$ $\text{CF}_3\text{CHClOOH}$	$9.2 \times 10^7$	7	Water/ tert-BuOH	p.r.	P.b.k. at 425 nm in air-satd. soln. contg. 30% tert-BuOH and 0.01 mol $\text{L}^{-1}$ halothane.	83A195
<b>7.32.18 Tyrosine, negative ion</b>							
	$\text{CF}_3\text{CHClOO}\cdot + \text{TyrO}^- \rightarrow$ $\text{CF}_3\text{CHClOO}^- + \text{TyrO}\cdot$	$1.2 \times 10^8$	12	Water/ tert-BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 10% tert-BuOH and 0.01 mol $\text{L}^{-1}$ halothane.	83A385
<b>7.33 2-Chloro-1,1,2,2-tetrafluoroethylperoxy</b>							
<b>7.33.1 Bilirubin dianion</b>							
	$\text{CF}_2\text{ClCF}_2\text{OO}\cdot + \text{BR}^{2-} \rightarrow$ $\text{CF}_2\text{ClCF}_2\text{OO}^- + \text{BR}^-$	$6.9 \times 10^8$	11	Water/ tert-BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol $\text{L}^{-1}$ tert-BuOH, $\text{CF}_2\text{CCF}_2\text{Cl}$ and bilirubin.	89A901
<b>7.34 1-Chloro-2,2-difluoro-2-methoxyethylperoxy</b>							
<b>7.34.1 Ascorbate ion</b>							
	$\text{CH}_3\text{OCF}_2\text{CHClOO}\cdot + \text{AH}^- \rightarrow$ $\text{CH}_3\text{OCF}_2\text{CHClOOH} + \cdot\text{A}^-$	$3.3 \times 10^8$	~7	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% tert-BuOH and methoxyflurane.	88A364
<b>7.34.2 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>							
	$\text{CH}_3\text{OCF}_2\text{CHClOO}\cdot + \text{ABTS} \rightarrow$ $\text{CH}_3\text{OCF}_2\text{CHClOO}^- + \text{ABTS}^+$	$3.4 \times 10^8$	~7	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% tert-BuOH and methoxyflurane.	88A364
<b>7.34.3 Chlorpromazine, conjugate acid</b>							
	$\text{CH}_3\text{OCF}_2\text{CHClOO}\cdot + \text{CZH}^+ \rightarrow$ $\text{CH}_3\text{OCF}_2\text{CHClOO}^- + \text{CZ}^+$	$4.7 \times 10^8$	5-6	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% tert-BuOH and methoxyflurane.	88A364
<b>7.34.4 Promethazine, conjugate acid</b>							
	$\text{CH}_3\text{OCF}_2\text{CHClOO}\cdot + \text{PZH}^+ \rightarrow$ $\text{CH}_3\text{OCF}_2\text{CHClOO}^- + \text{PZ}^+$	$2.8 \times 10^8$	5-6	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% tert-BuOH and methoxyflurane.	88A364
<b>7.34.5 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CH}_3\text{OCF}_2\text{CHClOO}\cdot +$ $(\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$ $\text{CH}_3\text{OCF}_2\text{CHClOO}^- +$ $\cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$2.7 \times 10^7$ $5.5 \times 10^8$	5-6 8-9	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% tert-BuOH and methoxyflurane.	88A364

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.35 Dichloromethylperoxy</b>							
7.35.1	<b>Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub></b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2 \rightarrow$	$8.2 \times 10^7$	<3	Water/ 2-PrOH	p.r.	P.b.k. at 660 nm in air-satd. soln. contg. 50% 2-PrOH, 0.2-0.3 mol $\text{L}^{-1}$ chloroform, and $2 \times 10^{-3}$ $\text{mol L}^{-1}$ $\text{HClO}_4$ .	84A178
	$\text{CHCl}_2\text{OO}^\cdot + [\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2]^\cdot+$						
7.35.2	<b>5,10,15,20-Tetrakis(4-methylphenyl)porphinatozinc(II)</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{ZnTTP} \rightarrow \text{CHCl}_2\text{OO}^- + [\text{ZnTTP}]^\cdot+$	$3 \times 10^9$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 640 nm in air-satd. soln. contg. $1.5 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	89A059
7.35.3	<b>5,10,15,20-Tetrakis(4-methylphenyl)porphinatozinc(II) pyridine complex</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{ZnTTP(py)} \rightarrow$	$2.7 \times 10^8$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 640 nm in air-satd. soln. contg. $2.10 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP and 1% pyridine.	89A059
	$\text{CHCl}_2\text{OO}^- + [\text{ZnTTP(py)}]^\cdot+$						
7.35.4	<b>Aniline</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{C}_6\text{H}_5\text{NH}_2 \rightarrow$	$1 \times 10^6$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. in air-satd. soln. contg. 4-17 $\times 10^{-3}$ mol $\text{L}^{-1}$ aniline.	89A059
	$\text{CHCl}_2\text{OOH} + \text{C}_6\text{H}_5\text{NH}$						
7.35.5	<b>Ascorbate ion</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{AH}^\cdot- \rightarrow \text{CHCl}_2\text{OOH} + \text{A}^-$	$7.0 \times 10^8$	7	Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 5% 2-PrOH and 0.1% $\text{CHCl}_3$ .	89A165
		$2.6 \times 10^8$	7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 3 mol $\text{L}^{-1}$ <i>tert</i> -BuOH and 0.01 mol $\text{L}^{-1}$ phosphate buffer and $\text{CHCl}_3$ ; $k$ measured at two different laboratories.	80A053
		$1.8 \times 10^8$	7				
7.35.6	<b>2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate) ion</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{ABTS} \rightarrow \text{CHCl}_2\text{OO}^- + \text{ABTS}^\cdot+$	$6.5 \times 10^8$	6.4	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 415 nm in air-satd. soln. contg. 20% <i>tert</i> -BuOH and 0.02 mol $\text{L}^{-1}$ $\text{CHCl}_3$ .	82A198
7.35.7	<b>Bilirubin dianion</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{BR}^{2-} \rightarrow \text{CHCl}_2\text{OO}^- + \text{BR}^\cdot-$	$3.4 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol $\text{L}^{-1}$ <i>tert</i> -BuOH, $\text{CHCl}_3$ and bilirubin.	89A901
7.35.8	<b>Chlorpromazine, conjugate acid</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{CZH}^+ \rightarrow \text{CZ}^\cdot+ + \text{CHCl}_2\text{OO}^-$	$3.6 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 11% 2-PrOH, and 0.1% $\text{CHCl}_3$ .	87A173
		$1.1 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 33% 2-PrOH, and 0.5% $\text{CHCl}_3$ .	87A173
		$8.3 \times 10^6$		2-PrOH/ Water	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 60% 2-PrOH, and 10% $\text{CHCl}_3$ .	87A173
7.35.9	<b>N,N-Dimethylaniline</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{C}_6\text{H}_5\text{N}(\text{CH}_3)_2 \rightarrow$	$2.5 \times 10^7$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. in air-satd. soln. contg. $0.2-220 \times 10^{-3}$ mol $\text{L}^{-1}$ dimethylaniline.	89A059
	$\text{CHCl}_2\text{OO}^- + [\text{C}_6\text{H}_5\text{N}(\text{CH}_3)_2]^\cdot+$						
7.35.10	<b>6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion</b>						
	$\text{CHCl}_2\text{OO}^\cdot + \text{TxOH}^- \rightarrow \text{CHCl}_2\text{OO}^- + \text{HTxO}^\cdot$	$1.1 \times 10^8$	7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% <i>tert</i> -BuOH, $10^{-2}$ mol $\text{L}^{-1}$ $\text{CHCl}_3$ and 0.01 mol $\text{L}^{-1}$ Trolox C.	88A436
7.35.11	<b>4-Methoxyphenol</b>						
	$\text{CHCl}_2\text{OO}^\cdot + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{OH} \rightarrow$	$6 \times 10^5$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 0.02-0.10 mol $\text{L}^{-1}$ 4- methoxyphenol,	89A059
	$\text{CHCl}_2\text{OOH} + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{O}^\cdot$						

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.35 Dichloromethylperoxy—Continued</b>							
<b>7.35.12 Phenoxide ion</b>							
$\text{CHCl}_2\text{OO}\cdot + \text{C}_6\text{H}_5\text{O}^- \rightarrow \text{CHCl}_2\text{OO}^- + \text{C}_6\text{H}_5\text{O}\cdot$	$1.1 \times 10^8$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and $\text{CHCl}_3$ .	80A053	
<b>7.35.13 Promethazine, conjugate acid</b>							
$\text{CHCl}_2\text{OO}\cdot + \text{PZH}^+ \rightarrow \text{CHCl}_2\text{OO}^- + \text{PZ}\cdot^+$	$1.4 \times 10^8$ $6.7 \times 10^7$	6 7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 510 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and 0.01 mol $\text{L}^{-1}$ phosphate buffer and $\text{CHCl}_3$ .	80A053	
<b>7.35.14 N,N,N',N'-Tetramethyl-p-phenylenediamine</b>							
$\text{CHCl}_2\text{OO}\cdot + \text{TMPD} \rightarrow \text{CHCl}_2\text{OO}^- + \text{TMPD}\cdot^+$	$3 \times 10^8$ $7.4 \times 10^8$		$\text{CH}_2\text{Cl}_2$	p.r.	P.b.k. at 570 nm in air-satd. soln. contg. $4.32 \times 10^{-4}$ mol $\text{L}^{-1}$ TMPD.	89A059	
		~8	Water	p.r.	P.b.k. at 565 nm in $\text{Ar}/\text{O}_2$ (4:1) satd. soln. contg. chloroform.	89A165	
<b>7.35.15 Tyrosine, negative ion</b>							
$\text{CHCl}_2\text{OO}\cdot + \text{TyrO}^- \rightarrow \text{CHCl}_2\text{OO}^- + \text{TyrO}\cdot$	$1.0 \times 10^8$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and $\text{CHCl}_3$ .	80A053	
<b>7.36 1,1-Dichloroethylperoxy</b>							
<b>7.36.1 Ascorbate ion</b>							
$\text{CH}_3\text{CCl}_2\text{OO}\cdot + \text{AH}^- \rightarrow \text{CH}_3\text{CCl}_2\text{OOH} + \cdot\text{A}^-$	$4.6 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,1-trichloroethane.	88A364	
<b>7.36.2 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate) ion</b>							
$\text{CH}_3\text{CCl}_2\text{OO}\cdot + \text{ABTS} \rightarrow \text{CH}_3\text{CCl}_2\text{OO}^- + \text{ABTS}\cdot^+$	$4.3 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,1-trichloroethane.	88A364	
<b>7.36.3 Bilirubin dianion</b>							
$\text{CH}_3\text{CCl}_2\text{OO}\cdot + \text{BR}^{2-} \rightarrow \text{CH}_3\text{CCl}_2\text{OO}^- + \text{BR}\cdot^-$	$6.0 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol $\text{L}^{-1}$ <i>tert</i> -BuOH, $\text{CH}_3\text{CCl}_3$ and bilirubin.	89A901	
<b>7.36.4 Chlorpromazine, conjugate acid</b>							
$\text{CH}_3\text{CCl}_2\text{OO}\cdot + \text{CZH}^+ \rightarrow \text{CZ}\cdot^+ + \text{CH}_3\text{CCl}_2\text{OO}^-$	$7.4 \times 10^8$ $2.3 \times 10^6$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,1-trichloroethane.	88A364	
			2-PrOH/ Water/ $\text{CH}_3\text{CCl}_3$	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 60% 2-PrOH and 10% $\text{CH}_3\text{CCl}_3$ .	87A173	
<b>7.36.5 Promethazine, conjugate acid</b>							
$\text{CH}_3\text{CCl}_2\text{OO}\cdot + \text{PZH}^+ \rightarrow \text{CH}_3\text{CCl}_2\text{OO}^- + \text{PZ}\cdot^+$	$3.7 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,1-trichloroethane.	88A364	
<b>7.36.6 Propyl 3,4,5-trihydroxybenzoate</b>							
$\text{CH}_3\text{CCl}_2\text{OO}\cdot + (\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CCl}_2\text{OOH} + \cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$8.0 \times 10^7$ $7.3 \times 10^8$	5-6 8-9	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,1-trichloroethane.	88A364	
<b>7.37 1,2-Dichloroethylperoxy</b>							
<b>7.37.1 Ascorbate ion</b>							
$\text{CH}_2\text{ClCHClOO}\cdot + \text{AH}^- \rightarrow \text{CH}_2\text{ClCHClOOH} + \cdot\text{A}^-$	$1.9 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloroethane.	88A364	
<b>7.37.2 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate) ion</b>							
$\text{CH}_2\text{ClCHClOO}\cdot + \text{ABTS} \rightarrow \text{CH}_2\text{ClCHClOO}^- + \text{ABTS}\cdot^+$	$1.1 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloroethane.	88A364	

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	Method	Comment	Ref.
<b>7.37 1,2-Dichloroethylperoxyl—Continued</b>							
<b>7.37.3 Bilirubin dianion</b>	$\text{CH}_2\text{CICHClOO}^\bullet + \text{BR}^{2-} \rightarrow$ $\text{CH}_2\text{CICHClOO}^- + \text{BR}^\bullet$	$1.9 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol L <sup>-1</sup> <i>tert</i> -BuOH, $\text{CH}_2\text{CICHCl}_2$ and bilirubin.	89A901
<b>7.37.4 Chlorpromazine, conjugate acid</b>							
	$\text{CH}_2\text{CICHClOO}^\bullet + \text{CZH}^+ \rightarrow$ $\text{CH}_2\text{CICHClOO}^- + \text{CZ}^\bullet$	$1.4 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloroethane.	88A364
<b>7.37.5 Promethazine, conjugate acid</b>							
	$\text{CH}_2\text{CICHClOO}^\bullet + \text{PZH}^+ \rightarrow$ $\text{CH}_2\text{CICHClOO}^- + \text{PZ}^\bullet$	$1.2 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloroethane.	88A364
<b>7.37.6 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CH}_2\text{CICHClOO}^\bullet + (\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$ $\text{CH}_2\text{CICHClOOH} + \cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$3.6 \times 10^8$		Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloroethane.	88A364
<b>7.38 Dichloro(cyano)methylperoxyl</b>							
<b>7.38.1 Ascorbate ion</b>	$\text{CCl}_2(\text{CN})\text{OO}^\bullet + \text{AH}^- \rightarrow$ $\text{CCl}_2(\text{CN})\text{OOH} + \cdot\text{A}^-$	$1.2 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and trichloroacetonitrile.	88A364
<b>7.38.2 2,2'-Asinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>	$\text{CCl}_2(\text{CN})\text{OO}^\bullet + \text{ABTS} \rightarrow$ $\text{CCl}_2(\text{CN})\text{OO}^- + \text{ABTS}^\bullet$	$5.8 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and trichloroacetonitrile.	88A364
<b>7.38.3 Chlorpromazine, conjugate acid</b>	$\text{CCl}_2(\text{CN})\text{OO}^\bullet + \text{CZH}^+ \rightarrow$ $\text{CCl}_2(\text{CN})\text{OO}^- + \text{CZ}^\bullet$	$9.1 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and trichloroacetonitrile.	88A364
<b>7.38.4 Promethazine, conjugate acid</b>	$\text{CCl}_2(\text{CN})\text{OO}^\bullet + \text{PZH}^+ \rightarrow$ $\text{CCl}_2(\text{CN})\text{OO}^- + \text{PZ}^\bullet$	$2.2 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and trichloroacetonitrile.	88A364
<b>7.38.5 Propyl 3,4,5-trihydroxybenzoate</b>	$\text{CCl}_2(\text{CN})\text{OO}^\bullet + (\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$ $\text{CCl}_2(\text{CN})\text{OOH} + \cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$1.9 \times 10^7$ $1.1 \times 10^9$	5-6 8-9	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and trichloroacetonitrile.	88A364
<b>7.39 Carboxy(dichloro)methylperoxyl, anion</b>							
<b>7.39.1 Ascorbate ion</b>	$\cdot\text{OOC}\text{Cl}_2\text{CO}_2^- + \text{AH}^- \rightarrow$ $\text{HOO}\text{Cl}_2\text{CO}_2^- + \cdot\text{A}^-$	$9.0 \times 10^7$	7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH, 0.01 mol L <sup>-1</sup> phosphate buffer, and $\text{CCl}_3\text{CO}_2^-$ .	80A053
<b>7.39.2 Promethazine, conjugate acid</b>	$\cdot\text{OOC}\text{Cl}_2\text{CO}_2^- + \text{PZH}^+ \rightarrow$ $\cdot\text{OOC}\text{Cl}_2\text{CO}_2^- + \text{PZ}^\bullet$	$7.6 \times 10^7$ $5.7 \times 10^7$	6 7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 510 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH, 0.01 mol L <sup>-1</sup> phosphate buffer and $\text{CCl}_3\text{CO}_2^-$ .	80A053
<b>7.39.3 Phenoxide ion</b>	$\cdot\text{OOC}\text{Cl}_2\text{CO}_2^- + \text{C}_6\text{H}_5\text{O}^- \rightarrow$ $\cdot\text{OOC}\text{Cl}_2\text{CO}_2^- + \text{C}_6\text{H}_5\text{O}^\bullet$	$1.4 \times 10^7$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and $\text{CCl}_3\text{CO}_2^-$ .	80A053

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	Method	Comment	Ref.
<b>7.39 Carboxy(dichloro)methylperoxy, anion—Continued</b>							
<b>7.39.4 Tyrosine, negative ion</b>							
$\cdot\text{OOC}\text{Cl}_2\text{CO}_2^- + \text{TyrO}^- \rightarrow$	$1.6 \times 10^7$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln.	80A053	
$\cdot\text{OOC}\text{Cl}_2\text{CO}_2^- + \text{TyrO}^-$					contg. 30% <i>tert</i> -BuOH and $\text{CCl}_3\text{CO}_2^-$		
<b>7.40 Dichlorofluoromethylperoxy</b>							
<b>7.40.1 Chlorpromazine, conjugate acid</b>							
$\text{CCl}_2\text{OO}^\bullet + \text{CZH}^+ \rightarrow \text{CZ}^\bullet +$	$1.2 \times 10^8$		2-PrOH/ Water/ $\text{CFCl}_3$	p.r.	P.b.k. at 525 nm in air-satd. soln.	87A173	
$\text{CCl}_2\text{OO}^-$					contg. 60% 2-PrOH and 10% $\text{CFCl}_3$ .		
<b>7.41 1,2-Dichloro-1,2,2-trifluoroethylperoxy</b>							
<b>7.41.1 Ascorbate ion</b>							
$\text{CCl}_2\text{CClFOO}^\bullet + \text{AH}^- \rightarrow$	$6.9 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloro-1,2,2-trifluoroethane;	88A364	
$\text{CCl}_2\text{CClFOOH} + \cdot\text{A}^-$					mixed radicals including $\text{CCl}_2\text{FCF}_2\text{OO}^\bullet$ .		
<b>7.41.2 2,2'-Azinobis(2-ethylbenzothiazoline-6-sulfonate ion)</b>							
$\text{CCl}_2\text{CClFOO}^\bullet + \text{ABTS} \rightarrow$	$2.2 \times 10^9$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloro-1,2,2-trifluoroethane;	88A364	
$\text{CCl}_2\text{CClFOOH} + \text{ABTS}^\bullet+$					mixed radicals including $\text{CCl}_2\text{FCF}_2\text{OO}^\bullet$ .		
<b>7.41.3 Chlorpromazine, conjugate acid</b>							
$\text{CCl}_2\text{CClFOO}^\bullet + \text{CZH}^+ \rightarrow$	$1.8 \times 10^9$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloro-1,2,2-trifluoroethane;	88A364	
$\text{CCl}_2\text{CClFOO}^- + \text{CZ}^\bullet$					mixed radicals including $\text{CCl}_2\text{FCF}_2\text{OO}^\bullet$ .		
<b>7.41.4 Promethazine, conjugate acid</b>							
$\text{CCl}_2\text{CClFOO}^\bullet + \text{PZH}^+ \rightarrow$	$1.2 \times 10^9$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloro-1,2,2-trifluoroethane;	88A364	
$\text{CCl}_2\text{CClFOO}^- + \text{PZ}^\bullet$					mixed radicals including $\text{CCl}_2\text{FCF}_2\text{OO}^\bullet$ .		
<b>7.41.5 Propyl 3,4,5-trihydroxybenzoate</b>							
$\text{CCl}_2\text{CClFOO}^\bullet +$	$1.4 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and 1,1,2-trichloro-1,2,2-trifluoroethane;	88A364	
$(\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$	$2.0 \times 10^9$	8-9	<i>tert</i> -BuOH		mixed radicals including $\text{CCl}_2\text{FCF}_2\text{OO}^\bullet$ .		
$\text{CCl}_2\text{CClFOOH} +$							
$\cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$							
<b>7.42 Trichloromethylperoxy</b>							
<b>7.42.1 Chlorite ion</b>							
$\text{CCl}_3\text{OO}^\bullet + \text{ClO}_2^- \rightarrow \text{CCl}_3\text{OO}^- +$	$1.4 \times 10^7$	7	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln.	88A291	
$\text{ClO}_2^\bullet$					contg. 40% 2-PrOH and 0.1 mol L <sup>-1</sup> $\text{CCl}_4$ .		
<b>7.42.2 Iron(III) deuteroporphyrin, dimethyl ester</b>							
$\text{CCl}_3\text{OO}^\bullet + \text{DPDMEFe}^{\text{III}} \rightarrow$	$1.2 \times 10^7$		$\text{CCl}_4$	p.r.	P.b.k. at 660 nm in air-satd. soln.	84A178	
$\text{CCl}_3\text{OO}^- + [\text{DPDMEFe}^{\text{III}}]_2^+$							
<b>7.42.3 Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub></b>							
$\text{CCl}_3\text{OO}^\bullet +$	$2.3 \times 10^8$	<3	Water/ 2-PrOH	p.r.	P.b.k. at 660 nm in air-satd. soln.	84A178	
$\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2 \rightarrow$					contg. 50% 2-PrOH, 0.2-0.3 mol L <sup>-1</sup> $\text{CCl}_4$ and $2 \times 10^{-3}$ mol L <sup>-1</sup> $\text{HClO}_4$ ; $k = 2.5-2.6 \times 10^8$ in 0.23		
$\text{CCl}_3\text{OO}^- +$					and 1.16 mol L <sup>-1</sup> $\text{HClO}_4$ .		
$[\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2]^+$							

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxy—Continued</b>							
<b>7.42.8 Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub>—Continued</b>							
		$\sim 1 \times 10^7$		2-PrOH	p.r.	P.b.k. at 660 nm in air-satd. soln. contg. 0.2-0.3 mol $\text{L}^{-1}$ $\text{CCl}_4$ and $2.3 \times 10^{-3}$ mol $\text{L}^{-1}$ $\text{HClO}_4$ .	84A178
<b>7.42.4 Iron(III) deuteroporphyrin IX (2-propoxy)(2-propanol)</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{DPFe}^{\text{III}}\text{OCH}(\text{CH}_3)_2(\text{HOCH}(\text{CH}_3)_2) \rightarrow$	$2.5 \times 10^8$	12.7	Water/ 2-PrOH	p.r.	P.b.k. at 700 nm in air-satd. soln. contg. 50% 2-PrOH, 0.2-0.3 mol $\text{L}^{-1}$ $\text{CCl}_4$ , and 0.05 mol $\text{L}^{-1}$ NaOH.	84A178
<b>7.42.5 5,10,15,20-Tetraphenylporphinatogallium(III) ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{GaTPP}^+ \rightarrow \text{CCl}_3\text{OO}^- + [\text{GaTPP}]^{2+}$	$1.5 \times 10^8$		$\text{CCl}_4$	p.r.	P.b.k. at 700 nm in air-satd. $\text{CCl}_4$ soln. contg. GaTPP.	87A070
<b>7.42.6 2,3,7,8,12,13,17,18-Octaethylporphinato(carbonyl)cyanoruthenium(II) ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{Ru(OEP)(CO)(CN)}^+ \rightarrow \text{CCl}_3\text{OO}^- + \text{Ru(OEP}^+\text{)(CO)(CN)}^+$	$8 \times 10^8$		$\text{CH}_3\text{CN}/\text{CCl}_4$	p.r.	P.b.k. in aerated soln. of acetonitrile/ $\text{CCl}_4$ 1:1 satd. with NaCN.	89A084
		$1.5 \times 10^9$		$\text{CH}_3\text{CN}/\text{CCl}_4/\text{H}_2\text{O}$	p.r.	P.b.k. in aerated soln. of acetonitrile/ $\text{CCl}_4$ 1:1 contg. 10% water and NaCN.	89A084
<b>7.42.7 Sulfite ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{SO}_3^{2-} \rightarrow \text{CCl}_3\text{OO}^- + \text{SO}_3^-$	$8 \times 10^6$	8	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 40% 2-PrOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ ; rel. to $k(\text{CCl}_3\text{OO}^\cdot + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{OH}) = 3.4 \times 10^6$ .	86A291
<b>7.42.8 5,10,15,20-Tetraphenylporphinatozinc(II)</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnTPP} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnTPP}]^+$	$7.0 \times 10^8$		2-PrOH/ Water	p.r.	P.b.k. at 700 nm in air-satd. soln. contg. 68% 2-PrOH, $\text{CCl}_4$ and $(1-4) \times 10^{-4}$ mol $\text{L}^{-1}$ porphyrin.	85A038
		$1.2 \times 10^9$		$\text{CCl}_4$	p.r.	P.b.k. at 660 nm in $\text{CCl}_4$ soln. satd. with oxygen.	84A090
		$1.7 \times 10^9$		$\text{CCl}_4$	p.r.	P.b.k. at 700 nm in air-satd. $\text{CCl}_4$ soln. contg. $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426
		$1.6 \times 10^9$		Cyclohexane/p.r. $\text{CCl}_4$		P.b.k. at 700 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ and $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426
		$3.0 \times 10^9$		Cyclohexene/p.r. $\text{CCl}_4$		P.b.k. at 700 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ and $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426
		$1.2 \times 10^9$		Acetonitrile/p.r. $\text{CCl}_4$		P.b.k. at 700 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ and $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426
		$4.0 \times 10^8$		Acetone/ $\text{CCl}_4$	p.r.	P.b.k. at 700 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ and $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426
		$2.6 \times 10^8$		2-PrOH/ $\text{CCl}_4$	p.r.	P.b.k. at 700 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ and $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426
		$7.7 \times 10^7$		DMSO/ $\text{CCl}_4$	p.r.	P.b.k. at 700 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ and $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426
<b>7.42.9 5,10,15,20-Tetraphenylporphinatozinc(II) pyridine complex</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnTPP(py)} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnTPP(py)}]^+$	$3.5 \times 10^7$		Cyclohexane/p.r. $\text{CCl}_4$		P.b.k. at 700 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ , 1% pyridine and $3-30 \times 10^{-5}$ mol $\text{L}^{-1}$ ZnTPP.	86A426

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxyl—Continued</b>							
<b>7.42.10 5,10,15,20-Tetrakis(4-pyridyl)porphinatozinc(II)</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnTpyP} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnTpyP}]^{5+}$	$2.0 \times 10^7$		2-PrOH/ Water	p.r.	P.b.k. at 700 nm in air-satd. soln. contg. 68% 2-PrOH, $\text{CCl}_4$ and $(1-4) \times 10^{-4}$ mol $\text{L}^{-1}$ porphyrin.	85A038
<b>7.42.11 5,10,15,20-Tetrakis(1-methylpyridinium-4-yl)porphinatozinc(II) ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnTMpyP}^{4+} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnTMpyP}]^{5+}$	$1.5 \times 10^7$		Water/ 2-PrOH	p.r.	P.b.k. at 690-700 nm in air-satd. soln. contg. 50% 2-PrOH, $\text{CCl}_4$ and $(1-4) \times 10^{-4}$ mol $\text{L}^{-1}$ porphyrin.	85A038
<b>7.42.12 5,10,15,20-Tetrakis(2-hydroxyphenyl)porphinatozinc(II)</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnT(o-HOP)}\text{P} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnT(o-HOP)}\text{P}]^{5+}$	$1.2 \times 10^9$	7	Water/ 2-PrOH	p.r.	P.b.k. at 680 nm in air-satd. soln. contg. ~50% 2-PrOH, ~2% $\text{CCl}_4$ and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate buffer.	86A242
<b>7.42.13 5,10,15,20-Tetrakis(3-hydroxyphenyl)porphinatozinc(II)</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnT(m-HOP)}\text{P} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnT(m-HOP)}\text{P}]^{5+}$	$1.5 \times 10^9$	7	Water/ 2-PrOH	p.r.	P.b.k. at 680 nm in air-satd. soln. contg. ~50% 2-PrOH, ~2% $\text{CCl}_4$ and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate buffer.	86A242
<b>7.42.14 5,10,15,20-Tetrakis(4-hydroxyphenyl)porphinatozinc(II)</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnT(p-HOP)}\text{P} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnT(p-HOP)}\text{P}]^{5+}$	$1.7 \times 10^9$	7	Water/ 2-PrOH	p.r.	P.b.k. at 680 nm in air-satd. soln. contg. ~50% 2-PrOH, ~2% $\text{CCl}_4$ and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate buffer.	86A242
<b>7.42.15 5,10,15,20-Tetrakis(4-sulfonatophenyl)porphinatozincate(II) ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ZnTPPS}^{4-} \rightarrow \text{CCl}_3\text{OO}^- + [\text{ZnTPPS}]^{3-}$	$7.0 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. at 600-700 nm in air satd. soln. contg. 45% 2-PrOH, $\text{CCl}_4$ and $(1-4) \times 10^{-4}$ mol $\text{L}^{-1}$ porphyrin.	85A038
<b>7.42.16 Arachidonic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3(\text{CH}_2)_3(\text{CH}_2\text{CH}=\text{CH})_4(\text{CH}_2)_3\text{CO}_2\text{H} \rightarrow$	$7.3 \times 10^6$		Water/ <i>tert</i> -BuOH	p.r.	C.k. in air-satd. soln. contg. 50% <i>tert</i> -BuOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ ; rel. to $k(\text{CCl}_3\text{OO}^\cdot + \text{ABTS}) = 1.9 \times 10^6$ .	83A364
<b>7.42.17 Ascorbate ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{AH}^- \rightarrow \text{CCl}_3\text{OOH} + \cdot\text{A}^-$	$9.1 \times 10^8$	7	Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 5% 2-PrOH and 0.02% $\text{CCl}_4$ .	89A165
		$2.0 \times 10^8$	7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and 0.01 mol $\text{L}^{-1}$ phosphate buffer and $\text{CCl}_4$ (measured in two different laboratories).	80A053
		$1.6 \times 10^8$	7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ .	89A019
		$1.1 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 12% and 50% 2-PrOH, respectively, and 1% $\text{CCl}_4$ .	89A384
		$5.8 \times 10^8$	7	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 12%, 30% and 50% 2-PrOH, respectively, and 1% $\text{CCl}_4$ .	89A384
		$1.3 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 67% 2-PrOH and 10% $\text{CCl}_4$ .	89A384
<b>7.42.18 Ascorbic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{AH}_2 \rightarrow \text{CCl}_3\text{OOH} + \cdot\text{A}^-$	$1.4 \times 10^7$	1	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 12%, 30% and 50% 2-PrOH, respectively, and 1% $\text{CCl}_4$ .	89A384
		$9.9 \times 10^6$					
		$3.1 \times 10^6$					

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxy—Continued</b>							
<b>7.42.18 Ascorbic acid—Continued</b>							
		$1.8 \times 10^6$	1	2-PrOH/ Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 67% 2-PrOH and 10% $\text{CCl}_4$ .	89A384
<b>7.42.19 2,2'-Azinobis(2-ethylbenzothiazoline-6-sulfonate ion)</b>							
	$\text{CCl}_3\text{OO}\cdot + \text{ABTS} \rightarrow \text{CCl}_3\text{OO}^- + \text{ABTS}^\cdot+$	$1.2 \times 10^9$		Water/ 2-PrOH/ Acetone	p.r.	P.b.k. at 415 nm in air-satd. soln. contg. 33% 2-PrOH, 16% acetone, 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ , and ABTS.	84A266
		$1.9 \times 10^9$	6.6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 415 nm in air-satd. soln. contg. 20% <i>tert</i> -BuOH and $10^{-2}$ mol $\text{L}^{-1}$ $\text{CCl}_4$ .	82A196
<b>7.42.20 Bilirubin dianion</b>							
	$\text{CCl}_3\text{OO}\cdot + \text{BR}^{2-} \rightarrow \text{CCl}_3\text{OO}^- + \text{BR}^\cdot-$	$2.2 \times 10^9$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol $\text{L}^{-1}$ <i>tert</i> -BuOH, $\text{CCl}_4$ and bilirubin.	89A901
<b>7.42.21 8-<i>tert</i>-Butyl-4-hydroxyanisole</b>							
	$\text{CCl}_3\text{OO}\cdot + \text{ArOH} \rightarrow \text{ArO}\cdot + \text{CCl}_3\text{OOH}$	$3.8 \times 10^7$		$\text{CCl}_4$	p.r.	P.b.k. in air-satd. soln.	82Z341
<b>7.42.22 <math>\beta</math>-Carotene</b>							
	$\text{CCl}_3\text{OO}\cdot + \text{car} \rightarrow \text{CCl}_3\text{OO}^- + \text{car}^\cdot+$	$1.5 \times 10^9$		Water/ <i>tert</i> -BuOH	p.r.	D.k. at 450 and 500 nm in air-satd. soln. contg. 50% <i>tert</i> -BuOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ .	81A036
<b>7.42.23 Chlorpromazine, conjugate acid</b>							
	$\text{CCl}_3\text{OO}\cdot + \text{CZH}^+ \rightarrow \text{CZ}\cdot^+ + \text{CCl}_3\text{OO}^-$	$1.9 \times 10^7$		2-PrOH/ $\text{CCl}_4$	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 50% $\text{CCl}_4$ .	87A173
		$2.9 \times 10^7$		2-PrOH/ $\text{CCl}_4$	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ .	87A173
		$7.2 \times 10^7$		2-PrOH/ Water/ $\text{CCl}_4$	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 60% 2-PrOH, and 10% $\text{CCl}_4$ .	87A173
		$6.7 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 33% 2-PrOH, and 0.5% $\text{CCl}_4$ .	87A173
		$1.0 \times 10^9$		Water/ 2-PrOH	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 11% 2-PrOH, and 0.1% $\text{CCl}_4$ .	87A173
		$5.7 \times 10^8$	5.4	Water/ 2-PrOH	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CCl}_4$ .	87A480
		$1.5 \times 10^9$	5.6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and carbon tetrachloride.	88A364
<b>7.42.24 Cholesterol</b>							
	$\text{CCl}_3\text{OO}\cdot + \text{C}_{27}\text{H}_{46}\text{O} \rightarrow$	$\sim 6 \times 10^5$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% $\text{CCl}_4$ , 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ and $0.5-1 \times 10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester; rel. to $k(\text{CCl}_3\text{OO}\cdot + \text{DPDMEFe}^{III}) = 2.5 \times 10^9$ .	85A341
<b>7.42.25 Cyclohexane</b>							
	$\text{CCl}_3\text{OO}\cdot + c\text{-C}_6\text{H}_{12} \rightarrow$	$1 \times 10^3$		$\text{CCl}_4$	p.r.	C.k. in air-satd. $\text{CCl}_4$ soln. contg. cyclohexane; rel. to $k(\text{CCl}_3\text{OO}\cdot + \text{ZnTPP(py)} = 3.5 \times 10^7$ .	87A070

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxyl—Continued</b>							
<b>7.42.26 Cyclohexene</b>							
$\text{CCl}_3\text{OO}\cdot + c\text{-C}_6\text{H}_{10} \rightarrow$	$1 \times 10^5$			$\text{CCl}_4$	p.r.	C.k. in air-satd. $\text{CCl}_4$ soln. contg. cyclohexene; rel. to $k(\text{CCl}_3\text{OO}\cdot + \text{GaTPP}) = 1.5 \times 10^8$ .	87A070
<b>7.42.27 2'-Deoxyadenosine 5'-monophosphate</b>							
$\text{CCl}_3\text{OO}\cdot + \text{dAMP} \rightarrow$	$<1 \times 10^5$	7	Water/ 2-PrOH		p.r.		87C024
<b>7.42.28 Deoxyguanosine 5'-monophosphate</b>							
$\text{CCl}_3\text{OO}\cdot + \text{dGMP} \rightarrow$	$\sim 6 \times 10^5$	7	Water/ 2-PrOH		p.r.		87C024
<b>7.42.29 1,4-Diazabicyclo[2.2.2]octane</b>							
$\text{CCl}_3\text{OO}\cdot + \text{DABCO} \rightarrow \text{CCl}_3\text{OO}^- + \text{DABCO}\cdot^+$	$1.2 \times 10^7$			Water/ tert-BuOH	p.r.	P.b.k. at 270 and 460 nm in air-satd. soln. contg. 40% <i>tert</i> -BuOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ .	81A036
<b>7.42.30 9-Diazofluorene</b>							
$\text{CCl}_3\text{OO}\cdot + \text{C}_{13}\text{H}_8\text{N}_2 \rightarrow$	$1.2 \times 10^7$			Water/ 2-PrOH/ Acetone	p.r.	C.k. in air-satd. soln. contg. 33% 2-PrOH and 16% acetone; rel. to $k(\text{CCl}_3\text{OO}\cdot + \text{ABTS}) = 1.2 \times 10^9$ .	84A266
<b>7.42.31 2,6-Di-<i>tert</i>-butyl-4-methylphenol</b>							
$\text{CCl}_3\text{OO}\cdot + \text{DTBMPHOH} \rightarrow \text{DTBMPHO}^- + \text{CCl}_3\text{OOH}$	$6.1 \times 10^6$			$\text{CCl}_4$	p.r.	P.b.k. in air-satd. soln.	82A452
<b>7.42.32 2,4-Di-<i>tert</i>-butylphenol</b>							
$\text{CCl}_3\text{OO}\cdot + [(\text{CH}_3)_3\text{C}]_2\text{C}_6\text{H}_3\text{OH} \rightarrow [(\text{CH}_3)_3\text{C}]_2\text{C}_6\text{H}_3\text{O}^- + \text{CCl}_3\text{OOH}$	$2.7 \times 10^6$			$\text{CCl}_4$	p.r.	P.b.k. in air-satd. soln.	82A452
<b>7.42.33 2,3-Dimethyl-4-dimethylamino-1-phenyl-3-pyrazolin-5-one</b>							
$\text{CCl}_3\text{OO}\cdot + \text{AP} \rightarrow \text{CCl}_3\text{OO}^- + \text{AP}\cdot^+$	$4.9 \times 10^8$	~6	Water		p.r.	P.b.k. in air-satd. soln. contg. <i>tert</i> -BuOH and $\text{CCl}_4$ .	88A305
<b>7.42.34 2,3-Dimethylindole</b>							
$\text{CCl}_3\text{OO}\cdot + 2,3\text{-Me}_2\text{InH} \rightarrow$	$1.2 \times 10^9$			Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ ; reaction mainly by radical addn.; one-electron oxidation is 32% in neutral, 28% in basic, 89% in acidic soln.	89A208
<b>7.42.35 2,3-Dimethyl-1-phenyl-3-pyrazolin-5-one</b>							
$\text{CCl}_3\text{OO}\cdot + \text{AT} \rightarrow$	$\sim 6$	Water			p.r.	No reaction obs.; air-satd. soln. contg. <i>tert</i> -BuOH and $\text{CCl}_4$ .	88A305
<b>7.42.36 3,4-Dimethyl-2-pyrazolin-5-one</b>							
$\text{CCl}_3\text{OO}\cdot + \text{DMPZO} \rightarrow [\text{DMPZO}\cdot] + \text{CCl}_3\text{OOH}$	$4.3 \times 10^7$	7.0	Water		p.r.	P.b.k. in air-satd. soln. contg. $\text{CCl}_4$ ; $pK_a = 8.9$ .	85A390
<b>7.42.37 Dimethyl sulfide</b>							
$\text{CCl}_3\text{OO}\cdot + \text{CH}_3\text{SCH}_3 \rightarrow \text{CCl}_3\text{OO}^- + (\text{CH}_3)_2\text{S}\cdot^+$	$1.3 \times 10^8$			Water/ tert-BuOH	p.r.	P.b.k. at 465 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH, $3 \times 10^{-2}$ mol $\text{L}^{-1}$ $\text{CCl}_4$ and $10^{-4}$ – $10^{-2}$ mol $\text{L}^{-1}$ sulfide.	85A123
<b>7.42.38 2,5-Diphenylfuran</b>							
$\text{CCl}_3\text{OO}\cdot + \text{DFF} \rightarrow \text{CCl}_3\text{OO}^- + \text{DFF}\cdot^+$	$6 \times 10^7$			Water/ tert-BuOH	p.r.	P.b.k. at 410 and 465 nm in air-satd. soln. contg. 40% <i>tert</i> -BuOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ .	81A036
<b>7.42.39 Ethyl 2-hydroxyethyl sulfide</b>							
$\text{CCl}_3\text{OO}\cdot + \text{C}_2\text{H}_5\text{SCH}_2\text{CH}_2\text{OH} \rightarrow \text{CCl}_3\text{OO}^- + [\text{C}_2\text{H}_5\text{SCH}_2\text{CH}_2\text{OH}]\cdot^+$	$4.0 \times 10^7$			Water/ 2-PrOH	p.r.	P.b.k. at 480 nm in air-satd. soln. contg. 30% 2-PrOH, $3 \times 10^{-2}$ mol $\text{L}^{-1}$ $\text{CCl}_4$ and $10^{-4}$ – $10^{-2}$ mol $\text{L}^{-1}$ sulfide.	85A123

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxyl—Continued</b>							
<b>7.42.40 1-Ethylthio-3-iodopropane</b>							
$\text{CCl}_3\text{OO}\cdot + \text{C}_2\text{H}_5\text{S}(\text{CH}_2)_3\text{I} \rightarrow$ $[\text{C}_2\text{H}_5\text{S}(\text{CH}_2)_3\text{I}]^+ + \text{CCl}_3\text{OO}^-$	$1.4 \times 10^8$	4	Water/ 2-PrOH	p.r.	P.b.k. in air-satd. soln. contg. 30% 2-PrOH and 0.1% $\text{CCl}_4$ .	88B057	
<b>7.42.41 Glutathione</b>							
$\text{CCl}_3\text{OO}\cdot + \text{GSH} \rightarrow$	$3 \times 10^6$	7	Water	p.r.	C.k.; rel. to $k(\text{CCl}_3\text{OO}\cdot + \text{TrpH})$ $= 8.9 \times 10^7$ .	88A251	
<b>7.42.42 Hexamethylbenzene</b>							
$\text{CCl}_3\text{OO}\cdot + \text{C}_6(\text{CH}_3)_6 \rightarrow \text{CCl}_3\text{OOH} +$ $\text{C}_6(\text{CH}_3)_5(\text{CH}_2)$	$7.5 \times 10^4$		$\text{CCl}_4$	p.r.	C.k. in air-satd. $\text{CCl}_4$ soln. contg. hexamethylbenzene; rel. to $k(\text{CCl}_3\text{OO}\cdot + \text{GaTPP}) = 1.5 \times 10^8$ .	87A070	
<b>7.42.43 Histidine</b>							
$\text{CCl}_3\text{OO}\cdot + \text{His} \rightarrow$	$2.5 \times 10^6$	7	Water	p.r.	C.k.; rel. to $k(\text{CCl}_3\text{OO}\cdot + \text{TrpH})$ $= 8.9 \times 10^7$ .	88A251	
<b>7.42.44 Hydroquinone</b>							
$\text{CCl}_3\text{OO}\cdot + 1,4-\text{C}_6\text{H}_4(\text{OH})_2 \rightarrow$ $\text{CCl}_3\text{OOH} + 4-\text{OC}_6\text{H}_4\text{O}\cdot + \text{H}^+$	$1.0 \times 10^7$	7	Water/ 2-PrOH	p.r.	P.b.k. at 430 nm in air-satd. soln. contg. 40% 2-PrOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ .	86A291	
	$6.5 \times 10^6$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ .	89A019	
	$4.1 \times 10^7$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 25% 2-PrOH and 4% $\text{CCl}_4$ .	89A019	
<b>7.42.45 6-Hydroxy-1,4-dimethylcarbazole</b>							
$\text{CCl}_3\text{OO}\cdot + \text{C}_{14}\text{H}_{13}\text{NO} \rightarrow$	$8.3 \times 10^8$		Water	p.r.			83A392
<b>7.42.46 6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion</b>							
$\text{CCl}_3\text{OO}\cdot + \text{TxOH}^- \rightarrow \text{CCl}_3\text{OO}^- +$ $\text{HTxO}\cdot$	$5.8 \times 10^8$	~4	Water	p.r.	P.b.k. at 420 nm in air/ $\text{CCl}_4$ satd. soln.	89A384	
	$3.7 \times 10^8$	7	Water/ tert-BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% tert-BuOH, $10^{-2}$ mol $\text{L}^{-1}$ $\text{CCl}_4$ and 0.01 mol $\text{L}^{-1}$ Trolox C.	88A436	
	$3.2 \times 10^8$	~4	Water/ MeOH	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 10%, 25% and 50% MeOH, respectively, and 1% $\text{CCl}_4$ .	89A384	
	$1.3 \times 10^8$	~4	MeOH/ Water	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 75% MeOH and 1% $\text{CCl}_4$ .	89A384	
	$3.2 \times 10^8$	~4	Water/ 2-PrOH	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 20% and 50% 2-PrOH, respectively, and 1% $\text{CCl}_4$ .	89A384	
	$1.6 \times 10^8$						
	$4.8 \times 10^7$	~4	2-PrOH/ Water	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 80% 2-PrOH and 1% $\text{CCl}_4$ .	89A384	
	$6.2 \times 10^8$	~4	Water/ Dioxane	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 10%, 30% and 50% dioxane, respectively, and 1% $\text{CCl}_4$ .	89A384	
	$4.0 \times 10^8$						
	$2.6 \times 10^8$						
	$7 \times 10^7$	~4	Dioxane/ Water	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 90% dioxane and 1% $\text{CCl}_4$ .	89A384	
	$2.7 \times 10^8$		Formamide	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 1% $\text{CCl}_4$ .	89A384	
	$8.0 \times 10^7$		Pyridine	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 10% $\text{CCl}_4$ .	89A384	
	$4.6 \times 10^7$		Ethylene glycol	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 3% $\text{CCl}_4$ .	89A384	

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	p.H	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxy—Continued</b>							
<b>7.42.46 6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion—Continued</b>							
		$4.6 \times 10^7$		$\text{CCl}_4$	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 5% acetone.	89A384
		$3.1 \times 10^7$		$\text{MeOH}$	p.r.	P.b.k. at 420 nm in air-satd. soln. 1% $\text{CCl}_4$ .	89A384
		$2.1 \times 10^7$		2-PrOH	p.r.	P.b.k. at 420 nm in air-satd. soln. 10% $\text{CCl}_4$ .	89A384
		$2.1 \times 10^7$		<i>tert</i> -BuOH	p.r.	P.b.k. at 420 nm in air-satd. soln. 10% $\text{CCl}_4$ .	89A384
		$2.1 \times 10^7$		Dimethyl-formamide	p.r.	P.b.k. at 420 nm in air-satd. soln. 10% $\text{CCl}_4$ .	89A384
		$1.5 \times 10^7$		Dioxane	p.r.	P.b.k. at 420 nm in air-satd. soln. 10% $\text{CCl}_4$ .	89A384
		$1.4 \times 10^7$		Ethyl ether	p.r.	P.b.k. at 420 nm in air-satd. soln. 10% $\text{CCl}_4$ .	89A384
		$1.2 \times 10^7$		$\text{CH}_3\text{CN}$	p.r.	P.b.k. at 420 nm in air-satd. soln. 10% $\text{CCl}_4$ .	89A384
		$9.2 \times 10^6$		Acetone	p.r.	P.b.k. at 420 nm in air-satd. soln. 10% $\text{CCl}_4$ .	89A384
<b>7.42.47 5-Hydroxytryptophan, conjugate base</b>							
	$\text{CCl}_3\text{OO}^\cdot + 5\text{-OTrpH} \rightarrow \text{CCl}_3\text{OO}^- + \text{OTrpH}$	$6.0 \times 10^8$	13	Water/ 2-PrOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 40% 2-PrOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ .	80A291
<b>7.42.48 5-Hydroxytryptophan</b>							
	$\text{CCl}_3\text{OO}^\cdot + 5\text{-OHTrpH} \rightarrow$	$1.5 \times 10^8$	7	Water/ 2-PrOH	p.r.		87C024
<b>7.42.49 Indole</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{InH} \rightarrow$	$1.0 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ ; reaction mainly by radical addn.; one-electron oxidation is 15% in neutral, 17% in basic, 60% in acidic soln.	89A208
<b>7.42.50 Isobarbiturate ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{IBO}^- \rightarrow$	$6.5 \times 10^7$	7	Water/ 2-PrOH	p.r.		87C024
<b>7.42.51 Linoleic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{LH} \rightarrow$	$3.9 \times 10^6$		Water/ <i>tert</i> -BuOH	p.r.	C.k. in air-satd. soln. contg. 50% <i>tert</i> -BuOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ ; rel. to $k(\text{CCl}_3\text{OO}^\cdot + \text{ABTS}) = 1.9 \times 10^9$ .	83A364
		$5 \times 10^5$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% $\text{CCl}_4$ , 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ , and $0.5-1 \times 10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester; rel. to $k(\text{CCl}_3\text{OO}^\cdot + \text{DPDMEFc}^{III}) = 2.5 \times 10^8$ .	85A341
<b>7.42.52 Linolenic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3(\text{CH}_2\text{CH}=\text{CH})_3(\text{CH}_2)_7\text{CO}_2\text{H} \rightarrow$	$7.0 \times 10^6$		Water/ <i>tert</i> -BuOH	p.r.	C.k. in air-satd. soln. contg. 50% <i>tert</i> -BuOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ ; rel. to $k(\text{CCl}_3\text{OO}^\cdot + \text{ABTS}) = 1.9 \times 10^9$ .	83A364

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxy—Continued</b>							
<b>7.42.52 Linolenic acid</b> —Continued							
		$1.1 \times 10^6$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% $\text{CCl}_4$ , 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ , and $0.5-1 \times 10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{III}$ deuteroporphyrin dimethyl ester; rel. to $k(\text{CCl}_3\text{OO}^- + \text{DPDMEFe}^{III}) = 2.5 \times 10^8$ .	85A341
<b>7.42.53 Methionine</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{Met} \rightarrow$	$2.9 \times 10^7$	10	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 30% 2-PrOH, $3 \times 10^{-2}$ mol $\text{L}^{-1}$ $\text{CCl}_4$ and $10^{-4}-10^{-2}$ mol $\text{L}^{-1}$ methionine; rel. to $k(\text{CCl}_3\text{OO}^- + \text{ABTS}) = 1.9 \times 10^9$ .	85A123
<b>7.42.54 4-Methoxybenzenethiol</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3\text{OC}_6\text{H}_4\text{SH} \rightarrow$ $\text{CCl}_3\text{OOH} + \text{CH}_3\text{OC}_6\text{H}_4\text{S}^\cdot$	$5 \times 10^7$	3-6	Water/ 2-PrOH	p.r.	P.b.k. at 530 nm in air-satd. soln. contg. 23% 2-PrOH, 0.7 mol $\text{L}^{-1}$ acetone and $2.0 \times 10^{-2}$ mol $\text{L}^{-1}$ $\text{CCl}_4$ ; pH dependent; $\text{pK}_a$ of thiol = 6.8.	86A550
<b>7.42.55 4-Methoxybenzenethiolate ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3\text{OC}_6\text{H}_4\text{S}^- \rightarrow$ $\text{CCl}_3\text{OO}^- + \text{CH}_3\text{OC}_6\text{H}_4\text{S}^\cdot$	$8.2 \times 10^8$	10- 12	Water/ 2-PrOH	p.r.	P.b.k. at 530 nm in air-satd. soln. contg. 23% 2-PrOH, 0.7 mol $\text{L}^{-1}$ acetone and $2.0 \times 10^{-2}$ mol $\text{L}^{-1}$ $\text{CCl}_4$ ; pH dependent.	86A550
<b>7.42.56 4-Methoxyphenol</b>							
	$\text{CCl}_3\text{OO}^\cdot + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{OH} \rightarrow$ $\text{CCl}_3\text{OOH} + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{O}^\cdot$	$3.4 \times 10^6$	7	Water/ 2-PrOH	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 40% 2-PrOH and 0.1 mol $\text{L}^{-1}$ $\text{CCl}_4$ .	86A291
		$<8 \times 10^6$		$\text{CCl}_4$	p.r.	P.b.k. at 420 nm in oxygen-satd. $\text{CCl}_4$ soln.	84A090
<b>7.42.57 4-Methoxyphenoxide ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{O}^- \rightarrow$ $\text{CCl}_3\text{OO}^- + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{O}^\cdot$	$8.2 \times 10^8$	11- 12	Water	p.r.	P.b.k. at 390-430 nm in air-satd. soln. contg. 5% acetone and 5% 2-PrOH, satd. with $\text{CCl}_4$ .	89A384
<b>7.42.58 1-Methylindole</b>							
	$\text{CCl}_3\text{OO}^\cdot + 1\text{-MeInH} \rightarrow$	$1.1 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ ; reaction is 51% one-electron oxidation as well as radical addn.	89A208
<b>7.42.59 2-Methylindole</b>							
	$\text{CCl}_3\text{OO}^\cdot + 2\text{-MeInH} \rightarrow$	$6 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ ; reaction is mainly by radical addn.; one-electron oxidation is 26% in neutral, 27% in basic, and 58% in acidic soln.	89A208
<b>7.42.60 3-Methylindole</b>							
	$\text{CCl}_3\text{OO}^\cdot + 3\text{-MeInH} \rightarrow$	$9 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ ; reaction is mainly by radical addn.; one-electron oxidation is 17% in neutral or basic, and 77% in acidic soln.	89A208
<b>7.42.61 Methyl 6-(methylthio)norbornane-2-carboxylate</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3\text{S}(\text{NB})\text{CO}_2\text{CH}_3 \rightarrow$ $\text{CCl}_3\text{OO}^- + \text{R}_2\text{S}^\cdot$	$2 \times 10^7$		Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 490 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and 1% $\text{CCl}_4$ .	87B097

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxyl—Continued</b>							
<b>7.42.62 Methyl 8-(methylthio)proponate</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3\text{SCH}_2\text{CH}_2\text{CO}_2\text{CH}_3 \rightarrow$	$7 \times 10^7$		Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 490 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and 1% $\text{CCl}_4$ .	87B097
	$\text{CCl}_3\text{OO}^- + [\text{CH}_3\text{SCH}_2\text{CH}_2\text{CO}_2\text{CH}_3]^\cdot+$						
<b>7.42.63 4-Methylphenoxide ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + 4\text{-CH}_3\text{C}_6\text{H}_4\text{O}^- \rightarrow$	$2.2 \times 10^8$	11-	Water	p.r.	P.b.k. at 390-430 nm in air-satd. soln. contg. 5% acetone and 5% 2-PrOH, satd. with $\text{CCl}_4$ ; $k_{\text{H}}/k_{\text{D}} = 2.0$ .	89A384
	$\text{CCl}_3\text{OO}^- + 4\text{-CH}_3\text{C}_6\text{H}_4\text{O}^\cdot$		12				
<b>7.42.64 8-(Methylthio)norbornane-2-carboxylic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3\text{S}(\text{NB})\text{CO}_2\text{H} \rightarrow$	$3 \times 10^8$		Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 30% <i>tert</i> -BuOH and 1% $\text{CCl}_4$ .	87B097
	$\text{CCl}_3\text{OO}^- + \text{R}_2\text{S}^\cdot+$						
<b>7.42.65 8-(Methylthio)propanoic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3\text{SCH}_2\text{CH}_2\text{CO}_2\text{H} \rightarrow$	$1 \times 10^8$		Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 30% <i>tert</i> -BuOH and 1% $\text{CCl}_4$ .	87B097
	$\text{CCl}_3\text{OO}^- + \text{R}_2\text{S}^\cdot+$						
<b>7.42.66 1-Methyluracil</b>							
	$\text{CCl}_3\text{OO}^\cdot + 1\text{-MeU} \rightarrow$	$<1 \times 10^5$	7	Water/ 2-PrOH	p.r.		87C024
<b>7.42.67 Metiazinic acid, conjugate base</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{MZ}^- \rightarrow \text{CCl}_3\text{OO}^- +$	$1.3 \times 10^9$		Water/ 2-PrOH/ Acetone	p.r.	P.b.k. at 530 nm in air-satd. soln. contg. 30% 2-PrOH, 10% acetone, and $0.04 \text{ mol L}^{-1} \text{ CCl}_4$ .	83G216
	$\text{MZ}^\cdot$						
<b>7.42.68 Oleic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{CO}_2\text{H} \rightarrow$	$1.7 \times 10^6$		Water/ <i>tert</i> -BuOH	p.r.	C.k. in air-satd. soln. contg. 50% <i>tert</i> -BuOH and $0.1 \text{ mol L}^{-1} \text{ CCl}_4$ ; rel. to $k(\text{CCl}_3\text{OO}^\cdot + \text{ABTS}) = 1.9 \times 10^9$ .	83A364
		$4 \times 10^5$	1	Water/ 2-PrOH	p.r.	C.k. in air-satd. soln. contg. 50% 2-PrOH, 2-3% $\text{CCl}_4$ , $0.1 \text{ mol L}^{-1} \text{ HClO}_4$ , and $0.5-1 \times 10^{-4} \text{ mol L}^{-1} \text{ Fe}^{III}$ deuteroporphyrin dimethyl ester; rel. to $k(\text{CCl}_3\text{OO}^\cdot + \text{DPDMEFe}^{III}) = 2.5 \times 10^8$ .	85A341
<b>7.42.69 Phenol</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{C}_6\text{H}_5\text{OH} \rightarrow \text{CCl}_3\text{OOH} +$	$<1 \times 10^5$	7	Water/ 2-PrOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CCl}_4$ .	87A480
	$\text{C}_6\text{H}_5\text{O}^\cdot$						
		$<7.5 \times 10^4$		$\text{CCl}_4$	p.r.	P.b.k. at 400 nm in oxygen-satd. $\text{CCl}_4$ soln.	84A090
<b>7.42.70 Phenoxide ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{C}_6\text{H}_5\text{O}^- \rightarrow \text{CCl}_3\text{OO}^- +$	$2.3 \times 10^8$	12	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and $\text{CCl}_4$ .	80A053
	$\text{C}_6\text{H}_5\text{O}^\cdot$						
		$2.0 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ .	89A019
		$9.6 \times 10^6$	11-	Water	p.r.	P.b.k. at 390-430 nm in air-satd. soln. contg. 5% acetone and 5% 2-PrOH, satd. with $\text{CCl}_4$ .	89A384
			12				
<b>7.42.71 Promethazine, conjugate acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{PZH}^\cdot \rightarrow \text{CCl}_3\text{OO}^- +$	$6.0 \times 10^8$	6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 510 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH, $0.01 \text{ mol L}^{-1}$ phosphate buffer and $\text{CCl}_4$ .	80A053
	$\text{PZ}^\cdot+$	$4.5 \times 10^8$	7				
		$1.4 \times 10^8$	4	Water	p.r.	P.b.k. at 510 nm in air-satd. soln. contg. 5% acetone and 5% 2-PrOH, satd. with $\text{CCl}_4$ ; $k_{\text{H}}/k_{\text{D}} = 1.8$ .	89A384

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	<i>k</i> (L mol <sup>-1</sup> s <sup>-1</sup> )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxyl—Continued</b>							
<b>7.42.72 2-Propanol</b>							
	$\text{CCl}_3\text{OO}^\cdot + (\text{CH}_3)_2\text{CHOH} \rightarrow$	$<7 \times 10^3$		Water/ 2-PrOH	p.r.	Competition with p.b.k. at 520 nm of tryptophan radical in air-satd. 50% 2-PrOH soln. contg. 0.1 mol L <sup>-1</sup> $\text{CCl}_4$ and tryptophan.	81A058
<b>7.42.73 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CCl}_3\text{OO}^\cdot + (\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow$	$2.0 \times 10^7$	5-6	Water/ 2-PrOH	p.r.	P.b.k. in air-satd. soln. contg. 10% <i>tert</i> -BuOH and carbon tetrachloride.	88A364
	$\text{CCl}_3\text{OOH} + \cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$1.3 \times 10^9$	8-9	<i>tert</i> -BuOH			83A392
<b>7.42.74 Pyridine</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{py} \rightarrow$	$7 \times 10^3$		$\text{CCl}_4$	p.r.	C.k. in air-satd. $\text{CCl}_4$ soln. contg. pyridine; rel. to $k(\text{CCl}_3\text{OO}^\cdot + \text{ZnTPP(py)}) = 3.5 \times 10^7$ .	87A070
<b>7.42.75 N,N,N',N'-Tetramethyl-p-phenylenediamine</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{TMFD} \rightarrow \text{CCl}_3\text{OOH} + \text{TMFD}^\cdot + \text{OH}^-$	$1.7 \times 10^9$	~8	Water	p.r.	P.b.k. at 565 nm in Ar/O <sub>2</sub> (4:1) satd. soln. contg. $\text{CCl}_4$ .	89A105
		$7.8 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ .	89A019
		$2.1 \times 10^9$		$\text{CCl}_4$	p.r.	P.b.k. in $\text{CCl}_4$ soln. satd. with oxygen.	84A090
<b>7.42.76 3,3'-Thiodipropionic acid</b>							
	$\text{CCl}_3\text{OO}^\cdot + 5(\text{CH}_2\text{CH}_2\text{CO}_2\text{H})_2 \rightarrow$	$<1 \times 10^6$		Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in soln. contg. 30% <i>tert</i> -BuOH and 1% $\text{CCl}_4$ .	87B097
<b>7.42.77 α-Tocopherol</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{ArOH} \rightarrow \text{ArO}^\cdot + \text{CCl}_3\text{OO}^-$	$5 \times 10^8$		2-PrOH/ Water/ Acetone	p.r.	P.b.k. in air-satd. soln. contg. 50% 2-PrOH, 10% acetone and 0.04 mol L <sup>-1</sup> $\text{CCl}_4$ .	79A084
		$1.8 \times 10^8$		$\text{CCl}_4$	p.r.	P.b.k. in air-satd. $\text{CCl}_4$ soln.	82A452 82Z341
<b>7.42.78 2,4,6-Trimethylphenoxyde ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + 2,4,6\text{-Me}_3\text{C}_6\text{H}_2\text{O}^- \rightarrow \text{CCl}_3\text{OOH} + 2,4,6\text{-Me}_3\text{C}_6\text{H}_2\text{O}^\cdot$	$7.6 \times 10^8$		Water/ 2-PrOH	p.r.	P.b.k. in oxygen-satd. soln. contg. 48% 2-PrOH and 4% $\text{CCl}_4$ .	89A019
<b>7.42.79 Trypsin</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{Trypt} \rightarrow$	$3 \times 10^8$	7	Water	p.r.		88A251
<b>7.42.80 Tryptophan</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{TrpH} \rightarrow$	$8.9 \times 10^7$	7	Water	p.r.		88A251
		$8.5 \times 10^7$	7	Water/ 2-PrOH	p.r.	P.b.k. at 520 nm in air-satd. 50% 2-PrOH soln. contg. 0.1 mol L <sup>-1</sup> $\text{CCl}_4$ ; major product is radical adduct; one-electron oxidation is 24% in basic soln. [89A208].	81A058
<b>7.42.81 Tryptophyltyrosine</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{TrpHTyrOH} \rightarrow$	$1.7 \times 10^7$		2-PrOH	p.r.	P.b.k. at 450 nm in air-satd. 2-PrOH contg. acetone and $\text{CCl}_4$	86A110
<b>7.42.82 Tyrosine</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{TyrOH} \rightarrow$	$<1 \times 10^4$	7	Water	p.r.		88A251
<b>7.42.83 Tyrosine, negative ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{TyrO}^- \rightarrow \text{CCl}_3\text{OO}^- + \text{TyrO}^\cdot$	$1.6 \times 10^8$	1.2	Water/ 2-PrOH/ Acetone	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 15% 2-PrOH, 7% acetone, 0.01 mol L <sup>-1</sup> $\text{CCl}_4$ .	78B128
		$1.3 \times 10^8$	1.2	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 400 nm in air-satd. soln. contg. 30% <i>tert</i> -BuOH and $\text{CCl}_4$ .	80A053

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.42 Trichloromethylperoxy</b> —Continued							
<b>7.42.84 Urate ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{UrO}^- \rightarrow \text{CCl}_3\text{OO}^- + \text{UrO}^\cdot$	$1.4 \times 10^9$ $1.3 \times 10^9$ $1.2 \times 10^9$	13	Water/ MeOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 10%, 25% and 50% MeOH, respectively, and 1% $\text{CCl}_4$ .	89A384
		$1.2 \times 10^9$	13	MeOH/ Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 80% MeOH and 1% $\text{CCl}_4$ .	89A384
		$2.7 \times 10^8$	13	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 40% 2-PrOH and 0.1 mol $\text{L}^{-1} \text{CCl}_4$ .	86A291
		$3.0 \times 10^8$	7	Water/ 2-PrOH	p.r.		87C024
		$1.5 \times 10^9$ $7.0 \times 10^8$ $1.9 \times 10^8$	13	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 10%, 28% and 50% 2-PrOH, respectively, and 1% $\text{CCl}_4$ .	89A384
		$1.2 \times 10^8$	13	2-PrOH/ Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 67% 2-PrOH and 10% $\text{CCl}_4$ .	89A384
<b>7.42.85 Xanthine, negative ion</b>							
	$\text{CCl}_3\text{OO}^\cdot + \text{XO}^- \rightarrow \text{CCl}_3\text{OO}^- + \text{XO}^\cdot$	$1.1 \times 10^8$	13	Water/ 2-PrOH	p.r.	P.b.k. at 350 nm in air-satd. soln. contg. 40% 2-PrOH and 0.1 mol $\text{L}^{-1} \text{CCl}_4$ .	86A291
<b>7.43 1,2,2-Trichloroethylperoxy</b>							
<b>7.43.1 Bilirubin dianion</b>							
	$\text{CHCl}_2\text{CHClOO}^\cdot + \text{BR}^{2-} \rightarrow \text{CHCl}_2\text{CHClOO}^- + \text{BR}^\cdot$	$2.6 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol $\text{L}^{-1}$ <i>tert</i> -BuOH, $\text{CHCl}_2\text{CHCl}_2$ and bilirubin.	89A901
<b>7.44 Pentachloroethylperoxy</b>							
<b>7.44.1 Ascorbate ion</b>							
	$\text{CCl}_3\text{CCl}_2\text{OO}^\cdot + \text{AH}^- \rightarrow \text{CCl}_3\text{CCl}_2\text{OOH} + \text{A}^\cdot$	$>4 \times 10^7$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% <i>tert</i> -BuOH and hexachloroethane.	88A364
<b>7.44.2 2,2'-Azinobis(8-ethylbenzothiazoline-6-sulfonate ion)</b>							
	$\text{CCl}_3\text{CCl}_2\text{OO}^\cdot + \text{ABTS} \rightarrow \text{CCl}_3\text{CCl}_2\text{OO}^- + \text{ABTS}^\cdot$	$4.3 \times 10^8$	~7	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% <i>tert</i> -BuOH and hexachloroethane.	88A364
<b>7.44.3 Chlorpromazine, conjugate acid</b>							
	$\text{CCl}_3\text{CCl}_2\text{OO}^\cdot + \text{CZH}^+ \rightarrow \text{CZ}^\cdot + \text{CCl}_3\text{CCl}_2\text{OO}^-$	$4.2 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% <i>tert</i> -BuOH and hexachloroethane.	88A364
		$8.6 \times 10^7$		2-PrOH/ Water/ $\text{CCl}_3\text{CCl}_3$	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 60% 2-PrOH and 10% $\text{CCl}_3\text{CCl}_3$ .	87A173
<b>7.44.4 Promethazine, conjugate acid</b>							
	$\text{CCl}_3\text{CCl}_2\text{OO}^\cdot + \text{PZH}^+ \rightarrow \text{CCl}_3\text{CCl}_2\text{OO}^- + \text{PZ}^\cdot$	$1.7 \times 10^8$	5-6	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% <i>tert</i> -BuOH and hexachloroethane.	88A364
<b>7.44.5 Propyl 3,4,5-trihydroxybenzoate</b>							
	$\text{CCl}_3\text{CCl}_2\text{OO}^\cdot + (\text{HO})_3\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7 \rightarrow \text{CCl}_3\text{CCl}_2\text{OOH} + \cdot\text{O}(\text{OH})(\text{O}^-)\text{C}_6\text{H}_2\text{CO}_2\text{C}_3\text{H}_7$	$3.2 \times 10^8$	8-9	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. in air-satd. soln. contg. 40% <i>tert</i> -BuOH and hexachloroethane.	88A364

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.45 Bromomethylperoxy</b>							
7.45.1	Ascorbate ion						
	$\text{CH}_2\text{BrOO}\cdot + \text{AH}^- \rightarrow \text{CH}_2\text{BrOOH} + \text{A}^-$	$1.5 \times 10^8$	8	Water	p.r.	P.b.k at 360 nm in air-satd. soln. contg. 5% 2-PrOH and 0.02% $\text{CH}_2\text{Br}_2$ .	89A165
<b>7.45.2 Bilirubin dianion</b>							
	$\text{CH}_2\text{BrOO}\cdot + \text{BR}^{2-} \rightarrow \text{CH}_2\text{BrOO}^- + \text{BR}^-$	$3.8 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. $2.0 \text{ mol L}^{-1}$ <i>tert</i> -BuOH, $2.8 \times 10^{-2} \text{ mol L}^{-1}$ $\text{CH}_2\text{Br}_2$ and $0.6-1.0 \times 10^{-3} \text{ mol L}^{-1}$ bilirubin.	89A901
<b>7.46 Dibromomethylperoxy</b>							
7.46.1	Bilirubin dianion						
	$\text{CHBr}_2\text{OO}\cdot + \text{BR}^{2-} \rightarrow \text{CHBr}_2\text{OO}^- + \text{BR}^-$	$5.9 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. $2.0 \text{ mol L}^{-1}$ <i>tert</i> -BuOH, $\text{CHBr}_3$ and bilirubin.	89A901
<b>7.47 Tribromomethylperoxy</b>							
7.47.1	Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol) <sub>2</sub>						
	$\text{CBr}_3\text{OO}\cdot + \text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2 + \text{DPFe}^{\text{III}} \rightarrow \text{CBr}_3\text{OO}^- + [\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2]^+$	$2.8 \times 10^8$	~1	Water/ 2-PrOH	p.r.	P.b.k. at 660 nm in air-satd. soln. contg. 50% 2-PrOH, $10^{-2} \text{ mol L}^{-1}$ $\text{CBr}_4$ and $0.1 \text{ mol L}^{-1}$ $\text{HClO}_4$ .	87A232
7.47.2	Ascorbate ion						
	$\text{CBr}_3\text{OO}\cdot + \text{AH}^- \rightarrow \text{CBr}_3\text{OOH} + \text{A}^-$	$5.0 \times 10^8$	7	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 20% 2-PrOH and 0.01% $\text{CBr}_4$ .	89A165
		$2.1 \times 10^8$	7	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CBr}_4$ .	87A480
		$1.7 \times 10^8$	7	2-PrOH/ Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 70% 2-PrOH and 1% $\text{CBr}_4$ .	89A384
7.47.3	Bilirubin dianion						
	$\text{CBr}_3\text{OO}\cdot + \text{BR}^{2-} \rightarrow \text{CBr}_3\text{OO}^- + \text{BR}^-$	$3.2 \times 10^9$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. $2.0 \text{ mol L}^{-1}$ <i>tert</i> -BuOH, $\text{CBr}_4$ and bilirubin.	89A901
7.47.4	Chlorpromazine, conjugate acid						
	$\text{CBr}_3\text{OO}\cdot + \text{CZH}^+ \rightarrow \text{CZ}^+ + \text{CBr}_3\text{OO}^-$	$5.7 \times 10^7$		2-PrOH	p.r.	P.b.k. at 525 nm in air satd. soln. contg. 2% $\text{CBr}_4$ .	87A173
		$7.7 \times 10^8$	5.4	Water/ 2-PrOH	p.r.	P.b.k. at 525 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CBr}_4$ .	87A480
7.47.5	Hydroquinone						
	$\text{CBr}_3\text{OO}\cdot + 1,4-\text{C}_6\text{H}_4(\text{OH})_2 \rightarrow \text{CBr}_3\text{OO}^- + 4-\text{OC}_6\text{H}_4\text{O}\cdot + \text{H}^+$	$1.8 \times 10^7$	7	Water/ 2-PrOH	p.r.	P.b.k. at 430 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CBr}_4$ .	87A480
7.47.6	<i>o</i> -Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion						
	$\text{CBr}_3\text{OO}\cdot + \text{TxOH}^- \rightarrow \text{CBr}_3\text{OO}^- + \text{HTxO}\cdot$	$2.6 \times 10^8$	~4	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 50% 2-PrOH and 1% $\text{CBr}_4$ .	89A384
		$7.1 \times 10^8$	~4	Water/ MeOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 25% and 50% MeOH, respectively, and 1% $\text{CBr}_4$ .	89A384
		$4.6 \times 10^8$	~4	MeOH/ Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 75% MeOH and 1% $\text{CBr}_4$ .	89A384
		$1.4 \times 10^8$	~4	MeOH/ Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 1% $\text{CBr}_4$ .	89A384

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.47 Tribromomethylperoxy</b> —Continued							
<b>7.47.7 Linolenic acid</b>							
	$\text{CBr}_3\text{OO}^\cdot + \text{CH}_3(\text{CH}_2\text{CH}=\text{CH})_3(\text{CH}_2)_7\text{CO}_2\text{H} \rightarrow$	$1.2 \times 10^6$	1	Water/ 2-PrOH	p.r.	C.k.; obs. 700 nm buildup for $[\text{DPDMEFe}^{\text{III}}]^\cdot+$ in water contg. 50% 2-PrOH, $1 \times 10^{-4}$ mol $\text{L}^{-1}$ iron(III) porphyrin, and 0.04 mol $\text{L}^{-1}$ linolenic acid, 0.01 mol $\text{L}^{-1}$ $\text{CBr}_4$ and 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ ; rel. to $k(\text{CBr}_3\text{OO}^\cdot + \text{DPDMEFe}^{\text{III}}) = 2.8 \times 10^8$ .	87A232
<b>7.47.8 4-Methoxyphenol</b>							
	$\text{CBr}_3\text{OO}^\cdot + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{OH} \rightarrow$ $\text{CBr}_3\text{OO}^\cdot + \text{H}^+ + 4\text{-CH}_3\text{OC}_6\text{H}_4\text{O}^\cdot \rightarrow$	$9.5 \times 10^6$	7	Water/ 2-PrOH	p.r.	P.b.k. at 420 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CBr}_4$ .	87A480
<b>7.47.9 Urate ion</b>							
	$\text{CBr}_3\text{OO}^\cdot + \text{UrO}^- \rightarrow \text{CBr}_3\text{OO}^\cdot + \text{UrO}^\cdot$	$4.1 \times 10^8$	13	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CBr}_4$ .	87A480
		$2.5 \times 10^8$	13	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 50% 2-PrOH, 0.1 mol $\text{L}^{-1}$ KOH and 1% $\text{CBr}_4$ .	89A384
		$1.8 \times 10^8$	13	2-PrOH/ Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 70% 2-PrOH, 0.1 mol $\text{L}^{-1}$ KOH and 1% $\text{CBr}_4$ .	89A384
<b>7.47.10 Xanthine, negative ion</b>							
	$\text{CBr}_3\text{OO}^\cdot + \text{XO}^- \rightarrow \text{CBr}_3\text{OO}^\cdot + \text{XO}^\cdot$	$1.7 \times 10^8$	13	Water/ 2-PrOH	p.r.	P.b.k. at 350 nm in air-satd. soln. contg. 40% 2-PrOH and $\text{CBr}_4$ .	87A480
<b>7.48 Iodomethylperoxy</b>							
<b>7.48.1 Ascorbate ion</b>							
	$\text{CH}_2\text{IOO}^\cdot + \text{AH}^- \rightarrow \text{CH}_2\text{IOOH} + \text{AO}^\cdot$	$1.3 \times 10^8$	8	Water	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 5% 2-PrOH and 0.02% $\text{CH}_2\text{I}_2$ .	89A165
		$6.3 \times 10^7$	8	Water/ 2-PrOH	p.r.	P.b.k. at 360 nm in air-satd. soln. contg. 40% 2-PrOH and 0.06% $\text{CH}_2\text{I}_2$ .	89A165
<b>7.48.2 Bilirubin dianion</b>							
	$\text{CH}_2\text{IOO}^\cdot + \text{BR}^{2-} \rightarrow \text{CH}_2\text{IOO}^\cdot + \text{BR}^\cdot$	$1.9 \times 10^8$	11	Water/ <i>tert</i> -BuOH	p.r.	P.b.k. at 590 nm in aerated soln. contg. 2.0 mol $\text{L}^{-1}$ <i>tert</i> -BuOH, $\text{CH}_2\text{I}_2$ and bilirubin.	89A901
<b>7.49 Peroxyl radicals from linoleate</b>							
<b>7.49.1 Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub></b>							
	$\text{LOO}^\cdot + \text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2 \rightarrow \text{LOO}^\cdot + [\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2]^\cdot+$	$3.5 \times 10^7$	1	Water/ 2-PrOH	p.r.	P.b.k. at 655 nm in air-satd. soln. contg. 50% 2-PrOH, 2-3% $\text{CCl}_4$ , 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ , 0.01 mol $\text{L}^{-1}$ linoleic acid, and $0.5-1 \times 10^{-4}$ mol $\text{L}^{-1}$ Fe <sup>III</sup> deuteroporphyrin dimethyl ester; mixture of 13-peroxy with other isomers.	85A341
<b>7.49.2 Linoleic acid</b>							
	$\text{LOO}^\cdot + \text{LH} \rightarrow \text{L}^\cdot + \text{LOOH}$	$3.6 \times 10^1$	acid	EtOH/ Water	s.f.	P.b.k. at 250 (LOOH) nm in 70% ethanol contg. oxygen and linoleic acid; mixture of 13-peroxy with other isomers.	81A288

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.50 18-Peroxy radical from linoleate</b>							
7.50.1	<b>8,5,7-Trihydroxy-2-(4-hydroxyphenyl)-2-benzopyran-4-one</b>						
	$\text{LOO}^\cdot + \text{KfOH} \rightarrow \text{LOOH} + \text{KfO}^\cdot$	$4.2 \times 10^7$	11.5	Water	p.r.	P.b.k. in $\text{N}_2\text{O}$ -satd. soln. contg. azide and 13-hydroperoxylinoleate ion; $k = 3.4 \times 10^7$ for mixture of peroxy radicals formed in $\text{N}_2\text{O}$ - $\text{O}_2$ satd. linoleate soln.	87A277
<b>7.50.2 Quercetin</b>							
	$\text{LOO}^\cdot + \text{QOH} \rightarrow \text{LOOH} + \text{QO}^\cdot$	$1.5 \times 10^7$	11.5	Water	p.r.	P.b.k. in $\text{N}_2\text{O}$ -satd. soln. contg. azide and 13-hydroperoxylinoleate ion; $k = 1.8 \times 10^7$ in $\text{N}_2\text{O-O}_2$ satd. linoleate soln.	87A277
<b>7.51 Peroxy radicals from oleic acid</b>							
7.51.1	<b>Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub></b>						
	$\text{LOO}^\cdot + \text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2 \rightarrow \text{LOO}^- + [\text{DPDMEFe}^{\text{III}}(\text{HOCH}(\text{CH}_3)_2)_2]^\cdot$	$3.5 \times 10^7$	1	Water/ 2-PrOH	p.r.	P.b.k. at 655 nm in air-satd. soln. contg. 50% 2-PrOH, oleic acid, 0.1 mol $\text{L}^{-1}$ $\text{HClO}_4$ , and 0.5-1 $\times 10^{-4}$ mol $\text{L}^{-1}$ $\text{Fe}^{\text{III}}$ ; deuteroporphyrin dimethyl ester; same value for linolenic acid.	85A341
<b>7.51.2 <math>\alpha</math>-Tocopherol</b>							
	$\text{LOO}^\cdot + \text{ArOH} \rightarrow \text{LOOH} + \text{ArO}^\cdot$	$2.5 \times 10^8$		Oleic acid	p.r.	P.b.k. in oxygen-satd. soln.; mixture of radicals from solvent.	79G405
<b>7.52 6-Peroxy radical of uracil-5-OH adduct</b>							
7.52.1	<b><i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>						
	$\text{U(OH)OO}^\cdot + \text{TMPD} \rightarrow \text{TMPD}^\cdot + \text{U(OH)OO}^-$	$1.4 \times 10^8$	6-11	Water	p.r.	P.b.k. in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln.; slow component.	81A122
<b>7.53 6-Peroxy radical of cytosine-5-OH adduct</b>							
7.53.1	<b><i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>						
	$\text{Cy(OH)OO}^\cdot + \text{TMPD} \rightarrow \text{TMPD}^\cdot + \text{Cy(OH)OO}^-$	$1.6 \times 10^8$	7-8	Water	p.r.	P.b.k. in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln.; slow component.	83A132
<b>7.54 6-Peroxy radical of thymine-5-OH adduct</b>							
7.54.1	<b><i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>						
	$5\text{-MeU(OH)OO}^\cdot + \text{TMPD} \rightarrow \text{TMPD}^\cdot + 5\text{-MeU(OH)OO}^-$	$\sim 1 \times 10^8$	~7	Water	p.r.	P.b.k. in $\text{N}_2\text{O}/\text{O}_2$ (4:1) satd. soln.; slow component.	81A122
<b>7.55 Peroxy radicals of thymine-OH adduct</b>							
7.55.1	<b>Norpseudopelletierine N-oxyl</b>						
	$5\text{-MeU(OH)OO}^\cdot + \text{NPPN} \rightarrow$	$8.0 \times 10^8$	7	Water	p.r.	P.b.k. at 300 nm in oxygen-satd. soln. contg. $5 \times 10^{-4}$ mol $\text{L}^{-1}$ thymine.	80A124
<b>7.55.2 2,2,6,6-Tetramethylpiperidine-N-oxyl</b>							
	$5\text{-MeU(OH)OO}^\cdot + \text{TMPPN} \rightarrow$	$3.1 \times 10^7$	7	Water	p.r.	P.b.k. at 300 nm in oxygen-satd. soln. contg. $5 \times 10^{-4}$ mol $\text{L}^{-1}$ thymine.	80A124
<b>7.56 Peroxy radical of thymidine-OH adduct</b>							
7.56.1	<b>2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>						
	$\text{T(OH)OO}^\cdot + \text{ABTS} \rightarrow \text{ABTS}^\cdot + \text{T(OH)OO}^-$	$1.3 \times 10^7$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.2 \times 10^{-3}$ mol $\text{L}^{-1}$ thymidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.56 Peroxyl radical of thymidine-OH adduct—Continued</b>							
<b>7.56.2 Ascorbate ion</b>							
	$\text{T(OH)OO}^\cdot + \text{AH}^- \rightarrow \cdot\text{A}^- + \text{T(OH)OOH}$	$2.5 \times 10^7$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.2 \times 10^{-3}$ mol $\text{L}^{-1}$ thymidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.56.3 Hydroquinone</b>							
	$\text{T(OH)OO}^\cdot + 1,4-\text{C}_6\text{H}_4(\text{OH})_2 \rightarrow$	$6.5 \times 10^6$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.2 \times 10^{-3}$ mol $\text{L}^{-1}$ thymidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.56.4 4-Methoxyphenol</b>							
	$\text{T(OH)OO}^\cdot + 4-\text{CH}_3\text{OC}_6\text{H}_4\text{OH} \rightarrow$	$<1 \times 10^6$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.2 \times 10^{-3}$ mol $\text{L}^{-1}$ thymidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.56.5 Norpseudopelletierine N-oxyl</b>							
	$\text{T(OH)OO}^\cdot + \text{NPPN} \rightarrow$	$1.3 \times 10^9$	7	Water	p.r.	P.b.k. at 300 nm in oxygen-satd. soln. contg. $5 \times 10^{-4}$ mol $\text{L}^{-1}$ thymidine.	80A124
<b>7.56.6 2,2,6,6-Tetramethylpiperidine-N-oxyl</b>							
	$\text{T(OH)OO}^\cdot + \text{TMPN} \rightarrow$	$2.0 \times 10^8$	7	Water	p.r.	P.b.k. at 300 nm in oxygen-satd. soln. contg. $5 \times 10^{-4}$ mol $\text{L}^{-1}$ thymidine.	80A124
<b>7.56.7 N,N,N',N'-Tetramethyl-p-phenylenediamine</b>							
	$\text{T(OH)OO}^\cdot + \text{TMPD} \rightarrow \text{TMPD}^\cdot + \text{T(OH)OO}^-$	$8.3 \times 10^7$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.2 \times 10^{-3}$ mol $\text{L}^{-1}$ thymidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.57 Peroxyl radical of deoxyguanosine-OH adduct</b>							
<b>7.57.1 N,N,N',N'-Tetramethyl-p-phenylenediamine</b>							
	$\text{dG(OH)OO}^\cdot + \text{TMPD} \rightarrow \text{TMPD}^\cdot + \text{dG(OH)OO}^-$	$1.5 \times 10^9$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ deoxyguanosine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.58 Peroxyl radical of deoxycytidine-OH adduct</b>							
<b>7.58.1 Ascorbate ion</b>							
	$\text{dC(OH)OO}^\cdot + \text{AH}^- \rightarrow \cdot\text{A}^- + \text{dC(OH)OOH}$	$1.8 \times 10^7$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.0 \times 10^{-3}$ mol $\text{L}^{-1}$ deoxycytidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.58.2 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)</b>							
	$\text{dC(OH)OO}^\cdot + \text{ABTS} \rightarrow \text{ABTS}^\cdot + \text{dC(OH)OO}^-$	$1.2 \times 10^7$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.0 \times 10^{-3}$ mol $\text{L}^{-1}$ deoxycytidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.58.3 Hydroquinone</b>							
	$\text{dC(OH)OO}^\cdot + 1,4-\text{C}_6\text{H}_4(\text{OH})_2 \rightarrow$	$1.1 \times 10^7$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.0 \times 10^{-3}$ mol $\text{L}^{-1}$ deoxycytidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
<b>7.58.4 4-Methoxyphenol</b>							
	$\text{dC(OH)OO}^\cdot + 4-\text{CH}_3\text{OC}_6\text{H}_4\text{OH} \rightarrow$	$<1 \times 10^6$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.0 \times 10^{-3}$ mol $\text{L}^{-1}$ deoxycytidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503

TABLE 7. Rate constants for reactions of substituted alkylperoxy radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.58 Peroxyl radical of deoxycytidine-OH adduct—Continued</b>							
<b>7.58.5 <i>N,N,N',N'-Tetramethyl-p-phenylenediamine</i></b>							
	$\text{dC(OH)OO}^\bullet + \text{TMPD} \rightarrow \text{TMPD}^\bullet +$	$6.8 \times 10^7$	7	Water	p.r.	P.b.k.; oxygen-satd. soln. contg. $2.0 \times 10^{-3}$ mol $\text{L}^{-1}$ deoxycytidine and $2 \times 10^{-3}$ mol $\text{L}^{-1}$ phosphate.	85A503
	$\text{dC(OH)OO}^\bullet$						
<b>7.59 Peroxyl radical of polyuridylic acid-OH adduct</b>							
<b>7.59.1 Cysteamine</b>							
	$\text{Poly U(OH)OO}^\bullet + \text{H}_3\text{N}^+\text{CH}_2\text{CH}_2\text{S}^- \rightarrow$	$1.7 \times 10^4$	6.3	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ poly U, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ cysteamine.	86A213
<b>7.59.2 Dithiothreitol</b>							
	$\text{Poly U(OH)OO}^\bullet + \text{DTT} \rightarrow$	$5 \times 10^4$	6.3	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ poly U, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ DTT.	86A213
<b>7.59.3 Glutathione</b>							
	$\text{Poly U(OH)OO}^\bullet + \text{GSH} \rightarrow$	$8 \times 10^3$	6.3	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ poly U, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ GSH.	86A213
<b>7.60 Peroxyl radical of polyadenylic acid-OH adduct</b>							
<b>7.60.1 Cysteamine</b>							
	$\text{Poly A(OH)OO}^\bullet + \text{H}_3\text{N}^+\text{CH}_2\text{CH}_2\text{S}^- \rightarrow$	$1 \times 10^5$	7.4	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ poly A, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ cysteamine.	86A213
<b>7.60.2 Dithiothreitol</b>							
	$\text{Poly A(OH)OO}^\bullet + \text{DTT} \rightarrow$	$1.3 \times 10^5$	7.4	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ poly A, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ DTT.	86A213
<b>7.60.3 Glutathione</b>							
	$\text{Poly A(OH)OO}^\bullet + \text{GSH} \rightarrow$	$5 \times 10^4$	7.4	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ poly A, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ GSH.	86A213
<b>7.61 Peroxyl radical of single-stranded DNA-OH adduct</b>							
<b>7.61.1 Dithiothreitol</b>							
	$\text{ssDNA(OH)OO}^\bullet + \text{DTT} \rightarrow$	$4 \times 10^4$	7.2	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ ssDNA, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ DTT.	86A213
	$\rightarrow$	$3 \times 10^4$					
<b>7.61.2 Cysteamine</b>							
	$\text{ssDNA(OH)OO}^\bullet + \text{H}_3\text{N}^+\text{CH}_2\text{CH}_2\text{S}^- \rightarrow$	$2 \times 10^4$	7.2	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ ssDNA, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ cysteamine.	86A213
		$5 \times 10^4$					
<b>7.61.3 Glutathione</b>							
	$\text{ssDNA(OH)OO}^\bullet + \text{GSH} \rightarrow$	$1.5 \times 10^4$	7.2	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ ssDNA, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ GSH.	86A213

TABLE 7. Rate constants for reactions of substituted alkylperoxyl radicals with inorganic and organic substrates—Continued

No.	Radical/Reactant	$k$ ( $\text{L mol}^{-1} \text{s}^{-1}$ )	pH	Solvent	Method	Comment	Ref.
<b>7.62 Peroxyl radical of double-stranded DNA-OH adduct</b>							
<b>7.62.1 Dithiothreitol</b>							
	$\text{dsDNA(OH)OO} \cdot + \text{DTT} \rightarrow$	$4 \times 10^4$ $6 \times 10^4$	7.5	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ dsDNA, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ DTT.	86A213
<b>7.62.2 Cysteamine</b>							
	$\text{dsDNA(OH)OO} \cdot + \text{H}_3\text{N}^+ \text{CH}_2\text{CH}_2\text{S}^- \rightarrow$	$5 \times 10^4$ $8 \times 10^4$	7.5	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ dsDNA, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ cysteamine.	86A213
<b>7.62.3 Glutathione</b>							
	$\text{dsDNA(OH)OO} \cdot + \text{GSH} \rightarrow$	$2 \times 10^4$ $4.5 \times 10^4$	7.5	Water	phot.	D.k. (esr) in oxygen-satd. soln. contg. $10^{-3}$ mol $\text{L}^{-1}$ $\text{H}_2\text{O}_2$ , $10^{-3}$ mol $\text{L}^{-1}$ dsDNA, and $3 \times 10^{-5}$ mol $\text{L}^{-1}$ GSH.	86A213
<b>7.62.4 2,2,6,6-Tetramethylpiperidine-N-oxyl</b>							
	$\text{dsDNA(OH)OO} \cdot + \text{TMPN} \rightarrow$	$9 \times 10^6$	7	Water	p.r.	D.k. at 320 nm in oxygen-satd. soln.; $k = 5.4 \times 10^7$ for denatured DNA.	80A124

## 7. References to Tables

- 61A003 Observation of free radical kinetics in the cyclohexane-oxygen system. McCarthy, R.L.; MacLachlan, A., *J. Chem. Phys.* **35**: 1625-7 (1961)
- 61A004 Kinetics of some radiation-induced reactions. McCarthy, R.L.; MacLachlan, A., *Trans. Faraday Soc.* **57**: 1107-16 (1961)
- 620019 Pulse radiolysis studies. I. Transient spectra and reaction-rate constants in irradiated aqueous solutions of benzene. Dorfman, L.M.; Taub, I.A.; Buehler, R.E., *J. Chem. Phys.* **36**: 3051-61 (1962)
- 655049 The self-reactions of t-butylperoxy radicals. Thomas, J.R., *J. Am. Chem. Soc.* **87**: 3935-40 (1965)
- 65A004 A pulse radiolysis study of peroxy radical. Aromatic amine reactions. MacLachlan, A., *J. Am. Chem. Soc.* **87**: 960-4 (1965)
- 670041 Pulse radiolysis of aqueous solutions of methyl iodide and methyl bromide. The reactions of iodine atoms and methyl radicals in water. Thomas, J.K., *J. Phys. Chem.* **71**: 1919-1925 (1967)
- 670269 Studies of radiation-induced reactions of ethylene in aqueous solution. II. Reactions in the presence of oxygen as studied by pulse radiolysis and  $\gamma$ -irradiation techniques. Cullis, C.F.; Francis, J.M.; Raef, Y.; Swallow, A.J., *Proc. Roy. Soc. (London) Ser. A* **300**: 443-54 (1967)
- 670618 Reaction rates of alkyl and peroxy radicals with copper ion-pulse radiolysis studies. MacLachlan, A., *J. Phys. Chem.* **71**: 4132-3 (1967)
- 677255 Studies by electron spin resonance of radicals produced in the photolysis of alkyl peroxides and hydroperoxides. Maguire, W.J.; Pink, R.C., *Trans. Faraday Soc.* **63**: 1097-105 (1967)
- 680066 Reactions of nitrosodimethylaniline with free radicals. Dainton, F.S.; Wiseall, B., *Trans. Faraday Soc.* **64**: 694-705 (1968)
- 680329 Electron paramagnetic resonance studies of transient free radicals produced by pulse radiolysis. Smaller, B.; Remko, J.R.; Avery, E.C., *J. Chem. Phys.* **48**: 5174-81 (1968)
- 690522 Pulse radiolysis studies on the oxidation of organic radicals in aqueous solution. Adams, G.E.; Willson, R.L., *Trans. Faraday Soc.* **65**: 2981-7 (1969)
- 700039 Pulsradiolytische Untersuchung einiger Elementarprozesse der Autoxydation: Alkohole, Cyclohexen und Diaethyelaether in waessriger Loesung. Stockhausen, K.; Fojtik, A.; Henglein, A., *Ber. Bunsenges. Phys. Chem.* **74**: 34-40 (1970)
- 700795 The reaction of oxygen with radiation-induced free radicals in DNA and related compounds. Willson, R.L., *Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med.* **17**: 349-58 (1970)
- 701103 The radiation chemistry of thymine in aqueous solution. Some reactions of the thymine-electron adduct. Loman, H.; Ebert, M., *Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med.* **18**: 369-79 (1970)
- 707039 Studies by electron spin resonance of the reactions of alkylperoxy radicals. Part I. Absolute rate constants for the termination reactions of alkylperoxy radicals. Bennett, J.E.; Brown, D.M.; Mile, B., *Trans. Faraday Soc.* **66**: 386-96 (1970)
- 710136 Spectroscopic investigation of cyclohexanol and cyclohexyl radicals and their corresponding peroxy radicals. Simic, M.; Hayon, E., *J. Phys. Chem.* **75**: 1677-80 (1971)
- 710256 Pulse radiolysis studies of some nucleic acid fragments in aqueous solutions. Fel', N.S.; Zaozerskaya, L.A.; Dolin, F.I., *Radiat. Eff.* **9**: 145-52 (1971)
- 710424 Pulsradiolytische Untersuchung des Mechanismus der Oxidation und Autoxidation von Formaldehyd in waessriger Loesung. Stockhausen, K.; Henglein, A., *Ber. Bunsenges. Phys. Chem.* **75**: 833-40 (1971)
- 710554 Pulse radiolysis study of cyclic peptides in aqueous solution. Absorption spectrum of the peptide radical -NHCHCO-. Hayon, E.; Simic, M., *J. Am. Chem. Soc.* **93**: 6781-6 (1971)
- 710618 Pulse radiolysis studies on reaction of triacetoneamine-N-oxyl with radiation-induced free radicals. Willson, R.L., *Trans. Faraday Soc.* **67**: 3008-19 (1971)
- 72A025 The self-reaction of sec-alkylperoxy radicals: A kinetic electron spin resonance study. Howard, J.A.; Bennett, J.E., *Can. J. Chem.* **50**: 2374-7 (1972)
- 72A026 A kinetic ESR study of the reaction of t-butylperoxy radicals with hexaphenylditin and hexaphenylidilead. Howard, J.A.; Furimsky, E., *J. Organomet. Chem.* **46**: C45-C46 (1972)
- 731011 Intermediates in the pulse radiolysis of solutions of phenothiazine. Burrows, H.D.; Kemp, T.J.; Welbourn, M.J., *J. Chem. Soc., Perkin Trans. 2* : 969-74 (1973)
- 731052 Acid-base properties of organic peroxy radicals, -OORH, in aqueous solution. Hayon, E.; Simic, M., *J. Am. Chem. Soc.* **95**: 6681-4 (1973)
- 737013 Absolute rate constants for the reaction of tert-butylperoxy radicals with trivalent phosphorus compounds. Furimsky, E.; Howard, J.A., *J. Am. Chem. Soc.* **95**: 369-74 (1973)
- 737428 Arrhenius parameters for reaction of tert-butylperoxy radicals with some hindered phenols and aromatic amines. Howard, J.A.; Furimsky, E., *Can. J. Chem.* **51**: 3738-45 (1973)
- 739058 Metal complexes as antioxidants. I. The reaction of zinc dialkyldithiophosphates and related compounds with peroxy radicals. Howard, J.A.; Ohkatsu, Y.; Chenier, J.H.B.; Ingold, K.U., *Can. J. Chem.* **51**: 1543-53 (1973)
- 741019 Pulse radiolysis of liquid n-pentane and n-pentane-oxygen solutions. Rate constants and activation energies for second-order decay of pentyl and pentylperoxy radicals. Burggraf, L.W.; Firestone, R.F., *J. Phys. Chem.* **78**: 508-14 (1974)
- 741051 Pulse radiolysis of cyclopentane in aqueous solutions. Rabani, J.; Pick, M.; Simic, M., *J. Phys. Chem.* **78**: 1049-51 (1974)
- 741074 Oxidation of ferrous ions by an aliphatic dioxy radical. Butler, J.; Jaysom, G.G.; Swallow, A.J., *J. Chem. Soc., Faraday Trans. 1* **70**: 1394-401 (1974)
- 741099 Pulse radiolytic investigations of OHCH<sub>2</sub>O<sub>2</sub> radicals. Rabani, J.; Klug-Roth, D.; Henglein, A., *J. Phys. Chem.* **78**: 2089-3 (1974)
- 741151 Formation and decay of peroxy radicals of some pyrimidine derivatives in water. Simic, M.; Hayon, E., *FEBS Lett.* **44**: 334-6 (1974)
- 745265 Arrhenius parameters for reaction of the tert-butylperoxy and 2-ethyl-2-propylperoxy radicals with some nonhindered phenols, aromatic amines, and thiophenols. Chenier, J.H.B.; Furimsky, E.; Howard, J.A., *Can. J. Chem.* **52**: 3682-8 (1974)
- 751055 Absorption spectra and kinetics of methyl and ethyl radicals in water. Hickel, B., *J. Phys. Chem.* **79**: 1054-9 (1975)
- 751077 Reactivity of coordinated nitrosyls. V. Generation and characterization of a ruthenium(II) alkynitroso complex. Armor, J.N.; Furman, R.; Hoffman, M.Z., *J. Am. Chem. Soc.* **97**: 1737-42 (1975)
- 757053 A kinetic electron spin resonance study of the transfer of a hydrogen atom from  $\alpha$ -tetralin hydroperoxide to a tertiary alkylperoxy radical. Chenier, J.H.B.; Howard, J.A., *Can. J. Chem.* **53**: 623-7 (1975)

- 760042 Pulse radiolytic investigations of some peroxyhydroxy-cyclohexadienyl radicals. Micic, O.I.; Nenadovic, M.T., *J. Phys. Chem.* **80**: 940-4 (1976)
- 761081 Pulse radiolytic investigations of peroxy radicals produced from 2-propanol and methanol. Ilan, Y.; Rabani, J.; Henglein, A., *J. Phys. Chem.* **80**: 1558-62 (1976)
- 761082 Pulse radiolytic investigations of peroxy radicals in aqueous solutions of acetate and glycine. Abramovitch, S.; Rabani, J., *J. Phys. Chem.* **80**: 1562-5 (1976)
- 761207 Radiolysis of aqueous solutions of acetic acid containing oxygen. Josimovic, L.R.; Draganic, I.G.; Markovic, V.M., *Glas. Hem. Drus.*, Beograd **41**: 75-9 (1976)
- 761212 A pulse radiolysis study of aqueous oxygenated benzene in presence of nitrous oxide. Ramanan, G., *J. Indian Chem. Soc.* **53**: 957-64 (1977)
- 76A266 Metal complexes as antioxidants. II. Reaction of nickel di-n-butyldithiocarbamate and nickel diisopropylidithiophosphate with alkylperoxy radicals. Howard, J.A.; Chenier, J.H.B., *Can. J. Chem.* **54**: 382-9 (1976)
- 777495 Mechanism of the first order decay of 2-hydroxypropyl-2-peroxy radicals and of  $O_2^-$  formation in aqueous solution. Bothe, E.; Behrens, G.; Schulte-Frohlinde, D., *Z. Naturforsch.*, Teil B **32B**: 886-9 (1977)
- 78A001 The photochemistry of organocobalt complexes containing tetraaza macrocyclic ligands. Cobalt-methyl homolysis and the nature of the cobalt-carbon bond. Mok, C.Y.; Endicott, J.F., *J. Am. Chem. Soc.* **100**: 123-9 (1978)
- 78A231 The bimolecular decay of  $\alpha$ -hydroxymethylperoxy radicals in aqueous solution. Bothe, E.; Schulte-Frohlinde, D., *Z. Naturforsch.*, Teil B **33B**: 786-8 (1978)
- 78A327 Flash photolysis study of the spectra of  $CH_3O_2$  and  $C(CH_3)_2O_2$  radicals and the kinetics of their mutual reactions and with NO. Anastasi, C.; Smith I.W.M.; Parkes, D.A., *J. Chem. Soc., Faraday Trans. 1* **74**: 1693-701 (1978)
- 78A339 Radiation chemistry of carbohydrates. Part 16. Kinetics of  $HO_2^-$  elimination from peroxy radicals derived from glucose and polyhydric alcohols. Bothe, E.; Schulte-Frohlinde, D.; von Sonntag, C., *J. Chem. Soc., Perkin Trans. 2* : 416-20 (1978)
- 78A365 Pulse radiolysis studies in model lipid systems: Formation and behavior of peroxy radicals in fatty acids. Hasegawa, K.; Patterson, L.K., *Photochem. Photobiol.* **28**: 817-23 (1978)
- 78A402 Pulse radiolysis of methyl acetate in aqueous solutions. Nenadovic, M.T.; Micic, O.I., *Radiat. Phys. Chem.* **12**: 85-9 (1978)
- 78A436 Oxidation of first-row bivalent transition-metal complexes containing ethylenediaminetetra-acetate and nitrilotriacetate ligands by free radicals: A pulse-radiolysis study. Latij, J.; Meyerstein, D., *J. Chem. Soc., Dalton Trans.* : 1105-18 (1978)
- 78B128 Reactions of the carbon tetrachloride-related peroxy free radical ( $CCl_3O_2^{\cdot}$ ) with amino acids: Pulse radiolysis evidence. Packer, J.E.; Slater, T.F.; Willson, R.L., *Life Sci.* **23**: 2617-20 (1978)
- 79A084 Direct observation of a free radical interaction between vitamin E and vitamin C. Packer, J.E.; Slater, T.F.; Willson, R.L., *Nature (London)* **278**: 737-8 (1979)
- 79A191 Some free radical reactions of camphor in relation to the action of cytochrome P450. Land, E.J.; Swallow, A.J., *J. Chem. Soc., Faraday Trans. 1* **75**: 1849-56 (1979)
- 79A295 Superoxide anions do not react with hydroperoxides. Bors, W.; Michel, C.; Saran, M., *FEBS Lett.* **107**: 403-6 (1979)
- 79A401 Disproportionation rate and products of cyclohexylperoxy radicals. Maslennikov, S.I.; Galimova, L.G.; Komissarov, V.D., *Bull. Acad. Sci. USSR, Div. Chem. Sci.* **28**: 585-8 (1979) Translated from: *Izv. Akad. Nauk SSSR, Ser. Khim.* : 631-4 (1979)
- 79B136 The kinetics of the disproportionation of secondary peroxyalkyl radicals of n-alkanes. Maslennikov, S.I.; Nikolaev, A.I.; Komissarov, V.D., *Kinet. Catal.* **20**: 261-4 (1979) Translated from: *Kinet. Katal.* **20**: 326-9 (1979)
- 79G027 Radiation chemistry of alcohols. XXII. Hydroxyl radical-induced oxidation of 2-methyl-2-propanol in oxygenated aqueous solution. A product and pulse radiolysis study. Schuchmann, M.N.; von Sonntag, C., *J. Phys. Chem.* **83**: 780-4 (1979)
- 79G405 Kinetic and mechanistic studies of peroxy, vitamin E and antioxidant free radicals by pulse radiolysis. Simic, M.G., *Autoxid. Food Biol. Syst.*, (Proc. Int. Workshop), 1979, M.G. Simic and M. Karel (eds.), Plenum, New York, NY, Pub. 1980, p.17-26
- 80A053 Electron transfer reactions of halogenated aliphatic peroxy radicals: Measurement of absolute rate constants by pulse radiolysis. Packer, J.E.; Willson, R.L.; Bahneemann, D.; Asmus, K.-D., *J. Chem. Soc., Perkin Trans. 2* : 296-9 (1980)
- 80A073 Absolute rate constants for hydrocarbon autoxidation. 28. A low temperature kinetic electron spin resonance study of the self-reactions of isopropylperoxy and related secondary alkylperoxy radicals in solution. Furimsky, E.; Howard, J.A.; Selwyn, J., *Can. J. Chem.* **58**: 677-80 (1980)
- 80A124 Interaction of oxygen and nitroxyls with radiation-induced radicals of DNA and related bases in aqueous solution. O'Neill, P.; Jenkins, T.C.; Fielden, E.M., *Radiat. Res.* **82**: 55-64 (1980)
- 80A282 Reaction of dihydroxymethyl radical with molecular oxygen in aqueous solution. Bothe, E.; Schulte-Frohlinde, D., *Z. Naturforsch.*, Teil B **35**: 1035-9 (1980)
- 80A283 Metal complexes as antioxidants. 7. A kinetic and product study of the reaction of tertiary alkylperoxy radicals with cobalt(II) acetylacetone. Howard, J.A.; Tong, S.B., *Can. J. Chem.* **58**: 1962-5 (1980)
- 80A391 Pulse radiolysis investigation of the interaction of bovine superoxide dismutase with organic free radicals. O'Neill, P.; Fielden, E.M., *Chemical and Biochemical Aspects of Superoxide and Superoxide Dismutase*, Proc. Fed. European Biochem. Soc. Sym. No. 62, J.V. Bannister and H.A.O. Hill (eds.), Elsevier, New York, NY, 1980, p.357-63
- 81A016 Absolute rate constants for the reactions of tert-butoxyl, tert-butylperoxy, and benzophenone triplet with amines: The importance of a stereoelectronic effect. Griller, D.; Howard, J.A.; Marriott, P.R.; Scaiano, J.C., *J. Am. Chem. Soc.* **103**: 619-23 (1981)
- 81A023 Hydrogen abstraction and one-electron oxidation in nickel(II)-iminodiacetate complexes. Bhattacharyya, S.N.; Saha, N.C.; Neta, P., *J. Phys. Chem.* **85**: 300-5 (1981)
- 81A036 Free radicals and singlet oxygen scavengers: Reaction of a peroxy-radical with  $\beta$ -carotene, diphenyl furan and 1,4-diazabicyclo(2.2.2)-octane. Packer, J.E.; Mahood, J.S.; Mora-Arellano, V.O.; Slater, T.F.; Willson, R.L.; Wolfenden, B.S., *Biochem. Biophys. Res. Commun.* **98**: 901-6 (1981)
- 81A058 Reactions of the trichloromethylperoxy free radical ( $Cl_3COO^{\cdot}$ ) with tryptophan, tryptophanyl-tyrosine and lysozyme. Packer, J.E.; Mahood, J.S.; Willson, R.L.; Wolfenden, B.S., *Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med.* **39**: 135-41 (1981)
- 81A122 Pattern of OH radical addition to uracil and methyl- and carboxyl-substituted uracils. Electron transfer of OH adducts with  $N,N,N',N'$ -tetramethyl-p-phenylenediamine and tetranitromethane. Fujita, S.; Steenken, S., *J. Am. Chem. Soc.* **103**: 2540-5 (1981)
- 81A202 A kinetic electron spin resonance study of the reaction of some oxy radicals with vanadyl acetylacetone. Howard, J.A.; Tait, J.C.; Yamada, T.; Chenier, J.H.B., *Can. J. Chem.* **59**: 2184-90 (1981)

- 81A288 Comparison of the capacities of the perhydroxyl and the superoxide radicals to initiate chain oxidation of linoleic acid. Gebicki, J.M.; Bielski, B.H.J., *J. Am. Chem. Soc.* **103**: 7020-2 (1981)
- 81A371 Hydroxyl radical induced oxidation of acetylene in oxygenated aqueous solution. The formation of a highly acidic intermediate. Schulte-Frohlinde, D.; Anker, R.; Bothe, E., *Oxygen and Oxy-Radicals in Chemistry and Biology*, M.A.J. Rodgers and E.L. Powers (eds.), Academic Press, New York, NY, 1981, p.61-7
- 81A376 Hydroxycyclodienyl peroxy radicals. Dizdaroglu, M.; Simic, M.G., *Oxygen and Oxy-Radicals in Chemistry and Biology*, M.A.J. Rodgers and E.L. Powers (eds.), Academic Press, New York, NY, 1981, p.619-21
- 81A392 Electron paramagnetic resonance study of the reactivity of tertiary butyl peroxy radicals in the liquid phase. Tavadyan, L.A.; Mardoyan, V.A.; Nalbandyan, A.B., *Dokl. Phys. Chem.* **259**: 737-40 (1981) Translated from: *Dokl. Akad. Nauk SSSR* **259**: 1143-7 (1981)
- 82A196 Radical-cations as reference chromogens in kinetic studies of one-electron transfer reactions: Pulse radiolysis studies of 2,2'-azinobis-(3-ethylbenzthiazoline-6-sulphonate). Wolfenden, B.S.; Willson, R.L., *J. Chem. Soc., Perkin Trans. 2* : 805-12 (1982)
- 82A266 Spectra of propylperoxy radicals and rate constants for mutual interaction. Adachi, H.; Basco, N., *Int. J. Chem. Kinet.* **14**: 1125-37 (1982)
- 82A452 Kinetics of peroxy radical reactions with antioxidants. Hunter, E.P.L.; Simic, M.G., *Oxy Radicals and Their Scavenger Systems, Vol. 1, Molecular Aspects*, G. Cohen and R.A. Greenwald (eds.), Elsevier Biomedical, New York, NY, Pub. 1983, p.32-7
- 82B008 Identity of peroxy radicals produced from arachidonic acid in oxygenated solutions as studied by pulse radiolysis technique. Rao, P.S.; Ayres, S.M.; Mueller, H.S., *Biochem. Biophys. Res. Commun.* **104**: 1532-6 (1982)
- 82B130 Haloalkyl radicals: Formation and reactivity of mono- and dichloromethylperoxy radicals. Emmi, S.S.; Beggiato, G.; Casalbore, G.; Fuochi, P.G., *Proc. Fifth Tihany Symposium on Radiation Chemistry*, J. Dobo, P. Hedvig and R. Schiller (eds.), Akad. Kiado, Budapest, 1983, Vol. 1, p.677-86
- 82G045 Hydroxyl radical induced oxidation of diethyl ether in oxygenated aqueous solution. A product and pulse radiolysis study. Schuchmann, M.N.; von Sonntag, C., *J. Phys. Chem.* **86**: 1995-2000 (1982)
- 82Z341 Interaction of free radicals and antioxidants. Simic, M.G.; Hunter, E.P.L., *Radioprotectors and Anticarcinogens*, O.F. Nygaard and M.G. Simic (eds.), Academic Press, New York, NY, 1983, p.449-60
- 83A056 Hydroxyl radical-induced oxidation of ethanol in oxygenated aqueous solutions. A pulse radiolysis and product study. Bothe, E.; Schuchmann, M.N.; Schulte-Frohlinde, D.; von Sonntag, C., *Z. Naturforsch., Teil B* **38B**: 212-9 (1983)
- 83A132 Pattern of OH radical addition to cytosine and 1-, 3-, 5-, and 6-substituted cytosines. Electron transfer and dehydrogenation reactions of the OH adducts. Hazra, D.K.; Steenken, S., *J. Am. Chem. Soc.* **105**: 4380-6 (1983)
- 83A161 Rate constants for the reactions of free radicals with oxygen in solution. Maillard, B.; Ingold, K.U.; Sciaiano, J.C., *J. Am. Chem. Soc.* **105**: 5095-9 (1983)
- 83A195 Electron transfer reactions of halothane-derived peroxy free radicals,  $\text{CF}_3\text{CHClO}_2^{\cdot}$ : Measurement of absolute rate constants by pulse radiolysis. Moenig, J.; Asmus, K.-D.; Schaeffer, M.; Slater, T.F.; Willson, R.L., *J. Chem. Soc., Perkin Trans. 2* : 1133-7 (1983)
- 83A241 Reactivity and structure of N-phenylnaphth-1-ylamines and related compounds. Part 1. Reactions with alkylperoxy radicals. Bennett, J.E.; Brunton, G.; Forrester, A.R.; Fullerton, J.D., *J. Chem. Soc., Perkin Trans. 2* : 1477-80 (1983)
- 83A364 Reaction of the trichloromethyl and halothane-derived peroxy radicals with unsaturated fatty acids: A pulse radiolysis study. Forni, L.G.; Packer, J.E.; Slater, T.F.; Willson, R.L., *Chem.-Biol. Interact.* **45**: 171-7 (1983)
- 83A385 Formation and reactions of halothane peroxy free radicals,  $\text{CF}_3\text{CHClO}_2^{\cdot}$ . Moenig, J.; Asmus, K.-D., *Oxygen Radicals Chem. Biol.*, W. Bors, M. Saran and D. Tait (eds.), de Gruyter, Berlin, Fed. Rep. Germany, Pub. 1984, p.57-63
- 83A392 Ellipticines and carbazoles as antioxidants. Searle, A.J.F.; Gee, C.; Willson, R.L., *Oxygen Radicals Chem. Biol.*, W. Bors, M. Saran and D. Tait (eds.), de Gruyter, Berlin, Fed. Rep. Germany, Pub. 1984, p.377-81
- 83G100 The radiolysis of uracil in oxygenated aqueous solutions. A study by product analysis and pulse radiolysis. Schuchmann, M.N.; von Sonntag, C., *J. Chem. Soc., Perkin Trans. 2* : 1525-31 (1983)
- 83G216 One electron reduction of carbon tetrachloride in oxygenated aqueous solutions: a trichloromethyldioxy-free radical mediated formation of chloride and carbon dioxide. Moenig, J.; Bahnenmann, D.; Asmus, K.D., *Chem.-Biol. Interact.* **47**: 15-27 (1983)
- 84A088 Radiolysis of di- and tri-methyl phosphates in oxygenated aqueous solution: a model system for DNA strand breakage. Schuchmann, M.N.; von Sonntag, C., *J. Chem. Soc., Perkin Trans. 2* : 699-704 (1984)
- 84A090 One-electron oxidation in irradiated carbon tetrachloride solutions of ZnTPP, TMPD, and phenols. Grodkowski, J.; Neta, P., *J. Phys. Chem.* **88**: 1205-9 (1984)
- 84A098 Pulse photolysis rate constants of the decay of ester peroxy radicals. Nikolaev, A.I.; Martemianov, V.S.; Saifullin, R.L.; Ibragimova, L.G., *React. Kinet. Catal. Lett.* **24**: 19-23 (1984)
- 84A178 Reactions of iron(III) porphyrins with peroxy radicals derived from halothane and halomethanes. Brault, D.; Neta, P., *J. Phys. Chem.* **88**: 2857-62 (1984)
- 84A231 Effects of oxygen and sulphhydryl-containing compounds on irradiated transforming DNA. III. Reaction rates. Held, K.D.; Harrop, H.A.; Michael, B.D., *Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med.* **45**: 627-36 (1984)
- 84A266 Oxidation and reduction of diazofluorene. A pulse-radiolysis study. Packer, J.E.; Willson, R.L., *J. Chem. Soc., Perkin Trans. 2* : 1415-9 (1984)
- 84A270 A pulse radiolytic study of the reaction  $\text{OH} + \text{O}_3$  in aqueous medium. Sehested, K.; Holzman, J.; Bjergbakke, E.; Hart, E.J., *J. Phys. Chem.* **88**: 4144-7 (1984); **89(2)**: 388 (1985)
- 84A313  $\beta$ -Hydroxyethylperoxy radicals: A study of the  $\gamma$ -radiolysis and pulse radiolysis of ethylene in oxygenated aqueous solutions. Piesiak, A.; Schuchmann, M.N.; Zegota, H.; von Sonntag, C., *Z. Naturforsch., Teil B* **39B**: 1262-7 (1984)
- 84A324 Cyclopentylperoxy and cyclohexylperoxy radicals in aqueous solution: A study by product analysis and pulse radiolysis. Zegota, H.; Schuchmann, M.N.; von Sonntag, C., *J. Phys. Chem.* **88**: 5589-93 (1984)
- 84A401 Kinetics of the reactions of peroxy radicals formed by the electron irradiation of normal and cyclic hydrocarbons in the presence of oxygen. Ladygin, B.Ya.; Zimina, G.M.; Vannikov, A.V., *High Energy Chem.* **18**: 241-4 (1984) Translated from: Khim. Vys. Energ. **18**: 301-5 (1984)
- 84A477 Pulse radiolysis of aqueous hydroquinone solutions in the presence of  $\text{O}_2$ . Al-Suhaybani, A.A.; Hughes, G., *Z. Phys. Chem. (Wiesbaden)* **141**: 229-37 (1984)

- 84G025 Radiolysis of dihydrouracil and dihydrothymine in aqueous solutions containing oxygen: First- and second-order reactions of the organic peroxy radicals: the role of isopyrimidines as intermediates. Al-Sheikhly, M.I.; Hissung, A.; Schuchmann, H.-P.; Schuchmann, M.N.; von Sonntag, C.; Garner, A.; Scholes, G., J. Chem. Soc., Perkin Trans. 2, 601-8 (1984)
- 85A038 Zinc porphyrin pi-radical cations in aqueous solution. Formation, spectra and decay kinetics. Neta, P.; Harriman, A., J. Chem. Soc., Faraday Trans. 2 81: 123-38 (1985)
- 85A106 Acetate peroxy radicals,  $\cdot\text{O}_2\text{CH}_2\text{CO}_2^-$ : A study on the  $\gamma$ -radiolysis and pulse radiolysis of acetate in oxygenated aqueous solutions. Schuchmann, M.N.; Zegota, H.; von Sonntag, C., Z. Naturforsch. B, Anorg. Chem., Org. Chem. 40B: 215-21 (1985)
- 85A123 Free radical one-electron versus hydroxyl radical-induced oxidation. Reaction of trichloromethylperoxy radicals with simple and substituted aliphatic sulphides in aqueous solution. Moenig, J.; Goebel, M.; Asmus, K.-D., J. Chem. Soc., Perkin Trans. 2 : 647-51 (1985)
- 85A311 Oxidation of Fe<sup>III</sup> porphyrins by peroxy radicals derived from 2-propanol and methanol. Evidence for acid-dependent and acid-independent pathways. Brault, D.; Neta, P., Chem. Phys. Lett. 121: 28-32 (1985)
- 85A341 The lipid peroxidation model for halogenated hydrocarbon toxicity. Kinetics and peroxy radical processes involving fatty acids and Fe(III) porphyrins. Brault, D.; Neta, P.; Patterson, L.K., Chem. Biol. Interact. 54: 289-97 (1985)
- 85A380 Autoxidation of biological molecules. 4. Maximizing the antioxidant activity of phenols. Burton, G.W.; Doba, T.; Gabe, E.J.; Hughes, L.; Lee, F.L.; Prasad, L.; Ingold, K.U., J. Am. Chem. Soc. 107: 7053-65 (1985)
- 85A390 One-electron redox reactions of pyrazolin-5-ones. A pulse radiolysis study of antipyrine and analogues. Jovanovic, S.V.; Neta, P.; Simic, M.G., Mol. Pharmacol. 28: 377-80 (1985)
- 85A466 Absolute values of rate constants of disproportionation of peroxy radicals formed from cholesterol, cholesteryl laurate, and their hydrogenation products. Vardanyan, R.L.; Safrullin, R.L.; Komissarov, V.D., Kinet. Catal. 26: 1140-4 (1985) Translated from: Kinet. Katal. 26: 1327-31 (1985)
- 85A503 Interaction of peroxy radical adducts of DNA bases with reductants. O'Neill, P.; Davies, S., *Superoxide and Superoxide Dismutase in Chemistry, Biology and Medicine*, G. Rotilio (ed.), Elsevier, Amsterdam, The Netherlands, Pub. 1986, p.44-6
- 85R131 Repair of hydroxyl radical damage of dA by antioxidants. O'Neill, P.; Chapman, P.W.; Papworth, D.G., Life Chem. Rep. 3: 62-9 (1985)
- 86A110 Electron-transfer reactions of tryptophan and tyrosine derivatives. Jovanovic, S.V.; Harriman, A.; Simic, M.G., J. Phys. Chem. 90: 1935-9 (1986)
- 86A175 Pulse photolysis of copper(II) chloride complexes in organic solvents. Gritsan, N.P.; Plyusnin, V.F.; Bazhin, N.M., Theor. Exp. Chem. 22: 33-8 (1986) Translated from: Teor. Eksp. Khim. 22: 39-44 (1986)
- 86A213 Lifetime of peroxy radicals of poly(U), poly(A) and single- and double-stranded DNA and the rate of their reaction with thiols. Schulte-Frohlinde, D.; Behrens, G.; Oenal, A., Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med. 50: 103-10 (1986)
- 86A242 Resonance stabilisation of zinc porphyrin pi-radical cations. Neta, P.; Richoux, M.-C.; Harriman, A.; Milgrom, L.R., J. Chem. Soc., Faraday Trans. 2 82: 209-17 (1986)
- 86A285 Acetonylperoxy radicals,  $\text{CH}_3\text{COCH}_2\text{O}_2^\bullet$ : A study on the  $\gamma$ -radiolysis and pulse radiolysis of acetone in oxygenated aqueous solutions. Zegota, H.; Schuchmann, M.N.; Schulz, D.; von Sonntag, C., Z. Naturforsch., B, Anorg. Chem., Org. Chem. 41B: 1015-22 (1986)
- 86A291 Rate constants for one-electron oxidation by methyl-peroxy radicals in aqueous solutions. Huie, R.E.; Neta, P., Int. J. Chem. Kinet. 18: 1185-91 (1986)
- 86A360 Decay constants of peroxy radicals from polypropylene and polypropylene model compounds: A kinetic ESR study. Faucitano, A.; Buttafava, A.; Martinotti, F.; Comincioli, V.; Bortolus, P., Polym. Photochem. 7: 491-502 (1986)
- 86A418 Spectrokinetic studies of  $\text{i-C}_3\text{H}_7$  and  $\text{i-C}_3\text{H}_7\text{O}_2^\bullet$  radicals. Munk, J.; Pagsberg, P.; Ratajczak, E.; Sillesen, A., Chem. Phys. Lett. 132: 417-21 (1986)
- 86A426 Rates and mechanisms of oxidation of ZnTPP by  $\text{CCl}_3\text{O}_2^\bullet$  radicals in various solvents. Alfassi, Z.B.; Harriman, A.; Mosseri, S.; Neta, P., Int. J. Chem. Kinet. 18: 1315-21 (1986)
- 86A464 Gamma and pulse radiolytic study of the antioxidant activity of vitamin E. Jore, D.; Ferradini, C.; Patterson, L.K., Radiat. Phys. Chem. 28: 557-8 (1986)
- 86A525 Reaction kinetics of alkyl and alkylperoxide radicals. Nikolayev, A.I.; Safrullin, R.L.; Komissarov, N.D., React. Kinet. Catal. Lett. 31: 355-9 (1986)
- 86A550 Reaction mechanisms of peroxy and C-centered radicals with sulfhydryls. Simic, M.G.; Hunter, E.P.L., J. Free Radicals Biol. Med. 2: 227-30 (1986)
- 86A554 Pulse radiolytic study of  $\alpha$ -tocopherol radical mechanisms in ethanolic solution. Jore, D.; Patterson, L.K.; Ferradini, C., J. Free Radicals Biol. Med. 2: 405-10 (1986)
- 87A070 Absolute rate constants for hydrogen abstraction from hydrocarbons by the trichloromethylperoxy radical. Mosseri, S.; Alfassi, Z.B.; Neta, P., Int. J. Chem. Kinet. 19: 309-17 (1987)
- 87A128 The production of the superoxide radical anion by the OH radical-induced oxidation of trimethylamine in oxygenated aqueous solution. The kinetics of the hydrolysis of (hydroxymethyl)dimethylamine. Das, S.; Schuchmann, M.N.; Schuchmann, H.-P.; von Sonntag, C., Chem. Ber. 120: 319-23 (1987)
- 87A173 Halogenated alkylperoxy radicals as oxidants: Effects of solvents and of substituents on rates of electron transfer. Alfassi, Z.B.; Mosseri, S.; Neta, P., J. Phys. Chem. 91: 3383-5 (1987)
- 87A207 Radioprotection of pyrimidines by oxygen and sensitization by phosphate: a feature of their electron adducts. Deeble, D.J.; von Sonntag, C., Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med. 51: 791-8 (1987)
- 87A215 A kinetic study of the self-reaction of prop-2-ylperoxy radicals in solution using ultraviolet absorption spectroscopy. Bennett, J.E., J. Chem. Soc., Faraday Trans. 1 83: 1805-13 (1987)
- 87A232 Reactions of iron porphyrins with  $\cdot\text{CF}_3$ ,  $\text{CF}_3\text{O}_2^\bullet$ , and  $\text{CBr}_3\text{O}_2^\bullet$  radicals. Brault, D.; Neta, P., J. Phys. Chem. 91: 4156-60 (1987)
- 87A250 On the attack of hydroxyl radicals on polyhydric alcohols and sugars and the reduction of the so-formed radicals by 1,4-dithiothreitol. Akhlag, M.S.; Al-Baghdadi, S.; von Sonntag, C., Carbohydr. Res. 164: 71-83 (1987)
- 87A277 Reactions of linoleic acid peroxy radicals with phenolic antioxidants: a pulse radiolysis study. Erben-Russ, M.; Bors, W.; Saran, M., Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med. 52: 393-412 (1987)
- 87A282 Primary processes of stabilizer action in radiation-induced alkane oxidation. Brede, O.; Hermann, R.; Mehnert, R., J. Chem. Soc., Faraday Trans. 1 83: 2365-80 (1987)
- 87A283 Reactions of alkylperoxy radicals in solution. Part 1. A kinetic study of self-reactions of 2-propylperoxy radicals between 135 and 300 K. Bennett, J.E.; Brunton, G.; Smith, J.R.L.; Salmon, T.M.F.; Waddington, D.J., J. Chem. Soc., Faraday Trans. 1 83: 2421-32 (1987)

- 87A292 Diffusion-controlled recombination of peroxide radicals in polyatomic esters. Khursan, S.L.; Martemianov, V.S.; Saifullin, R.L., *React. Kinet. Catal. Lett.* **33**: 453-8 (1987)
- 87A337 Pulse radiolytic study of the interaction of  $\text{SO}_4^{\cdot-}$  with deoxyribonucleosides. Possible implications for direct energy deposition. O'Neill, P.; Davies, S.E., *Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med.* **52**: 577-87 (1987)
- 87A362 Pattern of OH radical reaction with  $\text{N}^6,\text{N}^6$ -dimethyladenosine. Production of three isomeric OH adducts and their dehydration and ring-opening reactions. Vieira, A.J.S.C.; Steenken, S., *J. Am. Chem. Soc.* **109**: 7441-8 (1987)
- 87A441 Kinetics and mechanism of photo-induced reactions of platinum(III) halide complexes in methyl alcohol. Balashev, K.P.; Blinov, I.I.; Shagisultanova, G.A., *Koord. Khim.* **13**: 1674-8 (1987)
- 87A442 Recombination of polyatomic ester peroxy radicals in solution. Khursan, S.L.; Martemianov, V.S.; Saifullin, R.L.; Baisheva, N.S.; Ismagilova, G.S., *React. Kinet. Catal. Lett.* **34**: 427-32 (1987)
- 87A475 Radiolytic scanning of vitamin E-vitamin C oxidation-reduction mechanisms. Kaouadji, M.N.; Jore, D.; Ferradini, C.; Patterson, L.K., *Bioelectrochem. Bioenerg.* **18**: 59-70 (1987)
- 87A480 Rate constants for one-electron oxidation by the  $\text{CF}_3\text{O}_2^{\cdot}$ ,  $\text{CCl}_3\text{O}_2^{\cdot}$ , and  $\text{CBr}_3\text{O}_2^{\cdot}$  radicals in aqueous solutions. Huie, R.E.; Brault, D.; Neta, P., *Chem.-Biol. Interact.* **62**: 227-35 (1987)
- 87A490 Aspects of the  $\text{HO}_2^{\cdot}$  elimination reaction from organic peroxy radicals: Some recent examples. Das, S.; Mieden, O.J.; Pan, X.-M.; Repas, M.; Schuchmann, M.N.; Schuchmann, H.-P.; von Sonntag, C.; Zegota, H., *Oxygen Radicals in Biology and Medicine*, M.G. Simic, K.A. Taylor, J.F. Ward and C. von Sonntag (eds.), Plenum Press, New York, 1988, p.55-8
- 87B097 Neighboring group participation in radicals: Pulse radiolysis studies on radicals with sulfur-oxygen interaction. Mahling, S.; Asmus, K.-D.; Glass, R.S.; Hojjatie, M.; Wilson, G.S.; Sabahi, M., *J. Org. Chem.* **52**: 3717-24 (1987)
- 87C024 Redox properties of oxy and antioxidant radicals. Jovanovic, S.V.; Simic, M.G., *Oxygen Radicals in Biology and Medicine*, M.G. Simic, K.A. Taylor, J.F. Ward and C. von Sonntag (eds.), Plenum Press, New York, 1988, p.115-22
- 87G038 Hydroxyl radical-induced oxidation of diisopropyl ether in oxygenated aqueous solution. A product and pulse radiolysis study. Schuchmann, M.N.; von Sonntag, C., *Z. Naturforsch. B, Chem. Sci.* **42B**: 495-502 (1987)
- 88A113 Measurements of the gas phase UV absorption spectrum of  $\text{C}_2\text{H}_5\text{O}_2^{\cdot}$  radicals and of the temperature dependence of the rate constant for their self-reaction. Wallington, T.J.; Dagaut, P.; Kurylo, M.J., *J. Photochem. Photobiol. A* **42**: 173-85 (1988)
- 88A153 A flash photolysis investigation of the UV absorption spectrum and self-reaction kinetics of  $\text{CH}_2\text{ClCH}_2\text{O}_2^{\cdot}$  radicals in the gas phase. Dagaut, P.; Wallington, T.J.; Kurylo, M.J., *Chem. Phys. Lett.* **146**: 589-95 (1988)
- 88A251 Free radical inactivation of trypsin. Cudina, I.; Jovanovic, S.V., *Radiat. Phys. Chem.* **32**: 497-501 (1988)
- 88A266 The rapid hydration of the acetyl radical. A pulse radiolysis study of acetaldehyde in aqueous solution. Schuchmann, M.N.; von Sonntag, C., *J. Am. Chem. Soc.* **110**: 5698-701 (1988)
- 88A305 Aminopyrine and antipyrine free radical-cations: Pulse radiolysis studies of one-electron transfer reactions. Forni, L.G.; Mora-Arellano, V.O.; Packer, J.E.; Willson, R.L., *J. Chem. Soc., Perkin Trans. 2* : 1579-84 (1988)
- 88A323 The UV absorption spectra and kinetics of the self reactions of  $\text{CH}_2\text{ClO}_2^{\cdot}$  and  $\text{CH}_2\text{FO}_2^{\cdot}$  radicals in the gas phase. Dagaut, P.; Wallington, T.J.; Kurylo, M.J., *Int. J. Chem. Kinet.* **20**: 815-26 (1988)
- 88A364 Rate constants for the reactions of halogenated organic radicals. Lal, M.; Schoeneich, C.; Moenig, J.; Asmus, K.-D., *Int. J. Radiat. Biol.* **54**: 773-85 (1988)
- 88A416 Kinetic ESR for self reactions of perfluoroalkyl ether peroxy radicals. Faucitano, A.; Buttafava, A.; Martinotti, F.; Marchionni, G.; De Pasquale, R.J., *Tetrahedron Lett.* **29**: 5557-60 (1988)
- 88A436 Vitamin E analogue Trolox C. E.s.r. and pulse-radiolysis studies of free-radical reactions. Davies, M.J.; Forni, L.G.; Willson, R.L., *Biochem. J.* **255**: 513-22 (1988)
- 88B057  $2\sigma-1\sigma^*$  Three-electron-bonded radical cations from alkylthio(halogeno)alkanes. Anklam, E.; Mohan, H.; Asmus, K.-D., *J. Chem. Soc., Perkin Trans. 2* : 1297-302 (1988)
- 89A019 Reactivity of the  $\text{CCl}_3\text{OO}^{\cdot}$  radical. Evidence for a first-order transformation. Shen, X.; Lind, J.; Eriksen, T.E.; Merenyi, G., *J. Phys. Chem.* **93**: 553-7 (1989)
- 89A059 Reactivities of chlorine atoms and peroxy radicals formed in the radiolysis of dichloromethane. Alfassi, Z.B.; Mosseri, S.; Neta, P., *J. Phys. Chem.* **93**: 1380-5 (1989)
- 89A084 Radiolytic studies of the redox reactions of ruthenium porphyrins. Mosseri, S.; Neta, P.; Hambright, P., *J. Phys. Chem.* **93**: 2358-62 (1989)
- 89A085 Absorption spectrum and kinetics of reactions of the acetylperoxy radical. Moortgat, G.; Veyret, B.; Lesclaux, R., *J. Phys. Chem.* **93**: 2362-8 (1989)
- 89A165 Rate constants for reduction of substituted methyl-peroxy radicals by ascorbate ions and  $\text{N},\text{N},\text{N}'$ -tetramethyl-p-phenylenediamine. Neta, P.; Huie, R.E.; Mosseri, S.; Shastri, L.V.; Mittal, J.P.; Maruthamuthu, P.; Steenken, S., *J. Phys. Chem.* **93**: 4099-104 (1989)
- 89A204 Kinetics of the homolytic dioxygen insertion into the cobalt-carbon bond in  $(\text{nta})(\text{H}_2\text{O})\text{Co}^{III}-\text{CH}_3$ . Sauer, A.; Cohen, H.; Meyerstein, D., *Inorg. Chem.* **28**: 2511-2 (1989)
- 89A208 The reaction of the  $\text{CCl}_3\text{O}_2^{\cdot}$  radical with indoles, Shen, X.; Lind, J.; Eriksen, T.E.; Merenyi, G., *J. Chem. Soc., Perkin Trans. 2*, 555-62 (1989)
- 89A225 Acid-base properties of peptide peroxy radicals in aqueous solution. Mieden, O.J.; Schuchmann, M.N.; von Sonntag, C., *Free Rad. Res. Comms.* **6**: 127-8 (1989)
- 89A245 The reactions of peptide peroxy radicals in aqueous solution. Mieden, O.J.; von Sonntag, C., *Free Radicals, Metal Ions and Biopolymers*, P.C. Beaumont, D.J. Deeble, B.J. Parsons, and C. Rice-Evans (eds.), Richelieu Press, London, 1989, p.85-9, and private communication.
- 89C014 The  $\text{pK}_a$  value of the  $\cdot\text{OCH}_2\text{CO}_2\text{H}$  radical: The Taft  $\sigma^*$  constant of the  $-\text{CH}_2\text{O}_2^{\cdot}$  group. Schuchmann, M.N.; Schuchmann, H.-P.; von Sonntag, C., *J. Phys. Chem.* **93**: 5320-3 (1989)
- 89G044 Chain-propagation length of linoleic acid peroxidation in aqueous monomeric and micellar systems. Al-Sheikhly, M.; Simic, M.G., *J. Phys. Chem.* **93**: 3103-6 (1989)
- 89A384 Solvent effects in the reactions of peroxy radicals with organic reductants. Evidence for proton transfer mediated electron transfer. Neta, P.; Huie, R.E.; Maruthamuthu, P.; Steenken, S., *J. Phys. Chem.* **93**: 7654-9 (1989)
- 89A901 Oxidation reactions of bilirubin by halogenated peroxy radicals in aqueous solution. Mohan, H.; Gopinathan, C., *Radiat. Phys. Chem.*, submitted.
- 89A902 Hydroxyl radical-induced oxidation of acetaldehyde dimethyl acetal in oxygenated aqueous solution. Rapid  $\text{O}_2^-$  release from  $\text{CH}_3\text{C}(\text{OCH}_3)_2\text{O}_2^{\cdot}$  radical, Schuchmann, M.N.; Schuchmann, H.-P., von Sonntag, C., *J. Am. Chem. Soc.* **112**: 403-7 (1990)
- 89B901 The gas phase UV absorption spectrum of  $\text{CH}_3\text{O}_2^{\cdot}$  radicals: A reinvestigation. Dagaut, P.; Kurylo, M.H., *J. Photochem. Photobiol. A*, in press.

## 8.1. Molecular Formula Index

$\text{Br}_3\text{P}$	Phosphorus tribromide 6.5.3	$\text{C}_2\text{H}_3\text{Cl}_2\text{O}_2$	1,1-Dichloroethylperoxy 7.36 1,2-Dichloroethylperoxy 7.37
$\text{Br}_5\text{Pt}^{2-}$	Pentabromoplatinate(III) ion 7.5.2	$\text{C}_2\text{H}_3\text{NO}_2^-$	Amino(carboxy)methyl, anion 3.33
$\text{CBr}_3\text{O}_2$	Tribromomethylperoxy 7.47	$\text{C}_2\text{H}_3\text{O}$	2-Hydroxyethenyl 3.19
$\text{CClF}_2\text{O}_2$	Chlorodifluoromethylperoxy 7.31	$\text{C}_2\text{H}_3\text{O}_3$	Acetylperoxy 7.15
$\text{CCl}_2\text{FO}_2$	Dichlorofluoromethylperoxy 7.40	$\text{C}_2\text{H}_4\text{Cl}$	1-Chloroethyl 3.39
$\text{CCl}_3$	Trichloromethyl 3.47	$\text{C}_2\text{H}_4\text{ClO}_2$	1-Chloroethylperoxy 7.28 2-Chloroethylperoxy 7.29
$\text{CCl}_3\text{O}_2$	Trichloromethylperoxy 4.19, 5.65, 65.1, 7.42	$\text{C}_2\text{H}_4\text{NO}_4^-$	Amino(carboxy)methylperoxy 4.15
$\text{CF}_3\text{O}_2$	Trifluoromethylperoxy 7.24	$\text{C}_2\text{H}_5$	Ethyl 3.2
$\text{CHBr}_2\text{O}_2$	Dibromomethylperoxy 7.46	$\text{C}_2\text{H}_5\text{O}$	1-Hydroxyethyl 3.13 2-Hydroxyethyl 3.14
$\text{CHCl}_2$	Dichloromethyl 3.42	$\text{C}_2\text{H}_5\text{O}_2$	1,2-Dihydroxyethyl 3.21
$\text{CHCl}_2\text{O}_2$	Dichloromethylperoxy 7.35	$\text{C}_2\text{H}_5\text{O}_3$	Ethylperoxy 6.2 1-Hydroxyethylperoxy 4.2, 5.29, 29.1, 7.6 2-Hydroxyethylperoxy 5.30, 30.1
$\text{CH}_2\text{BrO}_2$	Bromomethylperoxy 7.45	$\text{O}_2\text{H}_5\text{O}_4$	1,2-Dihydroxyethylperoxy 4.5
$\text{CH}_2\text{Cl}$	Chloromethyl 3.38	$\text{C}_2\text{H}_6\text{S}$	Dimethyl sulfide 7.32.9, 7.42.37
$\text{CH}_2\text{ClO}_2$	Chloromethylperoxy 7.27	$\text{C}_2\text{H}_7\text{NS}$	Cysteamine 7.59.1, 7.60.1, 7.61.2, 7.62.2
$\text{CH}_2\text{FO}_2$	Fluoromethylperoxy 7.22	$\text{C}_3\text{H}_2\text{F}_5\text{O}$	1,2,2-Trifluoro-2-(difluoromethoxy)ethyl 3.37 2,2,2-Trifluoro-1-(difluoromethoxy)ethyl 3.36
$\text{CH}_2\text{IO}_2$	Iodomethylperoxy 7.48	$\text{C}_3\text{H}_2\text{F}_5\text{O}_3$	1,2,2-Trifluoro-2-( difluoromethoxy)ethylperoxy 7.25
$\text{CH}_3$	Methyl 3.1	$\text{C}_3\text{H}_4\text{ClF}_2\text{O}$	1-Chloro-2,2-difluoro-2-methoxyethyl 3.41
$\text{CH}_3\text{O}$	Hydroxymethyl 3.12	$\text{C}_3\text{H}_4\text{ClF}_2\text{O}_3$	1-Chloro-2,2-difluoro-2- methoxyethylperoxy 7.34
$\text{CH}_3\text{O}_2$	Dihydroxymethyl 3.20	$\text{C}_3\text{H}_4\text{F}_5\text{O}_2$	2,2,2-Trifluoro-1- difluoromethoxyethylperoxy 7.26
	Methylperoxy 6.1	$\text{C}_3\text{H}_4\text{O}_3^-$	1-Carboxy-1-hydroxyethyl, anion 3.29
$\text{CH}_3\text{O}_3$	Hydroxymethylperoxy 4.1, 5.28, 28.1, 7.5	$\text{C}_3\text{H}_5\text{NO}_3^-$	2-Amino-2-carboxy-1-hydroxyethyl, anion 3.35
$\text{CH}_3\text{O}_4$	Dihydroxymethylperoxy 4.4	$\text{C}_3\text{H}_5\text{O}$	2-Oxopropyl 3.26
$\text{C}_2\text{ClF}_4\text{O}_2$	2-Chloro-1,1,2,2-tetrafluoroethylperoxy 7.33	$\text{C}_3\text{H}_5\text{O}_2$	Acetoxyethyl 3.30 Allylperoxy 7.1
$\text{C}_2\text{Cl}_2\text{F}_3$	1,2-Dichloro-1,2,2-trifluoroethyl 3.46	$\text{C}_3\text{H}_5\text{O}_3$	Methoxycarbonylmethyl 3.31 2-Oxopropylperoxy 5.43, 43.1, 7.16
$\text{C}_2\text{Cl}_2\text{F}_3\text{O}_2$	1,2-Dichloro-1,2,2-trifluoroethylperoxy 7.41	$\text{C}_3\text{H}_5\text{O}_4$	Acetoxyethylperoxy 5.46, 46.1
$\text{C}_2\text{Cl}_2\text{N}$	Dichloro(cyano)methyl 3.45	$\text{C}_3\text{H}_5\text{O}_5$	2,4,6-Trioxacyclohexylperoxy 7.12
$\text{C}_2\text{Cl}_2\text{NO}_2$	Dichloro(cyano)methylperoxy 7.38	$\text{C}_3\text{H}_6\text{O}$	Propionaldehyde 6.5.52
$\text{C}_2\text{Cl}_2\text{O}_4^-$	Carboxy(dichloro)methylperoxy, anion 7.39	$\text{C}_3\text{H}_7\text{NO}_2\text{S}$	Cysteine 7.32.8
$\text{C}_2\text{Cl}_5$	Pentachloroethyl 3.48	$\text{C}_3\text{H}_7\text{O}$	1-Hydroxy-1-methylethyl 3.16 1-Hydroxypropyl 3.15
$\text{C}_2\text{Cl}_5\text{O}_2$	Pentachloroethylperoxy 7.44	$\text{C}_3\text{H}_7\text{O}_2$	2-Propylperoxy 5.1, 1.1, 6.3
$\text{C}_2\text{F}_2\text{O}_4^-$	Carboxy(difluoro)methylperoxy, anion 7.23	$\text{C}_3\text{H}_7\text{O}_3$	1,2,3-Trihydroxypropyl 3.22 1-Hydroxy-1-methylethylperoxy 4.3, 5.31, 31.1, 7.7
$\text{C}_2\text{HClF}_3$	1-Chloro-2,2,2-trifluoroethyl 3.40	$\text{C}_3\text{H}_7\text{O}_3\text{P}$	2-Methoxy-1,3,2-dioxaphospholane 6.5.36
$\text{C}_2\text{HClF}_3\text{O}_2$	1-Chloro-2,2,2-trifluoroethylperoxy 7.32	$\text{C}_3\text{H}_7\text{O}_5$	1,2,3-Trihydroxypropylperoxy 4.6
$\text{C}_2\text{HClO}_4^-$	Carboxy(chloro)methylperoxy, anion 7.30	$\text{C}_3\text{H}_8\text{N}$	Dimethylaminomethyl 3.32
$\text{C}_2\text{H}_2\text{Cl}_3\text{O}_2$	1,2,2-Trichloroethylperoxy 7.43	$\text{C}_3\text{H}_8\text{O}$	2-Propanol 7.42.72
$\text{C}_2\text{H}_2\text{NO}_2$	Cyanomethylperoxy 7.20		
$\text{C}_2\text{H}_2\text{O}_2^-$	Carboxymethyl, anion 3.27		
$\text{C}_2\text{H}_2\text{O}_3^-$	Carboxy(hydroxy)methyl, anion 3.28		
$\text{C}_2\text{H}_2\text{O}_4^-$	Carboxymethylperoxy, anion 5.45, 45.1, 7.18		
$\text{C}_2\text{H}_3\text{Cl}_2$	1,1-Dichloroethyl 3.43 1,2-Dichloroethyl 3.44		

C <sub>3</sub> H <sub>8</sub> O <sub>6</sub> P	Dimethylphosphatomethylperoxy 5.62, 62.1	C <sub>5</sub> H <sub>7</sub> N <sub>2</sub> O <sub>5</sub>	6-Peroxy radical of thymine-5-OH adduct 7.54
C <sub>3</sub> H <sub>9</sub> O <sub>3</sub> P	Trimethyl phosphite 6.5.72		Peroxy radicals of thymine-OH adduct 7.55
C <sub>4</sub> H <sub>3</sub> N <sub>2</sub> O <sub>3</sub> <sup>-</sup>	Isobarbiturate ion 6.1.10, 7.18.3, 7.42.50	C <sub>5</sub> H <sub>7</sub> O <sub>2</sub>	Peroxy radical from cyclopentene 5.6, 6.1
C <sub>4</sub> H <sub>3</sub> N <sub>2</sub> O <sub>4</sub> <sup>-</sup>	3,6-Dioxopiperazinylperoxy, conjugate base 4.16	C <sub>5</sub> H <sub>8</sub> N <sub>2</sub> O	3,4-Dimethyl-2-pyrazolin-5-one 7.42.36
C <sub>4</sub> H <sub>4</sub> NO <sub>4</sub> <sup>2-</sup>	Carboxy(carboxymethylamino)methyl, dianion 3.34	C <sub>5</sub> H <sub>8</sub> O <sub>4</sub>	1-Acetoxy-1-methylethylperoxy 5.49, 49.1
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub>	3,6-Dioxo-2-piperazinyl 3.54	C <sub>5</sub> H <sub>9</sub>	1-Acetoxypropylperoxy 5.48, 48.1
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> O <sub>3</sub>	Uracil-OH adduct 3.59	C <sub>5</sub> H <sub>9</sub> O <sub>2</sub>	Cyclopentyl 3.4
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> O <sub>4</sub>	3,6-Dioxo-2-piperazinylperoxy 5.73, 73.1	C <sub>5</sub> H <sub>9</sub> O <sub>3</sub>	Cyclopentylperoxy 5.7, 7.1, 6.7
	Peroxy radical of uracil-H adduct 4.18, 5.75, 75.1	C <sub>5</sub> H <sub>9</sub> O <sub>4</sub>	Hydroxycyclopentylperoxy 5.33, 33.1
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> O <sub>5</sub>	6-Peroxy radical of uracil-5-OH adduct 7.52		Pivaloylperoxy 7.17
	Peroxy radical of uracil-OH adduct 5.76, 76.1		1,3-Dihydroxycyclopentylperoxy 5.37, 37.1
C <sub>4</sub> H <sub>6</sub> N <sub>3</sub> O <sub>2</sub>	Cytosine-OH adduct 3.60	C <sub>5</sub> H <sub>10</sub> IS	Radicals from deoxyribose 3.23
C <sub>4</sub> H <sub>6</sub> N <sub>3</sub> O <sub>4</sub>	6-Peroxy radical of cytosine-5-OH adduct 7.53	C <sub>5</sub> H <sub>10</sub> O <sub>2</sub> S	1-Ethylthio-3-iodopropane 7.42.40
C <sub>4</sub> H <sub>6</sub> O <sub>4</sub>	1-Acetoxyethylperoxy 5.47, 47.1	C <sub>5</sub> H <sub>11</sub> N	Methyl 3-(methylthio)propionate 7.42.62
C <sub>4</sub> H <sub>7</sub> O <sub>3</sub>	Tetrahydro-2-furanylperoxy 7.10	C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub> S	Piperidine 6.5.51
C <sub>4</sub> H <sub>7</sub> O <sub>4</sub>	2,5-Dioxacyclohexylperoxy 7.11	C <sub>5</sub> H <sub>11</sub> O <sub>2</sub>	Methionine 7.32.12, 7.42.53
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> S	3-(Methylthio)propionic acid 7.42.65	C <sub>5</sub> H <sub>11</sub> O <sub>2</sub>	1,1-Dimethylpropylperoxy 6.6
C <sub>4</sub> H <sub>9</sub>	tert-Butyl 3.3		2,2-Dimethylpropylperoxy 5.5, 5.1
C <sub>4</sub> H <sub>9</sub> N	Pyrrolidine 6.5.53	C <sub>5</sub> H <sub>11</sub> O <sub>6</sub>	Pentylperoxy 5.4, 4.1
C <sub>4</sub> H <sub>9</sub> O	1-Hydroxy-1-methylpropyl 3.17	C <sub>5</sub> H <sub>11</sub> O <sub>7</sub>	Tri(methoxy)methoxymethylperoxy 7.14
	1-Hydroxy-2-methylpropyl 3.18	C <sub>6</sub> H <sub>5</sub> O <sup>-</sup>	1,2,3,4,5-Pentahydroxypentylperoxy 4.8
C <sub>4</sub> H <sub>9</sub> O <sub>2</sub>	Butylperoxy 6.4	C <sub>6</sub> H <sub>6</sub> CoNO <sub>6</sub> <sup>-</sup>	Phenoxyde ion 6.1.11, 7.23.1, 7.27.11, 7.30.2, 7.35.12, 7.39.3, 7.42.70
	sec-Butylperoxy 5.2, 2.1		Nitrilotriacetatocobaltate(II) ion 6.1.2, 7.8.1
	tert-Butylperoxy 5.3, 3.1, 6.5	C <sub>6</sub> H <sub>6</sub> MnNO <sub>6</sub> <sup>-</sup>	Nitrilotriacetatomanganate(II) ion 7.8.3
C <sub>4</sub> H <sub>9</sub> O <sub>3</sub>	1-Ethoxyethylperoxy 5.41, 41.1, 7.9	C <sub>6</sub> H <sub>6</sub> O	Phenol 6.5.48, 7.24.8, 7.42.69
	2-Hydroxy-2,2-dimethylethylperoxy 5.32, 32.1, 7.8	C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	Hydroquinone 6.1.7, 7.24.4, 7.42.44, 7.47.5, 7.56.3, 7.58.3
C <sub>4</sub> H <sub>9</sub> O <sub>4</sub>	1,1-Dimethoxyethylperoxy 4.14	C <sub>6</sub> H <sub>6</sub> S	Thiophenol 6.5.58
C <sub>4</sub> H <sub>9</sub> O <sub>6</sub>	1,2,3,4-Tetrahydroxybutylperoxy 4.7	C <sub>6</sub> H <sub>7</sub>	Cyclohexadienyl 3.6
C <sub>4</sub> H <sub>10</sub> OS	Ethyl 2-hydroxyethyl sulfide 7.42.39	C <sub>6</sub> H <sub>7</sub> N	Aniline 6.5.12, 7.27.4, 7.35.4
C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>	sec-Butyl hydroperoxide 6.5.13	C <sub>6</sub> H <sub>7</sub> O	2-Hydroxycyclohexadienyl 3.7
C <sub>4</sub> H <sub>10</sub> O <sub>2</sub> S <sub>2</sub>	Dithiothreitol 7.59.2, 7.60.2, 7.61.1, 7.62.1	C <sub>6</sub> H <sub>7</sub> O <sub>3</sub>	Hydroxycyclohexadienylperoxy 5.35, 35.1
C <sub>4</sub> H <sub>11</sub> NO <sub>2</sub> <sup>+</sup>	Trimethylammoniomethylperoxy 7.21	C <sub>6</sub> H <sub>7</sub> O <sub>6</sub> <sup>-</sup>	Ascorbate ion 6.1.3, 7.1.1, 7.2.1, 7.3.1, 7.4.1, 7.5.4, 7.7.4, 7.8.6, 7.15.1, 7.16.1, 7.18.2, 7.20.1, 7.21.1, 7.22.1, 7.24.2, 7.25.1, 7.26.1, 7.27.5, 7.28.1, 7.29.1, 7.30.1, 7.32.4, 7.34.1, 7.35.5, 7.36.1, 7.37.1, 7.38.1, 7.39.1, 7.41.1, 7.42.17, 7.44.1, 7.45.1, 7.47.2, 7.48.1, 7.56.2, 7.58.1
C <sub>5</sub> H <sub>3</sub> N <sub>4</sub> O <sub>2</sub> <sup>-</sup>	Xanthine, negative ion 6.1.15, 7.24.10, 7.42.85, 7.47.10	C <sub>6</sub> H <sub>8</sub> N <sub>2</sub> O <sub>4</sub> <sup>-</sup>	2,5-Dimethyl-3,6-dioxopiperazinylperoxy, conjugate base 4.17
C <sub>5</sub> H <sub>3</sub> N <sub>4</sub> O <sub>3</sub> <sup>-</sup>	Urate ion 6.1.14, 7.24.9, 7.42.84, 7.47.9	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub>	Ascorbic acid 6.1.4, 7.42.18
C <sub>5</sub> H <sub>5</sub> N	Pyridine 7.42.74	C <sub>6</sub> H <sub>9</sub> N <sub>2</sub> O <sub>2</sub>	1,4-Dimethyl-3,6-dioxo-2-piperazinyl 3.56
C <sub>5</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub>	Thymine radical 3.58		2,5-Dimethyl-3,6-dioxo-2-piperazinyl 3.55
C <sub>5</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub>	1-Methyluracil 7.42.66		
C <sub>5</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub> <sup>-</sup>	Thymine radical anion 3.57		
C <sub>5</sub> H <sub>7</sub> N <sub>2</sub> O <sub>3</sub>	Thymine-OH adduct 3.61		
C <sub>5</sub> H <sub>7</sub> N <sub>2</sub> O <sub>4</sub>	Peroxy radical of thymine-H adduct 5.74, 74.1		

C <sub>6</sub> H <sub>9</sub> N <sub>2</sub> O <sub>3</sub>	Dimethyluracil-OH adduct 3.62	C <sub>8</sub> H <sub>11</sub> N	<i>N,N</i> -Dimethylaniline 7.35.9
C <sub>6</sub> H <sub>9</sub> N <sub>3</sub> O <sub>2</sub>	Histidine 7.42.43	C <sub>8</sub> H <sub>12</sub> NO <sub>2</sub>	Norpseudopelletierine <i>N</i> -oxyl 7.55.1, 7.56.5
C <sub>6</sub> H <sub>9</sub> O <sub>2</sub>	Cyclohexenylperoxy 5.10, 10.1	C <sub>8</sub> H <sub>15</sub> O <sub>2</sub>	Cyclooctylperoxy 5.17, 17.1
C <sub>6</sub> H <sub>9</sub> O <sub>6</sub>	1,2-Diacetoxyethylperoxy 5.54, 54.1	C <sub>8</sub> H <sub>15</sub> O <sub>4</sub>	Peroxy radical from octene 5.18, 18.1
C <sub>6</sub> H <sub>10</sub> O <sub>10</sub>	Cyclohexene 7.42.26	C <sub>8</sub> H <sub>17</sub> O <sub>2</sub>	Peroxy radicals from octanoic acid 7.19
C <sub>6</sub> H <sub>10</sub> O <sub>4</sub>	Acetoxybutylperoxy 5.50, 50.1	C <sub>9</sub> H <sub>9</sub> N	Octylperoxy 5.16, 16.1, 6.10
C <sub>6</sub> H <sub>10</sub> O <sub>4</sub> S	3,3'-Thiodipropionic acid 7.42.76	C <sub>9</sub> H <sub>9</sub> O <sub>4</sub>	1-Methylindole 7.42.58
C <sub>6</sub> H <sub>11</sub> O <sub>2</sub>	Cyclohexylperoxy 5.11, 11.1, 6.8	C <sub>9</sub> H <sub>10</sub> NO <sub>3</sub> <sup>-</sup>	2-Methylindole 7.42.59
C <sub>6</sub> H <sub>11</sub> O <sub>3</sub>	1,2-Dihydroxycyclohexylperoxy 5.38, 38.1		3-Methylindole 7.42.60
	Hydroxycyclohexylperoxy 5.34, 34.1	C <sub>9</sub> H <sub>9</sub> O <sub>4</sub>	Acetoxy(phenyl)methylperoxy 5.52, 52.1
C <sub>6</sub> H <sub>11</sub> O <sub>4</sub>	1,3-Dihydroxycyclohexylperoxy 5.39, 39.1	C <sub>9</sub> H <sub>10</sub> NO <sub>3</sub> <sup>-</sup>	Tyrosine, negative ion 6.1.13, 7.23.3, 7.27.14, 7.30.4, 7.32.18, 7.35.15, 7.39.4, 7.42.83
C <sub>6</sub> H <sub>11</sub> O <sub>5</sub>	1,4-Dihydroxycyclohexylperoxy 5.40, 40.1	C <sub>9</sub> H <sub>11</sub> NO <sub>3</sub>	Tyrosine 7.42.82
	1,3,5-Trimethyl-2,4,6-trioxacyclohexylperoxy 7.13	C <sub>9</sub> H <sub>11</sub> O <sup>-</sup>	2,4,6-Trimethylphenoxyde ion 7.42.78
C <sub>6</sub> H <sub>11</sub> O <sub>6</sub>	Radicals from glucose 3.24	C <sub>9</sub> H <sub>12</sub> NO <sub>3</sub>	Phenylalanine OH-adduct 3.53
C <sub>6</sub> H <sub>11</sub> O <sub>8</sub>	Peroxy radicals from glucose 4.11	C <sub>9</sub> H <sub>13</sub> N <sub>2</sub> O <sub>7</sub>	Uridine-OH adduct 3.70
C <sub>6</sub> H <sub>12</sub>	Cyclohexane 7.42.25	C <sub>9</sub> H <sub>14</sub> N <sub>3</sub> O <sub>6</sub>	Cytidine-OH adduct 3.69
C <sub>6</sub> H <sub>12</sub> N <sub>2</sub>	1,4-Diazabicyclo[2.2.2]octane 6.5.16, 7.42.29	C <sub>9</sub> H <sub>14</sub> O <sub>2</sub> S	6-(Methylthio)norbornane-2-carboxylic acid 7.42.64
C <sub>6</sub> H <sub>13</sub> O <sub>2</sub>	1,1-Dimethylbutylperoxy 5.9, 9.1	C <sub>9</sub> H <sub>15</sub> N <sub>3</sub> O <sub>6</sub>	Peroxy radical of deoxycytidine-OH adduct 7.58
	Hexylperoxy 5.8, 8.1	C <sub>9</sub> H <sub>15</sub> N <sub>3</sub> O <sub>8</sub> P	Deoxycytidyl acid-OH adduct 3.73
C <sub>6</sub> H <sub>13</sub> O <sub>3</sub>	Isopropoxy(dimethyl)methylperoxy 4.13, 5.42, 42.1	C <sub>9</sub> H <sub>15</sub> N <sub>3</sub> O <sub>9</sub> P	Cytidylic acid-OH adduct 3.72
C <sub>6</sub> H <sub>13</sub> O <sub>8</sub>	Peroxy radicals from glucitol 4.9	C <sub>9</sub> H <sub>15</sub> O <sub>3</sub> P	Triallyl phosphite 6.5.62
	Peroxy radicals from inositol 4.10	C <sub>9</sub> H <sub>15</sub> O <sub>6</sub>	1,3-Diacetoxy-2,2-dimethylpropylperoxy 5.55, 55.1
C <sub>6</sub> H <sub>14</sub> O <sub>2</sub> S <sub>4</sub> Zn <sup>II</sup>	isopropylxanthate 6.5.11	C <sub>9</sub> H <sub>18</sub> NO	2,2,6,6-Tetramethylpiperidine- <i>N</i> -oxyl 7.55.2, 7.56.6, 7.62.4
C <sub>6</sub> H <sub>15</sub> N	Triethylamine 6.5.66	C <sub>9</sub> H <sub>19</sub> OO <sup>·</sup>	Nonylperoxy 5.19, 19.1
C <sub>6</sub> H <sub>15</sub> O <sub>3</sub> P	Triethyl phosphite 6.5.67	C <sub>9</sub> H <sub>21</sub> O <sub>3</sub> P	Triisopropyl phosphite 6.5.69
C <sub>7</sub> H <sub>6</sub> NO <sub>2</sub>	4-Nitrobenzyl 3.10	C <sub>10</sub> H <sub>7</sub> DO	1-Naphthol- <i>O-d</i> 6.5.46
C <sub>7</sub> H <sub>6</sub> NO <sub>4</sub>	4-Nitrobenzylperoxy 7.3		2-Naphthol- <i>O-d</i> 6.6.2
C <sub>7</sub> H <sub>7</sub>	Benzyl 3.9	C <sub>10</sub> H <sub>7</sub> D <sub>2</sub> N	1-Naphthylamine- <i>N-d</i> <sub>2</sub> 6.5.43
C <sub>7</sub> H <sub>7</sub> O <sup>-</sup>	4-Methylphenoxyde ion 7.42.63	C <sub>10</sub> H <sub>8</sub> O	1-Naphthol 6.5.45
C <sub>7</sub> H <sub>7</sub> OS <sup>-</sup>	4-Methoxybenzenethiolate ion 7.42.55		2-Naphthol 6.5.47, 6.6.1
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub>	Benzylperoxy 7.2	C <sub>10</sub> H <sub>8</sub> S	2-Naphthalenethiol 6.5.41
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup>	4-Methoxyphenoxyde ion 7.42.57	C <sub>10</sub> H <sub>9</sub> N	1-Naphthylamine 6.5.42
C <sub>7</sub> H <sub>8</sub> OS	4-Methoxybenzenethiol 7.42.54		2-Naphthylamine 6.5.44
C <sub>7</sub> H <sub>8</sub> O <sub>2</sub>	4-Methoxyphenol 7.24.7, 7.27.10, 7.35.11, 7.42.56, 7.47.8, 7.56.4, 7.58.4	C <sub>10</sub> H <sub>11</sub> DO <sub>2</sub>	α-Tetralin hydroperoxide, deuterated (OOD) 6.5.55
C <sub>7</sub> H <sub>9</sub> N	<i>N</i> -Methylaniline 6.5.39	C <sub>10</sub> H <sub>11</sub> N	2,3-Dimethylindole 7.42.34
C <sub>7</sub> H <sub>12</sub> O <sub>4</sub>	Acetoypentylperoxy 5.51, 51.1	C <sub>10</sub> H <sub>12</sub> CoN <sub>2</sub> O <sub>8</sub> <sup>2-</sup>	Ethylenediaminetetraacetatocobaltate(II) ion 7.8.2
C <sub>7</sub> H <sub>13</sub> O <sub>2</sub>	1-Methylcyclohexylperoxy 6.9	C <sub>10</sub> H <sub>12</sub> MnN <sub>2</sub> O <sub>8</sub> <sup>2-</sup>	Ethylenediaminetetraacetatomanganate(II) ion 7.8.4
	Cycloheptylperoxy 5.15, 15.1	C <sub>10</sub> H <sub>12</sub> O <sub>2</sub>	α-Tetralin hydroperoxide 6.5.54, 6.6.3
	Methylcyclohexylperoxy 5.12, 12.1	C <sub>10</sub> H <sub>12</sub> O <sub>5</sub>	Propyl 3,4,5-trihydroxybenzoate 7.25.5, 7.26.5, 7.28.5, 7.32.16, 7.34.5, 7.36.6, 7.37.6, 7.38.5, 7.41.5, 7.42.73, 7.44.5
C <sub>7</sub> H <sub>13</sub> O <sub>8</sub>	Peroxy radicals from methyl α-D-glucopyranoside 4.12	C <sub>10</sub> H <sub>14</sub> CoO <sub>4</sub>	Bis(acetylacetato)cobalt(II) 6.5.1
C <sub>7</sub> H <sub>15</sub> O <sub>2</sub>	1,1,2,2-Tetramethylpropylperoxy 5.14, 14.1	C <sub>10</sub> H <sub>14</sub> N <sub>5</sub> O <sub>2</sub>	Deoxyadenosine OH-adduct 3.63
	Heptylperoxy 5.13, 13.1		
C <sub>8</sub> H <sub>7</sub> N	Indole 7.42.49		
C <sub>8</sub> H <sub>10</sub> N <sub>2</sub> O	<i>N,N</i> -Dimethyl-4-nitrosoaniline 7.6.3		

$C_{10}H_{14}N_5O_6P$	2'-Deoxyadenosine 5'-monophosphate 7.42.27	$C_{12}H_{18}N_5O_5$	$N^6,N^6$ -Dimethyladenosine-8-OH adduct 3.66
$C_{10}H_{14}N_5O_7P$	Deoxyguanosine 5'-monophosphate 7.42.28		$N^6,N^6$ -Dimethyladenosine-5-OH adduct 3.65
$C_{10}H_{14}O$	2,3,5,6-Tetramethylphenol 6.5.56, 7.17.7 4-( <i>tert</i> -Butyl)phenol 6.5.14		$N^6,N^6$ -Dimethyladenosine-4-OH adduct 3.64
$C_{10}H_{14}O_5V$	Bis(acetylacetone)oxovanadium(IV) 6.5.7	$C_{12}H_{19}O_8$	1,2,2-Triacetoxy-2-ethylbutylperoxyxl 5.57, 57.1
$C_{10}H_{15}N$	<i>N,N</i> -Diethylaniline 6.5.30	$C_{12}H_{23}O_2$	Cyclododecylperoxyxl 5.21, 21.1
$C_{10}H_{15}N_2O_6$	Thymidine-6-OH adduct 3.68 Thymidine-OH adduct 3.67	$C_{12}H_{23}O_3$	Peroxyl radicals from 2,6,8-trimethylnon-4-one 5.44, 44.1
$C_{10}H_{15}N_2O_8$	Peroxyl radical of thymidine-OH adduct 7.56	$C_{12}H_{25}O_2$	Dodecylperoxyxl 5.22, 22.1, 6.11
$C_{10}H_{15}N_5O_6$	Peroxyl radical of deoxyguanosine-OH adduct 7.57	$C_{12}H_{27}O_3P$	Tri( <i>tert</i> -butyl) phosphite 6.5.64
$C_{10}H_{16}N_2$	<i>N,N,N'</i> -Tetramethyl- <i>p</i> -phenylene-diamine 6.1.12, 6.2.2, 6.3.1, 6.4.1, 6.5.57, 7.5.5, 7.8.8, 7.9.1, 7.10.1, 7.11.2, 7.12.1, 7.13.1, 7.14.1, 7.15.3, 7.16.3, 7.18.4, 7.20.4, 7.27.13, 7.35.14, 7.42.75, 7.52.1, 7.53.1, 7.54.1, 7.56.7, 7.57.1, 7.58.5	$C_{12}H_{28}O_3P_2S_4ZnZinc(II)$	diisopropylthiophosphate 6.5.8
$C_{10}H_{16}N_2O_9P$	Thymidylic acid-OH adduct 3.71	$C_{13}H_8N_2$	9-Diazofluorene 7.42.30
$C_{10}H_{16}O_2S$	Methyl 6-(methylthio)norbornane-2-carboxylate 7.42.61	$C_{13}H_{11}$	Diphenylmethyl 3.11
$C_{10}H_{17}N_3O_6S$	Glutathione 7.42.41, 7.59.3, 7.60.3, 7.61.3, 7.62.3	$C_{13}H_{11}O_2$	Diphenylmethylperoxyxl 7.4
$C_{10}H_{17}O_3$	1-Hydroxy-1,7,7-trimethylbicyclo[2.2.1]heptylperoxyxl 5.36, 36.1	$C_{13}H_{13}OP$	Methoxydiphenylphosphine 6.5.37
$C_{10}H_{17}O_6$	(Ethoxycarbonyl)valeratoethylperoxyxl 5.53, 53.1	$C_{13}H_{13}P$	Methyldiphenylphosphine 6.5.40
$C_{10}H_{21}O_2$	Decylperoxyxl 5.20, 20.1	$C_{13}H_{17}N_3O$	2,3-Dimethyl-4-dimethylamino-1-phenyl-3-pyrazolin-5-one 7.42.33
$C_{11}H_{11}N_2O_3^-$	5-Hydroxytryptophan, conjugate base 6.1.9, 7.42.47	$C_{13}H_{19}O_{10}$	1,1,1-Triacetoxyethyl-2-acetoxyethylperoxyxl 5.58, 58.1
$C_{11}H_{12}N_2O$	2,3-Dimethyl-1-phenyl-3-pyrazolin-5-one 7.42.35	$C_{13}H_{25}O_2$	2,4,6,8-Tetramethylnonenyperoxyxl 5.25, 25.1
$C_{11}H_{12}N_2O_2$	Tryptophan 7.42.80	$C_{13}H_{27}O_2$	2,4,6,8-Tetramethylnonyperoxyxl 5.24, 24.1
$C_{11}H_{12}N_2O_3$	5-Hydroxytryptophan 7.42.48	$C_{14}H_{12}O_2$	Tridecylperoxyxl 5.23, 23.1
$C_{11}H_{16}O_2$	3- <i>tert</i> -Butyl-4-hydroxyanisole 6.8.1, 7.42.21 4-Methoxy-2,3,5,6-tetramethylphenol 6.5.38, 7.17.6	$C_{14}H_{13}NO$	9,10-Dihydro-9-anthracenyl hydroperoxide 6.5.31
$C_{11}H_{19}O_4$	1,3-Dipropanoato-2,2-dimethylpropylperoxyxl 5.56, 56.1	$C_{14}H_{17}N$	6-Hydroxy-1,4-dimethylcarbazole 7.42.45
$C_{12}H_9NS$	Phenothiazine 6.7.2, 6.8.6	$C_{14}H_{17}NO$	<i>N-tert</i> -Butyl-2-naphthylamine 6.9.3
$C_{12}H_{10}ClP$	Chlorodiphenylphosphine 6.5.15	$C_{14}H_{17}O_4^-$	<i>N-tert</i> -Butyl- <i>N</i> -hydroxy-2-naphthylamine 6.9.4
$C_{12}H_{11}N$	Diphenylamine 6.8.4, 6.9.10	$C_{14}H_{21}ClO$	6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion 7.24.5, 7.27.9, 7.35.10, 7.42.46, 7.47.6
$C_{12}H_{11}P$	Diphenylphosphine 6.5.33	$C_{14}H_{21}DO$	6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid 6.1.8, 7.20.3
$C_{12}H_{16}OS$	3,4-Dihydro-6-hydroxy-5,7,8-trimethylbenzothiopyran 6.5.32, 7.17.3	$C_{14}H_{21}NO$	<i>O-d</i> -2,6-Di- <i>tert</i> -butyl-4-chlorophenol 6.5.19
$C_{12}H_{18}$	Hexamethylbenzene 7.42.42	$C_{14}H_{22}O$	2,6-Di- <i>tert</i> -butyl-4-chlorophenol 6.5.18
		$C_{14}H_{24}CoN_4^{2+}$	<i>O-d</i> -2,6-Di- <i>tert</i> -butylphenol 6.5.29
		$C_{14}H_{24}CoN_4^{2+}$	1-Ethyl-1,2,3,4-tetrahydro-6-hydroxy-5,7,8-trimethylquinoline 6.5.34, 7.17.4
		$C_{14}H_{24}CoN_4^{2+}$	2,4-Di- <i>tert</i> -butylphenol 7.42.32
		$C_{14}H_{24}CoN_4^{2+}$	2,6-Di- <i>tert</i> -butylphenol 6.5.28
		$C_{14}H_{24}CoN_4^{2+}$	2,3,9,10-Tetramethyl-1,4,8,11-tetraazacyclotetradeca-1,3,8,10-tetraenecobalt(II) ion 6.1.1
		$C_{15}H_{10}O_6$	3,5,7-Trihydroxy-2-(4-hydroxyphenyl)-2-benzopyran-4-one 7.50.1
		$C_{15}H_{10}O_7$	Quercetin 7.50.2

$C_{15}H_{12}NO_2S^-$	Metiazinic acid, conjugate base	7.32.13, 7.42.67	$C_{18}H_{30}O_2$	Linolenic acid	7.24.6, 7.32.11, 7.42.52, 7.47.7
$C_{15}H_{20}DNO$	<i>O</i> - <i>d</i> -2,6-Di- <i>tert</i> -butyl-4-cyanophenol	6.5.21	$C_{18}H_{30}O_2^-$	Radicals from linoleate	3.50
$C_{15}H_{20}O_2$	2,2,5,7,8-Pentamethylbenzopyran-6-ol	7.17.5	$C_{18}H_{30}O_4^-$	Peroxy radicals from linoleate	5.68, 68.1, 7.49
		2,2,5,7,8-Pentamethylbenzopyran-6-ol	$C_{18}H_{32}O_2$	Linoleic acid	7.7.5, 7.32.10, 7.42.51, 7.49.2
		6.5.35	$C_{18}H_{32}O_2^-$	Radicals from oleate	3.49
$C_{15}H_{21}NO$	2,6-Di- <i>tert</i> -butyl-4-cyanophenol	6.5.20	$C_{18}H_{32}O_5^-$	Peroxy radicals from linoleate-OH	
$C_{15}H_{22}O_2$	3,5-Di- <i>tert</i> -butyl-4-hydroxybenzaldehyde	6.5.22	$C_{18}H_{33}O_4$	Peroxy radicals from oleic acid	7.51
$C_{15}H_{22}O_3$	3,5-Di- <i>tert</i> -butyl-4-hydroxybenzoic acid	6.5.23	$C_{18}H_{33}O_4^-$	13-Peroxy radical from linoleate	5.67, 67.1, 7.50
$C_{15}H_{23}DO$	<i>O</i> - <i>d</i> -2,6-Di- <i>tert</i> -butyl-4-methylphenol	6.5.27	$C_{18}H_{34}O_2$	Oleic acid	7.7.6, 7.32.14, 7.42.68
$C_{15}H_{23}DO_2$	<i>O</i> - <i>d</i> -2,6-Di- <i>tert</i> -butyl-4-methoxyphenol	6.5.25	$C_{18}H_{36}N_2NiS_4$	Nickel(II) dibutyldithiocarbamate	6.5.2
$C_{15}H_{24}O$	2,0-Di- <i>tert</i> -butyl-4-methylphenol	6.5.26, 6.8.2, 7.17.2, 7.42.31	$C_{19}H_{16}O_2$	Triphenylmethyl hydroperoxide	6.5.73
$C_{15}H_{24}O_2$	2,6-Di- <i>tert</i> -butyl-4-methoxyphenol	6.5.24, 7.17.1	$C_{19}H_{30}O_3$	2,6-Di- <i>tert</i> -butyl-4-carbo- <i>tert</i> -butoxyphenol	6.5.17
$C_{15}H_{25}O$	2,6-Di- <i>tert</i> -butyl-1-hydroxy-4-methylcyclohexadienyl	3.8	$C_{20}H_{21}N$	<i>N</i> -(4- <i>tert</i> -Butylphenyl)-1-naphthylamine	
$C_{16}H_{12}DN$	<i>N</i> -Phenyl-1-naphthylamine- <i>N</i> -d <sub>1</sub>	6.5.50		6.9.5	
$C_{16}H_{12}O$	2,5-Diphenylfuran	7.42.38	$C_{20}H_{21}NO$	<i>N</i> -(4- <i>tert</i> -Butylphenyl)-1-naphthylamine- <i>N</i> -oxyl	6.9.6
$C_{16}H_{13}N$	<i>N</i> -Phenyl-1-naphthylamine	6.5.49, 6.9.11	$C_{20}H_{22}N_3O_4$	Tryptophyltyrosine	7.42.81
	<i>N</i> -Phenyl-2-naphthylamine	6.9.12	$C_{20}H_{30}O_2^-$	Radicals from arachidonate	3.52
$C_{16}H_{33}$	Hexadecyl	3.5	$C_{20}H_{32}O_2$	Arachidonic acid	7.32.3, 7.42.16
$C_{16}H_{33}O_2$	Hexadecylperoxy	5.26, 26.1	$C_{21}H_{21}O_3P$	Tri(4-methoxyphenyl)phosphine	6.5.70
$C_{16}H_{36}O_4P_2S_4ZnZinc(II)$	di- <i>sec</i> -butyldithiophosphate	6.5.9	$C_{21}H_{21}P$	Tri(4-methylphenyl)phosphine	6.5.71
	Zinc(II) diisobutylthiophosphate	6.5.10	$C_{24}H_{29}N$	3,8-Di- <i>tert</i> -butyl- <i>N</i> -phenyl-1-naphthylamine	6.9.8
$C_{17}H_{20}ClN_2S^+$	Chlorpromazine, conjugate acid	7.16.2, 7.20.2, 7.24.3, 7.25.3, 7.26.3, 7.27.8, 7.28.3, 7.32.6, 7.34.3, 7.35.8, 7.36.4, 7.37.4, 7.38.3, 7.40.1, 7.41.3, 7.42.23, 7.44.3, 7.47.4	$C_{24}H_{29}NO$	4- <i>tert</i> -Butyl- <i>N</i> -(4- <i>tert</i> -butylphenyl)-1-naphthylamine- <i>N</i> -oxyl	6.9.2
$C_{17}H_{21}N_2S^+$	Promethazine, conjugate acid	7.23.2, 7.25.4, 7.26.4, 7.27.12, 7.28.4, 7.30.3, 7.32.15, 7.34.4, 7.35.13, 7.36.5, 7.37.5, 7.38.4, 7.39.2, 7.41.4, 7.42.71, 7.44.4	$C_{25}H_{43}O_{10}$	1,1,1-Tri(valeratomethyl)-2-valeratoethylperoxy	5.60, 60.1
$C_{17}H_{27}O_{10}$	1,1,1-Tri(propionatomethyl)-2-propionatoethylperoxy	5.59, 59.1	$C_{27}H_{45}O_3$	3β-3-Hydroxycholest-5-en-7-ylperoxy	
$C_{18}H_{12}Cl_3P$	Tri(4-chlorophenyl)phosphine	6.5.65	$C_{27}H_{46}O$	Cholesterol	7.32.7, 7.42.24
$C_{18}H_{12}F_3P$	Tri(4-fluorophenyl)phosphine	6.5.68	$C_{27}H_{46}O_2$	δ-Tocopherol	6.5.61, 7.17.10
$C_{18}H_{15}O_3P$	Triphenyl phosphite	6.5.75	$C_{27}H_{47}O_3$	3β-3-Hydroxycholest-5-en-7-ylperoxy	5.70, 70.1
$C_{18}H_{15}P$	Triphenylphosphine	6.5.74	$C_{28}H_{37}N$	3,8-Di- <i>tert</i> -butyl- <i>N</i> -(4- <i>tert</i> -butylphenyl)-1-naphthylamine	6.9.7
$C_{18}H_{16}N_2$	<i>N,N</i> -Diphenyl-p-phenylenediamine	6.8.5	$C_{28}H_{37}NO$	3,8-Di- <i>tert</i> -butyl- <i>N</i> -(4- <i>tert</i> -butylphenyl)-1-naphthylamine- <i>N</i> -oxyl	6.9.9
$C_{18}H_{18}N_4O_6S_4^{2-}$	2'-2',2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)	6.1.5, 7.11.1, 7.15.2, 7.25.2, 7.26.2, 7.27.6, 7.28.2, 7.32.5, 7.34.2, 7.35.6, 7.36.2, 7.37.2, 7.38.2, 7.41.2, 7.42.19, 7.44.2, 7.56.1, 7.58.2	$C_{28}H_{41}NS$	3,7-Dioctylphenothiazine	6.7.1, 6.8.3
$C_{18}H_{28}O_2^-$	Radicals from linolenate	3.51	$C_{28}H_{48}O_2$	γ-Tocopherol	6.5.60, 7.17.9
$C_{18}H_{30}O$	2,4,6-Tri- <i>tert</i> -butylphenol	6.5.63	$C_{29}H_{50}O_2$	α-Tocopherol	6.5.59, 6.8.7, 6.10.1, 6.11.1, 7.6.4, 7.17.8, 7.19.1, 7.32.17, 7.42.77, 7.51.2
			$C_{30}H_{28}ClFeN_4O_4$	Iron(III) deuteroporphyrin IX	7.24.1
			$C_{32}H_{32}FeN_4O_4^+$	Iron(III) deuteroporphyrin, dimethyl ester	7.5.1, 7.42.2

$C_{33}H_{27}O_{10}$	1,1,1-Tribenzoatomethyl-2-benzoatoethylperoxy 5.61, 61.1	$Cu^+$	Copper(I) ion 7.6.1, 7.7.1
$C_{33}H_{34}N_4O_6^{2-}$	Bilirubin dianion 6.1.6, 6.2.1, 7.27.7, 7.29.2, 7.31.1, 7.33.1, 7.35.7, 7.36.3, 7.37.3, 7.42.20, 7.43.1, 7.45.2, 7.46.1, 7.47.3, 7.48.2	$Cu^{2+}$	Copper(II) ion 7.6.2
$C_{36}H_{30}Pb_2$	Hexaphenyldilead 6.5.5	$Fe^{2+}$	Iron(II) ion 7.7.2
$C_{36}H_{30}Sn_2$	Hexaphenylditin 6.5.6	$HO^-$	Hydroxide ion 4.1.3, 4.2.2, 4.3.3
$C_{36}H_{43}FeN_4O_4$	Iron(III) deuteroporphyrin IX (2-propoxy)(2-propanol) 7.32.2, 7.42.4	$HO_4P^{2-}$	Hydrogen phosphate ion 4.1.2, 4.2.3, 4.3.2
$C_{38}H_{44}N_5ORu^{2+}$	2,3,7,8,12,13,17,18-Octaethylporphinato(carbonyl)cyanoruthenium(II) ion 7.42.6	$H_{15}N_6ORu^{2+}$	Pentaamminenitrosylruthenium(III) ion, electron adduct 7.8.5
$C_{38}H_{50}FeN_4O_4$	Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol) <sub>2</sub> 7.7.3, 7.27.1, 7.32.1, 7.35.1, 7.42.3, 7.47.1, 7.49.1, 7.51.1	$O_3S^{2-}$	Sulfite ion 7.18.1, 7.42.7
$C_{39}H_{67}O_4$	3 $\beta$ -3-Dodecanoyloxycholest-5-en-7-ylperoxy 5.71, 71.1		
$C_{39}H_{69}O_4$	3 $\beta$ -3-Dodecanoyloxycholestan-7-ylperoxy 5.72, 72.1		
$C_{40}H_{24}N_8Zn$	5,10,15,20-Tetrakis(4-pyridyl)porphinatozinc(II) 7.42.10		
$C_{40}H_{56}$	$\beta$ -Carotene 7.42.22		
$C_{44}H_{24}N_4O_{12}S_4Zn^{4+}$	5,10,15,20-Tetrakis(4-sulfonatophenyl)porphinatozincate(II) ion 7.42.15		
$C_{44}H_{28}GaN_4^{+}$	5,10,15,20-Tetraphenylporphinatogallium(III) ion 7.42.5		
$C_{44}H_{28}N_4O_4Zn$	5,10,15,20-Tetrakis(2-hydroxyphenyl)porphinatozinc(II) 7.42.12		
	5,10,15,20-Tetrakis(3-hydroxyphenyl)porphinatozinc(II) 7.42.13		
	5,10,15,20-Tetrakis(4-hydroxyphenyl)porphinatozinc(II) 7.42.14		
$C_{44}H_{28}N_4Zn$	5,10,15,20-Tetraphenylporphinatozinc(II) 7.42.8		
$C_{44}H_{36}N_8Zn^{4+}$	5,10,15,20-Tetrakis(1-methylpyridinium-4-yl)porphinatozinc(II) ion 7.42.11		
$C_{48}H_{36}N_4Zn$	5,10,15,20-Tetrakis(4-methylphenyl)porphinatozinc(II) 7.27.2, 7.35.2		
$C_{49}H_{33}N_5Zn$	5,10,15,20-Tetraphenylporphinatozinc(II) pyridine complex 7.42.9		
$C_{53}H_{41}N_5Zn$	5,10,15,20-Tetrakis(4-methylphenyl)porphinatozinc(II) pyridine complex 7.27.3, 7.35.3		
$ClO_2^-$	Chlorite ion 7.42.1		
$Cl_3P$	Phosphorus trichloride 6.5.4		
$Cl_5Pt^{2-}$	Pentachloroplatinate(III) ion 7.5.3		

## 8.2 Chemical Name Index

- Acetoxybutylperoxy 5.50, 50.1  
 1-Acetoxyethylperoxy 5.47, 47.1  
 Acetoxymethyl 3.30  
 1-Acetoxy-1-methylethylperoxy 5.49, 49.1  
 Acetoxymethylperoxy 5.46, 46.1  
 Acetoxypentylperoxy 5.51, 51.1  
 Acetoxy(phenyl)methylperoxy 5.52, 52.1  
 1-Acetoxypropylperoxy 5.48, 48.1  
 Acetylperoxy 7.15  
 Allylperoxy 7.1  
 2-Amino-2-carboxy-1-hydroxyethyl, anion 3.35  
 Amino(carboxy)methyl, anion 3.33  
 Amino(carboxy)methylperoxy 4.15  
 2-Aminoethanethiol 7.59.1, 7.60.1, 7.61.2, 7.62.2  
 2-Amino-4-(methylthio)butanoic acid 7.32.12, 7.42.53  
 1-Aminonaphthalene-*N,N-d*<sub>2</sub> 6.5.43  
 1-Aminonaphthalene 6.5.42  
 2-Aminonaphthalene 6.5.44  
 Aminopyrine 7.42.33  
 Aniline 6.5.12, 7.27.4, 7.35.4  
 Aniline, *N,N*-dimethyl- 7.35.9  
 Aniline, *N,N*-dimethyl-4-nitroso- 7.6.3  
 Aniline, *N*-methyl- 6.5.39  
 1-Anilinonaphthalene 6.5.49, 6.9.11  
 2-Anilinonaphthalene 6.9.12  
 Antipyrine 7.42.35  
 Arachidonate radicals 3.52  
 Arachidonic acid 7.32.3, 7.42.16  
 Ascorbate ion 6.1.3, 7.1.1, 7.2.1, 7.3.1, 7.4.1, 7.5.4,  
     7.7.4, 7.8.6, 7.15.1, 7.16.1, 7.18.2, 7.20.1, 7.21.1,  
     7.22.1, 7.24.2, 7.25.1, 7.26.1, 7.27.5, 7.28.1, 7.29.1,  
     7.30.1, 7.32.4, 7.34.1, 7.35.5, 7.36.1, 7.37.1, 7.38.1,  
     7.39.1, 7.41.1, 7.42.17, 7.44.1, 7.45.1, 7.47.2,  
     7.48.1, 7.56.2, 7.58.1  
 Ascorbic acid 6.1.4, 7.42.18  
 2,2'-Azinobis(3-ethylbenzothiazoline-6-sulfonate ion)  
     6.1.5, 7.11.1, 7.15.2, 7.25.2, 7.26.2, 7.27.6, 7.28.2,  
     7.32.5, 7.34.2, 7.35.6, 7.36.2, 7.37.2, 7.38.2, 7.41.2,  
     7.42.19, 7.44.2, 7.56.1, 7.58.2  
 Benzaldehyde, 3,5-di-*tert*-butyl-4-hydroxy- 6.5.22  
 Benzenamine, *N,N*-diethyl- 6.5.30  
 Benzenamine, *N,N*-dimethyl- 7.35.9  
 Benzenamine, *N,N*-dimethyl-4-nitroso- 7.6.3  
 Benzenamine, *N*-methyl- 6.5.39  
 Benzenamine, *N*-phenyl- 6.8.4, 6.9.10  
 Benzene, 1,4-dihydroxy- 6.1.7, 7.24.4, 7.42.44, 7.47.5,  
     7.56.3, 7.58.3  
 Benzene, hexamethyl- 7.42.42  
 1,4-Benzenediamine, *N,N,N',N'*-tetramethyl- 6.1.12,  
     6.2.2, 6.3.1, 6.4.1, 6.5.57, 7.5.5, 7.8.8, 7.9.1,  
     7.10.1, 7.11.2, 7.12.1, 7.13.1, 7.14.1, 7.15.3, 7.16.3,  
     7.18.4, 7.20.4, 7.27.13, 7.35.14, 7.42.75, 7.52.1,  
     7.53.1, 7.54.1, 7.56.7, 7.57.1, 7.58.5  
 Benzenethiol 6.5.58  
 Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-,  
     1,1-dimethylethyl ester 6.5.17  
 Benzoic acid, 3,5-di-*tert*-butyl-4-hydroxy- 6.5.23  
 Benzonitrile, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-  
     6.5.20  
 2*H*-1-Benzopyran-2-carboxylic acid, 3,4-dihydro-6-  
     hydroxy-2,5,7,8-tetramethyl- 6.1.8, 7.20.3  
 2*H*-1-Benzopyran-2-carboxylic acid, 3,4-dihydro-6-  
     hydroxy-2,5,7,8-tetramethyl-, ion(1-) 7.24.5,  
     7.27.9, 7.35.10, 7.42.46, 7.47.6  
 2*H*-1-Benzopyran-6-ol, 3,4-dihydro-2,8-dimethyl-2-  
     (4,8,12-trimethyltridecyl)- 6.5.61, 7.17.10  
 2*H*-1-Benzopyran-6-ol, 3,4-dihydro-2,5,7,8-tetramethyl-  
     2-(4,8,12-trimethyltridecyl)-, 6.5.59, 6.8.7, 6.10.1,  
     6.11.1, 7.6.4, 7.17.8, 7.19.1, 7.32.17, 7.42.77,  
     7.51.2  
 2*H*-1-Benzopyran-6-ol, 3,4-dihydro-2,7,8-trimethyl-2-  
     (4,8,12-trimethyltridecyl)- 6.5.60, 7.17.9  
 Benzopyran-6-ol, 2,2,5,7,8-pentamethyl- 7.17.5  
 Benzopyran-6-ol, 2,2,5,7,8-pentamethyl- 6.5.35  
 1-Benzopyran-4-one, 2,(3,4-dihydroxyphenyl)-3,5,7-  
     trihydroxy- 7.50.2  
 1-Benzopyran-4-one, 3,5,7-trihydroxy-2-(4-  
     hydroxyphenyl)- 7.50.1  
 Benzyl 3.9  
 Benzylperoxy 7.2  
 Bicyclo[2.2.1]heptane-2-carboxylic acid, 6-(methylthio)-  
     7.42.64  
 Bicyclo[2.2.1]heptane-2-carboxylic acid, 6-(methylthio)-,  
     methyl ester 7.42.61  
 Bicyclo[2.2.1]heptylperoxy, 1-hydroxy-1,7,7-trimethyl-  
     5.36, 36.1  
 Biline-8,12-dipropanoate ion, 2,17-diethenyl-  
     1,10,19,22,23,24-hexahydro-3,7,13,17-  
     tetramethyl-1,19-dioxo- 6.1.6, 6.2.1, 7.27.7,  
     7.29.2, 7.31.1, 7.33.1, 7.35.7, 7.36.3, 7.37.3,  
     7.42.20, 7.43.1, 7.45.2, 7.46.1, 7.47.3, 7.48.2  
 Bilirubin dianion 6.1.6, 6.2.1, 7.27.7, 7.29.2, 7.31.1,  
     7.33.1, 7.35.7, 7.36.3, 7.37.3, 7.42.20, 7.43.1,  
     7.45.2, 7.46.1, 7.47.3, 7.48.2  
 Bis(acetylacetone)cobalt(II) 6.5.1  
 Bis(acetylacetone)oxovanadium(IV) 6.5.7  
 1,4-Bis(*N,N*-dimethylamino)benzene 6.1.12, 6.2.2,  
     6.3.1, 6.4.1, 6.5.57, 7.5.5, 7.8.8, 7.9.1, 7.10.1,  
     7.11.2, 7.12.1, 7.13.1, 7.14.1, 7.15.3, 7.16.3, 7.18.4,  
     7.20.4, 7.27.13, 7.35.14, 7.42.75, 7.52.1, 7.53.1,  
     7.54.1, 7.56.7, 7.57.1, 7.58.5  
 Bis(2,4-pentanedionato)cobalt(II) 6.5.1  
 1,4-Bis(*N*-phenylamino)benzene 6.8.5

- Bromomethylperoxy 7.45  
 Butylated hydroxyanisole 6.8.1, 7.42.21  
 Butylated hydroxytoluene 6.5.26, 6.8.2, 7.17.2, 7.42.31  
*4-tert-Butyl-N-(4-tert-butylphenyl)-1-naphthylamine* 6.9.1  
*4-tert-Butyl-N-(4-tert-butylphenyl)-1-naphthylamine-N-oxyl* 6.9.2  
*sec-Butyl hydroperoxide* 6.5.13  
*3-tert-Butyl-4-hydroxyanisole* 6.8.1, 7.42.21  
*N-tert-Butyl-2-naphthylamine* 6.9.4  
*N-tert-Butyl-2-naphthylamine* 6.9.3  
 Butylperoxy 6.4  
*sec-Butylperoxy* 5.2, 2.1  
*tert-Butylperoxy* 5.3, 3.1, 6.5  
*4-(tert-Butyl)phenol* 6.5.14  
*N-(4-tert-Butylphenyl)-1-naphthylamine* 6.9.5  
*N-(4-tert-Butylphenyl)-1-naphthylamine-N-oxyl* 6.9.6  
*tert-Butyl* 3.3  
 Camphor ketyl peroxy radical 5.36, 36.1  
 Carboxy(carboxymethylamino)methyl, dianion 3.34  
 Carboxy(chloro)methylperoxy, anion 7.30  
 Carboxy(dichloro)methylperoxy, anion 7.39  
 Carboxy(difluoro)methylperoxy, anion 7.23  
 1-Carboxy-1-hydroxyethyl, anion 3.29  
 Carboxy(hydroxy)methyl, anion 3.28  
 Carboxymethyl, anion 3.27  
 Carboxymethyldioxy ion(1-) 5.45, 45.1, 7.18  
 Carboxymethylperoxy, anion 5.45, 45.1, 7.18  
 $\beta$ -Carotene 7.42.22  
 Chlorite ion 7.42.1  
 1-Chloro-2,2-difluoro-2-methoxyethyl 3.41  
 1-Chloro-2,2-difluoro-2-methoxyethylperoxy 7.34  
 Chlorodifluoromethylperoxy 7.31  
 2-Chloro-10-dimethylaminopropylphenothiazine, conjugate acid 7.16.2, 7.20.2, 7.24.3, 7.25.3, 7.26.3, 7.27.8, 7.28.3, 7.32.6, 7.34.3, 7.35.8, 7.36.4, 7.37.4, 7.38.3, 7.40.1, 7.41.3, 7.42.23, 7.44.3, 7.47.4  
 Chlorodiphenylphosphine 6.5.15  
 1-Chloroethyl 3.39  
 1-Chloroethylperoxy 7.28  
 2-Chloroethylperoxy 7.29  
 Chloromethyl 3.38  
 Chloromethylperoxy 7.27  
 2-Chloro-1,1,2,2-tetrafluoroethylperoxy 7.33  
 1-Chloro-2,2,2-trifluoroethyl 3.40  
 1-Chloro-2,2,2-trifluoroethylperoxy 7.32  
 Chlorpromazine, conjugate acid 7.16.2, 7.20.2, 7.24.3, 7.25.3, 7.26.3, 7.27.8, 7.28.3, 7.32.6, 7.34.3, 7.35.8, 7.36.4, 7.37.4, 7.38.3, 7.40.1, 7.41.3, 7.42.23, 7.44.3, 7.47.4  
 Cholestan-7-ylperoxy, 3 $\beta$ -3-dodecanoyloxy- 5.72, 72.1  
 Cholestan-7-ylperoxy, 3 $\beta$ -3-hydroxy- 5.70, 70.1  
 Cholest-5-en-7-ylperoxy, 3 $\beta$ -3-dodecanoyloxy- 5.71, 71.1  
 Cholest-5-en-7-ylperoxy, 3 $\beta$ -3-hydroxy- 5.69, 69.1  
 Cholesterol 7.32.7, 7.42.24  
 6-Chromanol, 2-carboxy-2,5,7,8-tetramethyl- 6.1.8, 7.20.3  
 6-Chromanol, 2,8-dimethyl-2-(4,8,12-trimethyltridecyl)- 6.5.61, 7.17.10  
 6-Chromanol, 2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)- 6.5.59, 6.8.7, 6.10.1, 6.11.1, 7.6.4, 7.17.8, 7.19.1, 7.32.17, 7.42.77, 7.51.2  
 6-Chromanol, 2,7,8-trimethyl-2-(4,8,12-trimethyltridecyl)- 6.5.60, 7.17.9  
 Cleland's Reagent, 7.59.2, 7.60.2, 7.61.1, 7.62.1  
 Cobalt(II), 2,3,9,10-tetramethyl-1,4,8,11-tetraazacyclotetradeca-1,3,8,10-tetraene 6.1.1  
 Copper(II) ion 7.6.2  
 Copper(I) ion 7.6.1, 7.7.1  
 Cu,Zn-Erythrocuprein 7.8.7  
 Cyanomethylperoxy 7.20  
 Cyclododecylperoxy 5.21, 21.1  
 Cycloheptylperoxy 5.15, 15.1  
 Cyclohexadienyl 3.6  
 Cyclohexadienylperoxy, hydroxy- 5.35, 35.1  
 Cyclohexane 7.42.25  
 Cyclohexene 7.42.26  
 Cyclohexenylperoxy 5.10, 10.1  
 Cyclohexylperoxy 5.11, 11.1, 6.8  
 Cyclohexylperoxy, methyl- 5.12, 12.1  
 Cyclooctylperoxy 5.17, 17.1  
 Cyclopentenylperoxy 5.6, 6.1  
 Cyclopentyl 3.4  
 Cyclopentylperoxy 5.7, 7.1, 6.7  
 Cysteamine 7.59.1, 7.60.1, 7.61.2, 7.62.2  
 Cysteine 7.32.8  
 Cytidine-OH adduct 3.69  
 Cytidine 5'-monophosphate-OH adduct 3.72  
 Cytidylic acid-OH adduct 3.72  
 Cytosine-OH adduct 3.60  
 DNA-OH adduct 3.74  
 Decylperoxy 5.20, 20.1  
 Deoxyadenosine OH-adduct 3.63  
 2'-Deoxyadenosine 5'-monophosphate 7.42.27  
 Deoxyadenosine monophosphate 7.42.27  
 Deoxyadenylic acid 7.42.27  
 2'-Deoxy-5'-adenylic acid 7.42.27  
 2'-Deoxycytidine 5'-monophosphate OH-adduct 3.73  
 Deoxycytidylic acid-OH adduct 3.73  
 Deoxyguanosine 5'-monophosphate 7.42.28  
 Deoxyguanylic acid 7.42.28  
 Deuterohemin 7.24.1  
 1,3-Diacetoxy-2,2-dimethylpropylperoxy 5.55, 55.1

- 1,2-Diacetoxethylperoxy 5.54, 54.1  
 1,4-Diazabicyclo[2.2.2]octane 6.5.16, 7.42.29  
 9-Diazofluorene 7.42.30  
 Dibromomethylperoxy 7.46  
 3,8-Di-*tert*-butyl-*N*-(4-*tert*-butylphenyl)-1-naphthylamine 6.9.7  
 3,8-Di-*tert*-butyl-*N*-(4-*tert*-butylphenyl)-1-naphthylamine-*N*-oxyl 6.9.9  
 2,6-Di-*tert*-butyl-4-carbo-*tert*-butoxyphenol 6.5.17  
 2,6-Di-*tert*-butyl-4-carboxyphenol 6.5.23  
*O*-*d*-2,6-Di-*tert*-butyl-4-chlorophenol 6.5.19  
 2,6-Di-*tert*-butyl-4-chlorophenol 6.5.18  
 2,6-Di-*tert*-butyl-*p*-cresol 6.5.26, 6.8.2, 7.17.2, 7.42.31  
*O*-*d*-2,6-Di-*tert*-butyl-4-cyanophenol 6.5.21  
 2,6-Di-*tert*-butyl-4-cyanophenol 6.5.20  
 2,6-Di-*tert*-butyl-4-formylphenol 6.5.22  
 3,5-Di-*tert*-butyl-4-hydroxybenzaldehyde 6.5.22  
 3,5-Di-*tert*-butyl-4-hydroxybenzoic acid 6.5.23  
 2,6-Di-*tert*-butyl-1-hydroxy-4-methylcyclohexadienyl 3.8  
 3,5-Di-*tert*-butyl-4-hydroxytoluene 6.5.26, 6.8.2, 7.17.2, 7.42.31  
*O*-*d*-2,6-Di-*tert*-butyl-4-methoxyphenol 6.5.25  
 2,6-Di-*tert*-butyl-4-methoxyphenol 6.5.24, 7.17.1  
*O*-*d*-2,6-Di-*tert*-butyl-4-methylphenol 6.5.27  
 2,6-Di-*tert*-butyl-4-methylphenol 6.5.26, 6.8.2, 7.17.2, 7.42.31  
 2,4-Di-*tert*-butylphenol 7.42.32  
*O*-*d*-2,6-Di-*tert*-butylphenol 6.5.29  
 2,6-Di-*tert*-butylphenol 6.5.28  
 3,8-Di-*tert*-butyl-*N*-phenyl-1-naphthylamine 6.9.8  
 Dichloro(cyano)methyl 3.45  
 Dichloro(cyano)methylperoxy 7.38  
 1,1-Dichloroethyl 3.43  
 1,2-Dichloroethyl 3.44  
 1,1-Dichloroethylperoxy 7.36  
 1,2-Dichloroethylperoxy 7.37  
 Dichlorofluoromethylperoxy 7.40  
 Dichloromethyl 3.42  
 Dichloromethylperoxy 7.35  
 1,2-Dichloro-1,2,2-trifluoroethyl 3.46  
 1,2-Dichloro-1,2,2-trifluoroethylperoxy 7.41  
 2,17-Diethenyl-1,10,19,22,23,24-hexahydro-3,7,13,17-tetramethyl-1,19-dioxobiline-8,12-dipropanoate ion 6.1.6, 6.2.1, 7.27.7, 7.29.2, 7.31.1, 7.33.1, 7.35.7, 7.36.3, 7.37.3, 7.42.20, 7.43.1, 7.45.2, 7.46.1, 7.47.3, 7.48.2  
*N,N*-Diethylaniline 6.5.30  
 9,10-Dihydro-9-anthracenyl hydroperoxide 6.5.31  
 3,4-Dihydro-6-hydroxy-5,7,8-trimethylbenzothiopyran 6.5.32, 7.17.3  
 1,4-Dihydroxybenzene 6.1.7, 7.24.4, 7.42.44, 7.47.5, 7.56.3, 7.58.3  
 2,3-Dihydroxy-1,4-butanedithiol (*R*<sup>\*</sup>,*R*<sup>\*</sup>)(±) 7.59.2, 7.60.2, 7.61.1, 7.62.1  
 1,2-Dihydroxycyclohexylperoxy 5.38, 38.1  
 1,3-Dihydroxycyclohexylperoxy 5.39, 39.1  
 1,4-Dihydroxycyclohexylperoxy 5.40, 40.1  
 1,3-Dihydroxycyclopentylperoxy 5.37, 37.1  
 1,2-Dihydroxyethyl 3.21  
 1,2-Dihydroxyethylperoxy 4.5  
 Dihydroxymethyl 3.20  
 Dihydroxymethylperoxy 4.4  
 2,(3,4-Dihydroxyphenyl)-3,5,7-trihydroxy-1-benzopyran-4-one 7.50.2  
*threo*-1,4-Dimercapto-2,3-butanediol 7.59.2, 7.60.2, 7.61.1, 7.62.1  
 1,1-Dimethoxyethylperoxy 4.14  
*N*<sup>6</sup>,*N*<sup>6</sup>-Dimethyladenosine-4-OH adduct 3.64  
*N*<sup>6</sup>,*N*<sup>6</sup>-Dimethyladenosine-5-OH adduct 3.65  
*N*<sup>6</sup>,*N*<sup>6</sup> Dimethyladenosine-8-OH adduct 3.66  
 4-Dimethylaminoantipyrine 7.42.33  
 Dimethylaminomethyl 3.32  
*N,N*-Dimethylaniline 7.35.9  
 1,1-Dimethylbutylperoxy 5.9, 9.1  
 4,5-Dimethyl-1,2-dihydro-3-pyrazolone 7.42.36  
 2,3-Dimethyl-4-dimethylamino-1-phenyl-3-pyrazolin-5-one 7.42.33  
 1,4-Dimethyl-3,6-dioxo-2-piperazinyl 3.56  
 2,5-Dimethyl-3,6-dioxo-2-piperazinyl 3.55  
 2,5-Dimethyl-3,6-dioxopiperazinylperoxy, conjugate base 4.17  
 1,1-Dimethylethyl 3.3  
 2(3)-(1,1-Dimethylethyl)-4-methoxyphenol 6.8.1, 7.42.21  
 1,1-Dimethylethylperoxy 5.3, 3.1, 6.5  
 4-(1,1-Dimethylethyl)phenol 6.5.14  
 2,3-Dimethylindole 7.42.34  
*N,N*-Dimethyl-4-nitrosoaniline 7.6.3  
 2,3-Dimethyl-1-phenyl-3-pyrazolin-5-one 7.42.35  
 Dimethylphosphatometylperoxy 5.62, 62.1  
 1,1-Dimethylpropylperoxy 6.6  
 2,2-Dimethylpropylperoxy 5.5, 5.1  
 3,4-Dimethyl-2-pyrazolin-5-one 7.42.36  
 Dimethyl sulfide 7.32.9, 7.42.37  
 Dimethyluracil-OH adduct 3.62  
 3,7-Dioctylphenothiazine 6.7.1, 6.8.3  
 2,5-Dioxacyclohexylperoxy 7.11  
 Dioxanylperoxy 7.11  
 3,6-Dioxo-2-piperazinyl 3.54  
 3,6-Dioxopiperazinylperoxy, conjugate base 4.16  
 3,6-Dioxo-2-piperazinylperoxy 5.73, 73.1  
 Diphenylamine 6.8.4, 6.9.10

2,5-Diphenylfuran 7.42.38  
 Diphenylmethyl 3.11  
 Diphenylmethylperoxy 7.4  
*N,N'*-Diphenyl-*p*-phenylenediamine 6.8.5  
 Diphenylphosphine 6.5.33  
 1,3-Dipropanoato-2,2-dimethylpropylperoxy 5.56, 56.1  
 Dismutase, superoxide 7.8.7  
 Dithiothreitol 7.59.2, 7.60.2, 7.61.1, 7.62.1  
 $3\beta$ -3-Dodecanoyloxychostan-7-ylperoxy 5.72, 72.1  
 $3\beta$ -3-Dodecanoyloxycholest-5-en-7-ylperoxy 5.71, 71.1  
 Dodecylperoxy 5.22, 22.1, 6.11  
 Durenol 6.5.56, 7.17.7  
 E.C. 1.15.1.1 7.8.7  
 E.C. 3.4.4.4 7.42.79  
 5,8,11,14-Eicosatetraenoic acid 7.32.3, 7.42.16  
 Ethanethiol, 2-amino- 7.59.1, 7.60.1, 7.61.2, 7.62.2  
 Ethenyl, 2-hydroxy- 3.19  
 (Ethoxycarbonyl)valeratoethylperoxy 5.53, 53.1  
 1-Ethoxyethylperoxy 5.41, 41.1, 7.9  
 Ethyl 3.2  
 Ethyl, 2-amino-2-carboxy-1-hydroxy-, ion(1-) 3.35  
 Ethyl, 1-chloro- 3.39  
 Ethyl, 1-chloro-2,2-difluoro-2-methoxy- 3.41  
 Ethyl, 1,1-dichloro- 3.43  
 Ethyl, 1,2-dichloro- 3.44  
 Ethyl, 1,2-dichloro-1,2,2-trifluoro- 3.46  
 Ethyl, 1,1-dimethyl- 3.3  
 Ethyl, pentachloro- 3.48  
 Ethyl, 1,2,2-trifluoro-2-(difluoromethoxy)- 3.37  
 Ethyl, 2,2,2-trifluoro-1-(difluoromethoxy)- 3.36  
 Ethyldioxy, 1-chloro-2,2-difluoro-2-methoxy- 7.34  
 Ethyldioxy, 1,2,2-trifluoro-2-(difluoromethoxy)- 7.25  
 Ethylenediaminetetraacetatocobaltate(II) ion 7.8.2  
 Ethylenediaminetetraacetatomanganate(II) ion 7.8.4  
 Ethyl 2-hydroxyethyl sulfide 7.42.39  
 Ethylperoxy 6.2  
 Ethylperoxy, 1-chloro-2,2,2-trifluoro- 7.32  
 Ethylperoxy, 1,1-dichloro- 7.36  
 Ethylperoxy, 1,2-dihydroxy- 4.5  
 Ethylperoxy, 1,1-dimethyl- 5.3, 3.1, 6.5  
 Ethylperoxy, 1-hydroxy- 4.2, 5.29, 29.1, 7.6  
 Ethylperoxy, 2-hydroxy- 5.30, 30.1  
 Ethylperoxy, 2-hydroxy-2,2-dimethyl- 5.32, 32.1, 7.8  
 Ethylperoxy, 1-hydroxy-1-methyl- 4.3, 5.31, 31.1, 7.7  
 Ethylperoxy, 1-methyl- 5.1, 1.1, 6.3  
 Ethylperoxy, 1-oxo- 7.15  
 2-Ethyl-2-propylperoxy 6.6  
 1-Ethyl-1,2,3,4-tetrahydro-6-hydroxy-5,7,8-trimethylquinoline 6.5.34, 7.17.4  
 2-(Ethylthio)ethanol 7.42.39  
 1-Ethylthio-3-iodopropane 7.42.40

Ferrideuteroporphyrin, dimethyl ester 7.5.1, 7.42.2  
 Ferrideuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub> 7.7.3, 7.27.1, 7.32.1, 7.35.1, 7.42.3, 7.47.1, 7.49.1, 7.51.1  
 Ferrideuteroporphyrin IX 7.24.1  
 Ferrideuteroporphyrin IX (2-propoxy)(2-propanol) 7.32.2, 7.42.4  
 Fluoromethylperoxy 7.22  
 Furan, 2,5-diphenyl- 7.42.38  
 Gallium(III) 5,10,15,20-tetraphenylporphyrin 7.42.5  
 Glucose radicals 3.24  
 $\gamma$ -L-Glutamyl-L-cysteinylglycine 7.42.41, 7.59.3, 7.60.3, 7.61.3, 7.62.3  
 Glutathione 7.42.41, 7.59.3, 7.60.3, 7.61.3, 7.62.3  
 Heptylperoxy 5.13, 13.1  
 Hexadecyl 3.5  
 Hexadecylperoxy 5.26, 26.1  
 Hexahydro-5(or 6)-hydroxy-2,4-dioxopyrimidinyl 3.59  
 Hexamethylbenzene 7.42.42  
 Hexaphenyldilead 6.5.5  
 Hexaphenyldiplumbane 6.5.5  
 Hexaphenyldistannane 6.5.6  
 Hexaphenylditin 6.5.6  
 Hexylperoxy 5.8, 8.1  
 Histidine 7.42.43  
 Hydrogen phosphate ion 4.1.2, 4.2.3, 4.3.2  
 Hydroquinone 6.1.7, 7.24.4, 7.42.44, 7.47.5, 7.56.3, 7.58.3  
 Hydroxide ion 4.1.3, 4.2.2, 4.3.3  
 $3\beta$ -3-Hydroxychostan-7-ylperoxy 5.70, 70.1  
 $3\beta$ -3-Hydroxycholest-5-en-7-ylperoxy 5.69, 69.1  
 2-Hydroxycyclohexadienyl 3.7  
 Hydroxycyclohexadienylperoxy 5.35, 35.1  
 Hydroxycyclohexylperoxy 5.34, 34.1  
 Hydroxycyclopentylperoxy 5.33, 33.1  
 6-Hydroxy-1,4-dimethylcarbazole 7.42.45  
 2-Hydroxy-2,2-dimethylethylperoxy 5.32, 32.1, 7.8  
 2-Hydroxyethenyl 3.19  
 1-Hydroxyethyl 3.13  
 2-Hydroxyethyl 3.14  
 1-Hydroxyethylperoxy 4.2, 5.29, 29.1, 7.6  
 2-Hydroxyethylperoxy 5.30, 30.1  
 Hydroxymethyl 3.12  
 1-Hydroxy-1-methylethyl 3.16  
 1-Hydroxy-1-methylethylperoxy 4.3, 5.31, 31.1, 7.7  
 Hydroxymethylperoxy 4.1, 5.28, 28.1, 7.5  
 1-Hydroxy-1-methylpropyl 3.17  
 1-Hydroxy-2-methylpropyl 3.18  
 6-Hydroxy-2,2,5,7,8-pentamethylchromene 7.17.5  
 6-Hydroxy-2,2,5,7,8-pentamethylchromene 6.5.35  
 1-Hydroxypropyl 3.15

- 6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate ion **7.24.5, 7.27.9, 7.35.10, 7.42.46, 7.47.6**
- 6-Hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid **6.1.8, 7.20.3**
- 1-Hydroxy-1,7,7-trimethylbicyclo[2.2.1]heptylperoxy **5.36, 36.1**
- 5-Hydroxytryptophan, conjugate base **6.1.9, 7.42.47**
- 5-Hydroxytryptophan **7.42.48**
- Indole **7.42.49**
- Indole, 1-methyl- **7.42.58**
- Indole, 2-methyl- **7.42.59**
- Indole, 3-methyl- **7.42.60**
- Iodomethylperoxy **7.48**
- Iron(III) deuteroporphyrin, dimethyl ester **7.5.1, 7.42.2**
- Iron(III) deuteroporphyrin, dimethyl ester, (2-propanol)<sub>2</sub> **7.7.3, 7.27.1, 7.32.1, 7.35.1, 7.42.3, 7.47.1, 7.49.1, 7.51.1**
- Iron(III) deuteroporphyrin IX **7.24.1**
- Iron(III) deuteroporphyrin IX (2-propoxy)(2-propanol) **7.32.2, 7.42.4**
- Iron(II) ion **7.7.2**
- Isobarbiturate ion **6.1.10, 7.18.3, 7.42.50**
- Isopropanol **7.42.72**
- Isopropoxy(dimethyl)methylperoxy **4.13, 5.42, 42.1**
- Isopropyl alcohol **7.42.72**
- Kaempferol **7.50.1**
- 13-Linoleate peroxyl radical **5.67, 67.1, 7.50**
- Linoleate radical **3.50**
- Linoleic acid **7.7.5, 7.32.10, 7.42.51, 7.49.2**
- Linolenate radical **3.51**
- Linolenic acid **7.24.6, 7.32.11, 7.42.52, 7.47.7**
- 2-Mercaptonaphthalene **6.5.41**
- Methionine **7.32.12, 7.42.53**
- 4-Methoxybenzenethiol **7.42.54**
- 4-Methoxybenzenethiolate ion **7.42.55**
- Methoxycarbonylmethyl **3.31**
- 2-Methoxy-1,3,2-dioxaphospholane **6.5.36**
- Methoxydiphenylphosphine **6.5.37**
- 2-Methoxy-2-oxoethyl **3.31**
- 4-Methoxyphenol **7.24.7, 7.27.10, 7.35.11, 7.42.56, 7.47.8, 7.56.4, 7.58.4**
- 4-Methoxyphenoxyde ion **7.42.57**
- 4-Methoxy-2,3,5,6-tetramethylphenol **6.5.38, 7.17.6**
- Methyl **3.1**
- Methyl, carboxy(carboxymethylamino)-, dianion **3.34**
- Methyl, dichloro(cyano)- **3.45**
- N*-Methylaniline **6.5.39**
- Methylcyclohexylperoxy **5.12, 12.1**
- 1-Methylcyclohexylperoxy **6.9**
- 10-(2-Methyl-2-dimethylaminoethyl)phenothiazine, conjugate acid **7.23.2, 7.25.4, 7.26.4, 7.27.12, 7.28.4, 7.30.3, 7.32.15, 7.34.4, 7.35.13, 7.36.5, 7.37.5, 7.38.4, 7.39.2, 7.41.4, 7.42.71, 7.44.4**
- Methyldiphenylphosphine **6.5.40**
- Methyl diphenylphosphinite **6.5.37**
- 1-Methylindole **7.42.58**
- 2-Methylindole **7.42.59**
- 3-Methylindole **7.42.60**
- Methyl 6-(methylthio)norbornane-2-carboxylate **7.42.61**
- Methyl 3-(methylthio)propionate **7.42.62**
- Methylperoxy **6.1**
- Methylperoxy, chloro- **7.27**
- Methylperoxy, dichloro- **7.35**
- Methylperoxy, dichloro(cyano)- **7.38**
- Methylperoxy, dihydroxy- **4.4**
- Methylperoxy, diphenyl- **7.4**
- Methylperoxy, phenyl- **7.2**
- Methylperoxy, trichloro- **4.19, 5.65, 65.1, 7.42**
- Methylperoxy, trimethylammonio- **7.21**
- 10-Methylphenothiazin-2-ylacetate ion **7.32.13, 7.42.67**
- 4-Methylphenoxyde ion **7.42.63**
- Methyl phosphite **6.5.72**
- 1-Methylpropylperoxy **5.2, 2.1**
- Methyl sulfide **7.32.9, 7.42.37**
- 6-(Methylthio)norbornane-2-carboxylic acid **7.42.64**
- 3-(Methylthio)propionic acid **7.42.65**
- 1-Methyluracil **7.42.66**
- N*<sub>1</sub>-Methyluracil **7.42.66**
- Metiazinic acid, conjugate base **7.32.13, 7.42.67**
- 1-Naphthalenamine-*N,N*-*d*<sub>2</sub> **6.5.43**
- 1-Naphthalenamine **6.5.42**
- 2-Naphthalenamine **6.5.44**
- Naphthalene, 1-amino- **6.5.42**
- Naphthalene, 2-amino- **6.5.44**
- Naphthalene, 1-anilino- **6.5.49, 6.9.11**
- Naphthalene, 2-anilino- **6.9.12**
- Naphthalene, 1-hydroxy- **6.5.45**
- Naphthalene, 2-hydroxy- **6.5.47, 6.6.1**
- Naphthalene, 2-mercaptop- **6.5.41**
- 2-Naphthalenethiol **6.5.41**
- 1-Naphthol **6.5.45**
- 1-Naphthol-*O*-*d* **6.5.46**
- 2-Naphthol **6.5.47, 6.6.1**
- 2-Naphthol-*O*-*d* **6.6.2**
- $\alpha$ -Naphthol **6.5.45**
- $\beta$ -Naphthol **6.5.47, 6.6.1**
- $\beta$ -Naphthol-*O*-*d* **6.6.2**
- 1-Naphthylamine, *N*-phenyl- **6.5.49, 6.9.11**
- 2-Naphthylamine, *N*-phenyl- **6.9.12**

- 1-Naphthylamine 6.5.42  
 1-Naphthylamine-*N*-*d*<sub>2</sub> 6.5.43  
 2-Naphthylamine 6.5.44  
*N*-1-Naphthylaniline 6.5.49, 6.9.11  
*N*-2-Naphthylaniline 6.9.12  
 2-Naphthylphenylamine 6.9.12  
 Nickel(II) dibutyldithiocarbamate 6.5.2  
 Nitrilotriacetatocobaltate(II) ion 6.1.2, 7.8.1  
 Nitrilotriacetatomanganate(II) ion 7.8.3  
 4-Nitrobenzyl 3.10  
 4-Nitrobenzylperoxy 7.3  
 4-Nitroso-*N,N*-dimethylaniline 7.6.3  
 Nonylperoxy 5.19, 19.1  
*N*orpseudopelletierine *N*-oxyl 7.55.1, 7.56.5  
*Z,Z*-9,12-Octadecadienoic acid 7.7.5, 7.32.10, 7.42.51, 7.49.2  
 9-Octadecenoic acid 7.7.6, 7.32.14, 7.42.68  
 2,3,7,8,12,13,17,18- Octaethylporphinato(carbonyl)cyanoruthenium(II) ion 7.42.6  
 Octenylperoxy 5.18, 18.1  
 Octylperoxy 5.16, 16.1, 6.10  
 Oleate radicals 3.49  
 Oleic acid 7.7.6, 7.32.14, 7.42.68  
 3-Oxo-9-azabicyclo[3.3.1]non-9-yloxy 7.55.1, 7.56.5  
 2-Oxopropyl 3.26  
 2-Oxopropylperoxy 5.43, 43.1, 7.16  
 Pentaamminenitrosylruthenium(III) ion, electron adduct 7.8.5  
 Pentabromoplatinate(III) ion 7.5.2  
 Pentachloroethyl 3.48  
 Pentachloroethylperoxy 7.44  
 Pentachloroplatinate(III) ion 7.5.3  
 1,2,3,4,5-Pentahydroxypentylperoxy 4.8  
 2,2,5,7,8-Pentamethylbenzopyran-6-ol 7.17.5  
 2,2,5,7,8-Pentamethylbenzopyran-6-ol 6.5.35  
 2,2,5,7,8-Pentamethylchrom-6-ol 7.17.5  
 2,2,5,7,8-Pentamethylchrom-6-ol 6.5.35  
 Pentylperoxy 5.4, 4.1  
 Perfluoropolyetherperoxy from photooxid. of C<sub>2</sub>F<sub>4</sub> 5.63, 63.1  
 Perfluoropolyetherperoxy from photooxid. of C<sub>3</sub>F<sub>6</sub> 5.64, 64.1  
 Peroxyl radical from alanine anhydride, conjugate base 4.17  
 Peroxyl radical from cholestanol 5.70, 70.1  
 Peroxyl radical from cholestanyl laurate 5.72, 72.1  
 Peroxyl radical from cholesterol 5.69, 69.1  
 Peroxyl radical from cholesteryl laurate 5.71, 71.1  
 Peroxyl radical from cyclopentene 5.6, 6.1  
 Peroxyl radical from dioxane 7.11  
 Peroxyl radical from glycine anhydride 5.73, 73.1  
 13-Peroxyl radical from linoleate 5.67, 67.1, 7.50  
 Peroxyl radical from octene 5.18, 18.1  
 6-Peroxyl radical of cytosine-5-OH adduct 7.53  
 Peroxyl radical of deoxycytidine-OH adduct 7.58  
 Peroxyl radical of deoxyguanosine-OH adduct 7.57  
 Peroxyl radical of double-stranded DNA-OH adduct 7.62  
 Peroxyl radical of phenol-H adduct 5.35, 35.1  
 Peroxyl radical of polyadenylic acid-OH adduct 7.60  
 Peroxyl radical of polyuridylic acid-OH adduct 7.59  
 Peroxyl radical of single-stranded DNA-OH adduct 7.61  
 Peroxyl radical of thymidine-OH adduct 7.56  
 Peroxyl radical of thymine-H adduct 5.74, 74.1  
 6-Peroxyl radical of thymine-5-OH adduct 7.54  
 Peroxyl radical of uracil-H adduct 4.18, 5.75, 75.1  
 6-Peroxyl radical of uracil-5-OH adduct 7.52  
 Peroxyl radical of uracil-OH adduct 5.76, 76.1  
 Peroxyl radicals from glucitol 4.9  
 Peroxyl radicals from glucose 4.11  
 Peroxyl radicals from inositol 4.10  
 Peroxyl radicals from linoleate 5.68, 68.1, 7.49  
 Peroxyl radicals from linoleate-OH adduct 5.66, 66.1  
 Peroxyl radicals from methyl α-D-glucopyranoside 4.12  
 Peroxyl radicals from octanoic acid 7.19  
 Peroxyl radicals from oleic acid 7.51  
 Peroxyl radicals from polypropylene 5.27, 27.1  
 Peroxyl radicals from 2,6,8-trimethylnon-4-one 5.44, 44.1  
 Peroxyl radicals of thymine-OH adduct 7.55  
 Phenazone 7.42.35  
 Phenol 6.5.48, 7.24.8, 7.42.69  
 Phenol, 3,5-bis(1,1-dimethylethyl)-4-chloro- 6.5.18  
 Phenol, 3,5-bis(1,1-dimethylethyl)-4-methoxy- 6.5.24, 7.17.1  
 Phenol, 2,6-di-*tert*-butyl-4-carboxy- 6.5.23  
 Phenol, 2,6-di-*tert*-butyl-4-formyl- 6.5.22  
 Phenol, 4-methoxy- 7.24.7, 7.27.10, 7.35.11, 7.42.56, 7.47.8, 7.56.4, 7.58.4  
 Phenol, 4-methoxy-2,3,5,6-tetramethyl- 6.5.38, 7.17.6  
 Phenolate ion 6.1.11, 7.23.1, 7.27.11, 7.30.2, 7.35.12, 7.39.3, 7.42.70  
 Phenothiazine 6.7.2, 6.8.6  
 Phenothiazine, 2-chloro-10-dimethylaminopropyl-, conjugate acid 7.16.2, 7.20.2, 7.24.3, 7.25.3, 7.26.3, 7.27.8, 7.28.3, 7.32.6, 7.34.3, 7.35.8, 7.36.4, 7.37.4, 7.38.3, 7.40.1, 7.41.3, 7.42.23, 7.44.3, 7.47.4  
 Phenothiazine, 10-(2-methyl-2-dimethylaminoethyl)-, conjugate acid 7.23.2, 7.25.4, 7.26.4, 7.27.12, 7.28.4, 7.30.3, 7.32.15, 7.34.4, 7.35.13, 7.36.5, 7.37.5, 7.38.4, 7.39.2, 7.41.4, 7.42.71, 7.44.4

- Phenothiazine-2-acetate ion, 10-methyl- 7.32.13,  
7.42.67
- Phenoxyde ion 6.1.11, 7.23.1, 7.27.11, 7.30.2, 7.35.12,  
7.39.3, 7.42.70
- Phenoxyde ion, 4-methoxy- 7.42.57
- Phenoxyde ion, 4-methyl- 7.42.63
- Phenylalanine OH-adduct 3.53
- p*-Phenylenediamine, *N,N*-diphenyl- 6.8.5
- p*-Phenylenediamine, *N,N,N',N'*-tetramethyl- 6.1.12,  
6.2.2, 6.3.1, 6.4.1, 6.5.57, 7.5.5, 7.8.8, 7.9.1,  
7.10.1, 7.11.2, 7.12.1, 7.13.1, 7.14.1, 7.15.3, 7.16.3,  
7.18.4, 7.20.4, 7.27.13, 7.35.14, 7.42.75, 7.52.1,  
7.53.1, 7.54.1, 7.56.7, 7.57.1, 7.58.5
- Phenylmethyl 3.9
- N*-Phenyl-1-naphthylamine 6.5.49, 6.9.11
- N*-Phenyl-1-naphthylamine-*N-d*<sub>1</sub> 6.5.50
- N*-Phenyl-2-naphthylamine 6.9.12
- Phosphorus tribromide 6.5.3
- Phosphorus trichloride 6.5.4
- 2-Piperazinylperoxyl, 2,5-dimethyl-3,6-dioxo-, conjugate base 4.17
- 2-Piperazinylperoxyl, 3,6-dioxo- 5.73, 73.1
- Piperidine 6.5.51
- Piperidine, 2,2,6,6-tetramethyl-1-oxyl- 7.55.2, 7.56.6,  
7.62.4
- Pivaloylperoxyl 7.17
- Platinate(2-), pentabromo- 7.5.2
- Plumbane, hexaphenyl 6.5.5
- Porphine, 5,10,15,20-tetrakis(2-hydroxyphenyl)-,  
zinc(II) 7.42.12
- Porphine, 5,10,15,20-tetrakis(3-hydroxyphenyl)-,  
zinc(II) 7.42.13
- Porphine, 5,10,15,20-tetrakis(4-hydroxyphenyl)-,  
zinc(II) 7.42.14
- Porphine, 5,10,15,20-tetrakis(4-methylphenyl)-, zinc(II)  
7.27.2, 7.35.2
- Porphine, 5,10,15,20-tetrakis(1-methylpyridinium-4-  
yl)-, zinc(II) 7.42.11
- Porphine, 5,10,15,20-tetrakis(4-pyridyl)-, zinc(II)  
7.42.10
- Porphine, 5,10,15,20-tetrakis(4-sulfonatophenyl)-,  
zinc(II) 7.42.15
- Porphine, 5,10,15,20-tetraphenyl-, gallium(III) ion  
7.42.5
- Porphine, 5,10,15,20-tetraphenyl-, zinc(II) 7.42.8
- Porphine, 5,10,15,20-tetraphenyl-, zinc(II), pyridine  
complex 7.42.9
- Porphine-2,18-dipropanoic acid, 3,7,12,17-tetramethyl-,  
chloroiron(III) 7.24.1
- Porphine-2,18-dipropanoic acid, 3,7,12,17-tetramethyl-,  
dimethyl ester, iron(III) 7.5.1, 7.42.2
- Porphine-2,18-dipropanoic acid, 3,7,12,17-tetramethyl-,  
dimethyl ester, iron(III), bis(2-propanol) 7.7.3,  
7.27.1, 7.32.1, 7.35.1, 7.42.3, 7.47.1, 7.49.1, 7.51.1
- Promethazine, conjugate acid 7.23.2, 7.25.4, 7.26.4,  
7.27.12, 7.28.4, 7.30.3, 7.32.15, 7.34.4, 7.35.13,  
7.36.5, 7.37.5, 7.38.4, 7.39.2, 7.41.4, 7.42.71,  
7.44.4
- 2-Propanol 7.42.72
- 2-Propanol radical 3.16
- Propionaldehyde 6.5.52
- Propyl gallate 7.25.5, 7.26.5, 7.28.5, 7.32.16, 7.34.5,  
7.36.6, 7.37.6, 7.38.5, 7.41.5, 7.42.73, 7.44.5
- Propylperoxyl, 2-oxo- 5.43, 43.1, 7.16
- Propylperoxyl, 1,2,3-trihydroxy- 4.6
- 2-Propylperoxyl 5.1, 1.1, 6.3
- Propyl 3,4,5-trihydroxybenzoate 7.25.5, 7.26.5, 7.28.5,  
7.32.16, 7.34.5, 7.36.6, 7.37.6, 7.38.5, 7.41.5,  
7.42.73, 7.44.5
- Purin-4,6-dione ion(1-) 6.1.15, 7.24.10, 7.42.85,  
7.47.10
- Purin-2,6,8-trione, 7,9-dihydro- ion(1-) 6.1.14, 7.24.9,  
7.42.84, 7.47.9
- 2-Pyrazolin-5-one, 3,4-dimethyl- 7.42.36
- 3-Pyrazolin-5-one, 2,3-dimethyl-1-phenyl- 7.42.35
- Pyridine 7.42.74
- Pyrimidine, 2,4,5-trihydroxy- ion(1-) 6.1.10, 7.18.3,  
7.42.50
- 2,4-Pyrimidinedione, 5-methyl-, radical ion (1-) 3.57
- 5-Pyrimidinyl, 1-(2-deoxy- $\beta$ -D-erythropentofuranosyl)hexahydro-6-hydroxy-5-methyl-2,4-dioxo- 3.67
- Pyrimidinyl, 1,2,6,-?tetrahydro-5-methyl-2,6-dioxo- 3.58
- 6-Pyrimidinylperoxyl, 4-amino-5-hydroxy-2-oxo- 7.53
- 5-Pyrimidinylperoxyl, hexahydro-5-methyl-2,4-dioxo- 5.74, 74.1
- 6-Pyrimidinylperoxyl, hexahydro-5-hydroxy-2,4-dioxo- 7.52
- Pyrimidinylperoxyl, hexahydro(hydroxy)-2,4-dioxo- 5.76, 76.1
- Pyrimidinylperoxyl, hexahydro(hydroxy)-5-methyl-2,4-dioxo- 7.55
- Pyrimidinylperoxyl, hexahydro-2,4-dioxo- 4.18, 5.75,  
75.1
- Pyrrolidine 6.5.53
- Quercetin 7.50.2
- Radical from alanine anhydride 3.55
- Radical from *d*-*erythro*-2-Deoxypentose 3.23
- Radical from glycine anhydride 3.54
- Radical from sarcosine anhydride 3.56
- Radicals from arachidonate 3.52
- Radicals from deoxyribose 3.23
- Radicals from glucose 3.24
- Radicals from linoleate 3.50
- Radicals from linolenate 3.51
- Radicals from oleate 3.49

- Radicals from polyethylene oxide 3.25  
 Serine radical, conjugate base 3.35  
 Skatole 7.42.60  
 Stannane, hexaphenyl 6.5.6  
 Sulfite ion 7.18.1, 7.42.7  
 Superoxide dismutase 7.8.7  
 Tetrahydro-2-furanylperoxy 7.10  
 Tetrahydropyrrole 6.5.53  
 1,2,3,4-Tetrahydroxybutylperoxy 4.7  
 5,10,15,20-Tetrakis(2-hydroxyphenyl)porphinatozinc(II) 7.42.12  
 5,10,15,20-Tetrakis(3-hydroxyphenyl)porphinatozinc(II) 7.42.13  
 5,10,15,20-Tetrakis(4-hydroxyphenyl)porphinatozinc(II) 7.42.14  
 5,10,15,20-Tetrakis(4-methylphenyl)porphinatozinc(II) 7.27.2, 7.35.2  
 5,10,15,20-Tetrakis(4-methylphenyl)porphinatozinc(II) pyridine complex 7.27.3, 7.35.3  
 5,10,15,20-Tetrakis(1-methylpyridinium-4-yl)porphinatozinc(II) ion 7.42.11  
 5,10,15,20-Tetrakis(4-pyridyl)porphinatozinc(II) 7.42.10  
 5,10,15,20-Tetrakis(4-sulfonatophenyl)porphinatozincate(II) ion 7.42.15  
 $\alpha$ -Tetralin hydroperoxide, deuterated (OOD) 6.5.55  
 $\alpha$ -Tetralin hydroperoxide 6.5.54, 6.6.3  
 $(all-E)$ -3,7,12,16-Tetramethyl-1,18-bis(2,6,6-trimethyl-1-cyclohexen-1-yl)-1,3,5,7,9,11,13,15,17-octadecanonaene 7.42.22  
 2,4,6,8-Tetramethylnononylperoxy 5.25, 25.1  
 2,4,6,8-Tetramethylnonylperoxy 5.24, 24.1  
 2,3,5,6-Tetramethylphenol 6.5.56, 7.17.7  
 $N,N,N',N'$ -Tetramethyl-*p*-phenylenediamine 6.1.12, 6.2.2, 6.3.1, 6.4.1, 6.5.57, 7.5.5, 7.8.8, 7.9.1, 7.10.1, 7.11.2, 7.12.1, 7.13.1, 7.14.1, 7.15.3, 7.16.3, 7.18.4, 7.20.4, 7.27.13, 7.35.14, 7.42.75, 7.52.1, 7.53.1, 7.54.1, 7.56.7, 7.57.1, 7.58.5  
 2,2,6,6-Tetramethylpiperidine-*N*-oxyl 7.55.2, 7.56.6, 7.62.4  
 3,7,12,17-Tetramethylporphine-2,18-dipropanoato(chloro)ferrate(III), dihydrogen 7.24.1  
 3,7,12,17-Tetramethylporphine-2,18-dipropanoatoiron(III) ion, dimethyl ester 7.5.1, 7.42.2  
 3,7,12,17-Tetramethylporphine-2,18-dipropanoatoiron(III), dimethyl ester, bis(2-propanol) 7.7.3, 7.27.1, 7.32.1, 7.35.1, 7.42.3, 7.47.1, 7.49.1, 7.51.1  
 1,1,2,2-Tetramethylpropylperoxy 5.14, 14.1  
 2,3,9,10-Tetramethyl-1,4,8,11-tetraazacyclotetradeca-1,3,8,10-tetraenecobalt(II) ion 6.1.1  
 5,10,15,20-Tetraphenylporphinatogallium(III) ion 7.42.5  
 5,10,15,20-Tetraphenylporphinatozinc(II) 7.42.8  
 5,10,15,20-Tetraphenylporphinatozinc(II) pyridine complex 7.42.9  
 3,3'-Thiodipropionic acid 7.42.76  
 Thiophenol 6.5.58  
 Thymidine-OH adduct 3.67  
 Thymidine-6-OH adduct 3.68  
 Thymidine 5'-monophosphate-OH adduct 3.71  
 Thymidylic acid-OH adduct 3.71  
 Thymine-OH adduct 3.61  
 Thymine radical 3.58  
 Thymine radical anion 3.57  
 $\alpha$ -Tocopherol 6.5.59, 6.8.7, 6.10.1, 6.11.1, 7.6.4, 7.17.8, 7.19.1, 7.32.17, 7.42.77, 7.51.2  
 $\gamma$ -Tocopherol 6.5.60, 7.17.9  
 $\delta$ -Tocopherol 6.5.61, 7.17.10  
 1,2,2-Triacetoxy-2-ethylbutylperoxy 5.57, 57.1  
 1,1,1-Triacetoxyethyl-2-acetoxyethylperoxy 5.58, 58.1  
 Triallyl phosphite 6.5.62  
 1,1,1-Tribenzoatomethyl-2-benzoatoethylperoxy 5.61, 61.1  
 Tribromomethylperoxy 7.47  
 2,4,6-Tri-*tert*-butylphenol 6.5.63  
 Tri(*tert*-butyl) phosphite 6.5.64  
 1,2,2-Trichloroethylperoxy 7.43  
 Trichloromethyl 3.47  
 Trichloromethylperoxy 4.19, 5.65, 65.1, 7.42  
 Tri(4-chlorophenyl)phosphine 6.5.65  
 Tridecylperoxy 5.23, 23.1  
 Triethylamine 6.5.66  
 Triethylenediamine 6.5.16, 7.42.29  
 Triethyl phosphite 6.5.67  
 1,2,2-Trifluoro-2-(difluoromethoxy)ethyl 3.37  
 1,2,2-Trifluoro-2-(difluoromethoxy)ethylperoxy 7.25  
 2,2,2-Trifluoro-1-(difluoromethoxy)ethyl 3.36  
 2,2,2-Trifluoro-1-difluoromethoxyethylperoxy 7.26  
 Trifluoromethylperoxy 7.24  
 Tri(4-fluorophenyl)phosphine 6.5.68  
 3,5,7-Trihydroxy-2-(4-hydroxyphenyl)-2-benzopyran-4-one 7.50.1  
 1,2,3-Trihydroxypropyl 3.22  
 1,2,3-Trihydroxypropylperoxy 4.6  
 2,4,5-Trihydroxypyrimidine, conjugate base 6.1.10, 7.18.3, 7.42.50  
 Triisopropyl phosphite 6.5.69  
 Tri(methoxy)methoxymethylperoxy 7.14  
 Tri(4-methoxyphenyl)phosphine 6.5.70  
 Trimethylacetylperoxy 7.17  
 Trimethylammoniomethylperoxy 7.21

- 2,6,8-Trimethyl-4-oxononylperoxy 5.44, 44.1  
 2,4,6-Trimethylphenoxyde ion 7.42.78  
 Tri(4-methylphenyl)phosphine 6.5.71  
 Trimethyl phosphite 6.5.72  
 1,3,5-Trimethyl-2,4,6-trioxacyclohexylperoxy 7.13  
 Trimethyltrioxanylperoxy 7.13  
 2,4,6-Trioxacyclohexylperoxy 7.12  
 Trioxanylperoxy 7.12  
 Triphenylmethyl hydroperoxide 6.5.73  
 Triphenylphosphine 6.5.74  
 Triphenyl phosphite 6.5.75  
 1,1,1-Tri(propionatomethyl)-2-propionatoethylperoxy 5.59, 59.1  
 Tri-*p*-tolylphosphine 6.5.71  
 1,1,1-Tri(valeratomethyl)-2-valeratoethylperoxy 5.60, 60.1  
 Trolox C 6.1.8, 7.20.3  
 Trolox C anion 7.24.5, 7.27.9, 7.35.10, 7.42.46, 7.47.6  
 Trypsin 7.42.79  
 Tryptophan 7.42.80  
 Tryptophan, 5-hydroxy-, conjugate base 6.1.9, 7.42.47  
 Tryptophan, 5-hydroxy- 7.42.48  
 Tryptophyltyrosine 7.42.81  
 Tyrosine 7.42.82  
 Tyrosine, negative ion 6.1.13, 7.23.3, 7.27.14, 7.30.4, 7.32.18, 7.35.15, 7.39.4, 7.42.83  
 Uracil, *N*<sub>1</sub>-methyl- 7.42.66  
 Uracil-OH adduct 3.59  
 Urate ion 6.1.14, 7.24.9, 7.42.84, 7.47.9  
 Uric acid anion 6.1.14, 7.24.9, 7.42.84, 7.47.9  
 Uridine-OH adduct 3.70  
 Vanadium, oxobis(2,4-pentanedionato)- 6.5.7  
 Vitamin C 6.1.4, 7.42.18  
 Vitamin E 6.5.59, 6.8.7, 6.10.1, 6.11.1, 7.6.4, 7.17.8, 7.19.1, 7.32.17, 7.42.77, 7.51.2  
 Xanthine, negative ion 6.1.15, 7.24.10, 7.42.85, 7.47.10  
 Zinc(II) di-sec-butyldithiophosphate 6.5.9  
 Zinc(II) diisobutyldithiophosphate 6.5.10  
 Zinc(II) diisopropyldithiophosphate 6.5.8  
 Zinc(II) isopropylxanthate 6.5.11  
 Zinc(II) pyridine(5,10,15,20-tetraphenylporphyrin) 7.42.9  
 Zinc(II) tetra(2-hydroxyphenyl)porphyrin 7.42.12  
 Zinc(II) tetra(3-hydroxyphenyl)porphyrin 7.42.13  
 Zinc(II) tetra(4-hydroxyphenyl)porphyrin 7.42.14  
 Zinc(II) 5,10,15,20-tetrakis(4-methylphenyl)porphyrin 7.27.2, 7.35.2  
 Zinc(II) 5,10,15,20-tetrakis(1-methylpyridinium-4-yl)porphyrin 7.42.11  
 Zinc(II) 5,10,15,20-tetrakis(4-pyridyl)porphyrin 7.42.10  
 Zinc(II) 5,10,15,20-tetrakis(4-sulfonatophenyl)porphyrin 7.42.15  
 Zinc(II) 5,10,15,20-tetraphenylporphyrin 7.42.8