

# **General Administrative Regulation under the Federal Water Act on the Classification of Substances Hazardous to Waters into Water Hazard Classes**

**(Verwaltungsvorschrift wassergefährdende Stoffe - VwVwS)  
of 17 May 1999**

**This translation has not been officially approved  
and is for information purposes only.**

Pursuant to Article 19g (5) of the Federal Water Management Act (WHG) in the version promulgated on 12 November 1996 (Federal Law Gazette I p. 1695), the following general administrative regulation is issued:

## **1 Scope of application**

1.1 This Administrative Regulation specifies, pursuant to Article 19g (5) second sentence WHG, the substances that are able to persistently impair the physical, chemical or biological characteristics of water (substances hazardous to waters), and it classifies them in keeping with their hazard potential, and on the basis of their physical, chemical and biological substance properties, into water hazard classes (WGK).

Substances within the meaning of this Administrative Regulation also include substance groups and mixtures.

Substance groups are groups of substances with common functional, active or structural characteristics.

Mixtures are preparations or combinations of two or more substances, and solutions in water.

1.2 The following are defined as non-hazardous to waters within the meaning of Article 19g (5) WHG:

- a) Substances listed in Annex 1,
- b) Substances that fulfil the prerequisites set forth in Annex 3 (5) and are not listed in Annex 2,
- c) Mixtures that fulfil the prerequisites set forth in Number 2.2.2 and are not listed in Annex 2,
- d) Foods within the meaning of the Act on Foods and Consumer Goods (Lebensmittel- und Bedarfsgegenstandegesetz), where not listed in Annex 2,
- e) Feeds within the meaning of the Feedstuffs Act (Futtermittelgesetz), where not listed in Annex 2.

## **2 Definition and classification of substances hazardous to waters**

### **2.1 Substances**

2.1.1 All substances listed in Annex 2 are hazardous to waters. In addition, all those substances are hazardous to waters that, on the basis of their physical, chemical or biological characteristics, do not fulfil the prerequisites set forth in Annex 3 (5) for substances non-hazardous to waters.

2.1.2 The substances hazardous to waters are classified into the following water hazard classes, in keeping with their hazard potential:

WGK 3: severe hazard to waters,

WGK 2: hazard to waters,

WGK 1: low hazard to waters.

2.1.3 If a substance has not been classified in Annex 2 into one of the water hazard classes, it shall be classified with the characteristics determined according with the provisions of Annex 3.

2.1.4 Substances that have been combined into substance groups are specified and classified in Annex 2.

### **2.2 Mixtures**

2.2.1 Mixtures are classified, in keeping with their hazard potential, into water hazard classes pursuant to Number 2.1.2. The water hazard class for a given mixture

a) is determined, pursuant to Annex 4 (3), on the basis of the mixture's components, if the mixture is not classified in Annex 2, or,

b) pursuant to Annex 4 (4), is determined through testing of the mixture itself, if the mixture is not classified in Annex 2.

2.2.2 Mixtures are non-hazardous to waters if they fulfil the following prerequisites:

a) Their content of WGK 1 components is less than 3 % mass share.

b) Their content of WGK 2 and 3 components is less than 0.2 % mass share.

c) WGK 3 components, carcinogenic components or components of unknown identity have not been added.

d) They do not contain any dispersants.

Number 2.1 shall apply for determination of the water hazard classes of the components.

### 3 Documentation and publication

Substances shall be considered as specified and classified in water hazard classes, pursuant to Number 2.1 in conjunction with Annex 3, if they have been published by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety or an agency it has authorised.

If different classifications, not based on use of default values pursuant to Annex 3 (2), are reported for the same substance to the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety or to its authorised agency, the substance shall be officially classified by being added to Annex 2, if it is not possible to directly reconcile the relevant classifications. If the necessary expert review cannot be completed within the short term, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety or an agency it has authorised shall publish an initial listing with the substance in the higher water hazard class only.

The following information must be documented prior to publication:

- chemically unique substance name,
- CAS number and EC number if applicable,
- water hazard class,
- classified R-phrases,
- assigned default values for non-tested characteristics,
- point total pursuant to Annex 3 (4.1),
- name and address of the classifier, date.

The following information must also be included for substances non-hazardous to waters pursuant to Number 1.2 (b):

- physical state,
- solubility in water,
- acute toxicity for a rodent species and toxicity for two aquatic organisms,
- biodegradability (for organic liquids).

#### 3a Obligation to undertake self-classification

As a result of the direct obligations, as set forth in Articles 19g ff. WHG, for operators of facilities for handling substances hazardous to waters, such operators shall also be charged with determining and documenting the water-hazard potential of relevant substances pursuant to Number 2.1 in conjunction with Annex 3, and of mixtures pursuant to Annex 4, where this Administrative Regulation does not already contain binding classification, in its Annexes 1 and 2, or the relevant substance manufacturer or distributor has not already himself carried out such classification and documentation.

#### **4 Entry into force, expiration**

This Administrative Regulation shall enter into force on the first day of the calendar month that follows its promulgation.

At the same time, the General Administrative Regulation under the Federal Water Act on the Classification of Substances Hazardous to Waters into Water Hazard Classes of 18 April 1996 (Joint Ministerial Gazette (GMBI.) p. 327) shall expire.

Approved by the Bundesrat.

Bonn, 17 May 1999

The Federal Minister for the Environment, Nature Conservation and Nuclear Safety

Jürgen Trittin

## Annex 1

### Substances non-hazardous to waters pursuant to Number 1.2a

| Substance name  | Index number |
|---|--------------|
| acetylene   | 1182         |
| aluminium oxide   | 1346         |
| argon   | 1348         |
| barium carbonate  | 781          |
| barium sulfate  | 308          |
| bitumen   | 326          |
| bromochlorodifluoromethane  | 1360         |
| n-butane  | 561          |
| n-buten-1   | 792          |
| calcium carbonate   | 317          |
| calcium fluoride  | 804          |
| canthaxanthin   | 1680         |
| chromium(III) oxide   | 806          |
| cyclododecane   | 777          |
| diethylaminoethylcellulose  | 1487         |
| 1,12-dodecanedioic acid   | 1197         |
| iron  | 748          |
| iron(II) oxide  | 750          |
| iron(II, III) oxide   | 751          |
| iron(III) hydroxide   | 752          |
| iron(III) oxide   | 800          |
| ethane  | 91           |
| ethene  | 742          |
| fatty alcohol/fatty acid ester, saturated and unsaturated, with<br>- even-numbered straight C-chain and<br>- C-number of the alcohol and fatty acid ester in each case $\geq 12$ and<br>- terminal carboxyl or OH group of fatty acid and alcohol radical <sup>11</sup> | 660          |
| fatty alcohols, saturated, with<br>- even-numbered C-chain and<br>- C-number $\geq 14$ and<br>- a terminal OH group <sup>11</sup>   | 656          |
| fatty alcohols, unsaturated, with<br>- even-numbered straight C-chain and<br>- C-number from 16-18 and<br>- a terminal OH group <sup>11</sup>   | 658          |
| fatty acids C16/18-triethylene glycol diester   | 1419         |
| fatty acids, C16-18 and C18 unsaturated, isobutyl ester   | 1435         |
| fatty acids, C16-18, 2-hexyl decyl-ester  | 1915         |
| fatty acids, saturated, straight with even-numbered C-chain and C-number $\geq 14$ and a terminal carboxyl group <sup>11</sup>  | 661          |
| isobutane   | 562          |

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|---|------|
| isopropyl myristate   | 1608 |
| isostearic acid   | 1423 |
| silicic acid, magnesium salt  | 1315 |
| carbonic acid   | 354  |
| carbon  | 801  |
| carbon dioxide  | 256  |
| plastics, including granulates, preformed parts, fibres, sheets and plastic resins, if solid, non-dispergated, not water-soluble and inert                                  | 766  |
| copper phthalocyanin  | 1339 |
| metals, if solid, not in colloidal solution and do not react with water or atmospheric oxygen   | 1443 |
| methane   | 1343 |
| 2-methyl-1-propene  | 1193 |
| natural substances such as minerals, sand, wood, carbon and pulp, and glass and ceramic materials, if solid, non-dispergated, not water-soluble and inert                   | 765  |
| 1,12-octadecandiol  | 1768 |
| palmitic acid isopropyl ester   | 1669 |
| paraffins (waxes)   | 268  |
| pentaerythritol tetra fatty acid ester (C6-C10)   | 770  |
| petroleum coke  | 433  |
| propane   | 560  |
| propene   | 816  |
| soot, industrial, if labelling with R 45 is not required  | 1742 |
| oxygen  | 743  |
| sulfur, lumpy   | 842  |
| sulfur hexafluoride   | 846  |
| silicon dioxide   | 849  |
| silicon dioxide, surface-treated with hexamethyldisilazane, hydrophobic   | 1429 |
| soybean sterol, refined   | 1899 |
| nitrogen  | 1351 |
| strontium carbonate   | 803  |
| tallow fatty acid isobutyl ester  | 1898 |
| titanium dioxide  | 1345 |
| triglycerides (peroxidized, fatty acid radical with even-numbered straight C-chain and C-number $\geq 12$ ) <sup>11</sup>   | 762  |
| triglycerides (industrially untreated or hydrated; fatty acid radical saturated and unsaturated, with even-numbered, straight C-chain and C-number $\geq 8$ ) <sup>11</sup> | 760  |
| vaselines (hydrated)  | 1935 |
| hydrogen  | 741  |
| zinc  | 1349 |

#### Footnotes:

<sup>11</sup>The assessment refers to the substance without additives. Where additives are added, higher WGK are possible pursuant to the provisions set forth in Annex 4 (classification of mixtures into water hazard classes).

## Annex 2

### Substances hazardous to waters according to number 2.1.1

*(This list has not been translated. It is also possible to look for certain substances via CAS-number or part of substance name on the web-site of the Federal Environmental Agency ([www.umweltbundesamt.de/wgk.htm](http://www.umweltbundesamt.de/wgk.htm)))*

| Substance Name  | Index Number | WGK |
|---|--------------|-----|
| Acemetacin  | 1082         | 3   |
| Acephat   | 677          | 2   |
| Acetaldehyd   | 1            | 1   |
| Acetamid  | 2            | 1   |
| 1-Acetamino-7-hydroxynaphthalin                               | 1823         | 1   |
| Acetanhydrid  | 3            | 1   |
| Acet-p-anisidin   | 1502         | 1   |
| Acetessigsäureethylester                                      | 4            | 1   |
| Acetessigsäuremethylester                                     | 5            | 1   |
| Acetoacetanilid   | 1125         | 1   |
| Aceton <sup>14</sup>  | 6            | 1   |
| Acetoncyanhydrin  | 7            | 3   |
| Acetonitril   | 8            | 2   |
| Acetophenon   | 735          | 1   |
| N-(2-Acetoxyethyl)-1,2,3,4-tetrahydro-2,2,4-trimethylchinolin | 1891         | 2   |
| Acetylacetonperoxid <sup>26</sup>                             | 1491         | 1   |
| Acetyl-m-aminobenzoessäure                                    | 1693         | 1   |
| 2-Acetylamino-4-methylphenol                                  | 1816         | 1   |
| Acetylchlorid   | 784          | 1   |
| $\alpha$ -Acetyldigoxin                                       | 976          | 3   |
| $\beta$ -Acetyldigoxin  | 1015         | 3   |
| $\alpha$ -Acetyldigoxin                                       | 1016         | 3   |
| Acetyldigoxin-12  | 1060         | 3   |
| Acetylgitoxin-16  | 1030         | 3   |
| Acetyl- $\beta$ -methyldigoxin-12                             | 1081         | 3   |
| N-Acetyl-N-methyl-p-phenylendiamin                            | 1637         | 1   |
| 4-Acetyl-morpholin  | 1747         | 1   |
| Acetylstrophanthidin-3  | 1024         | 3   |
| Acetylthiocholinjodid   | 987          | 3   |
| Acovenosid-A  | 969          | 3   |
| Acrolein  | 9            | 3   |
| Acroleincyanhydrin-O-acetat                                   | 850          | 3   |
| Acrylamid   | 716          | 3   |
| Acrylnitril   | 10           | 3   |
| Acrylsäure  | 11           | 1   |
| Acrylsäure-n-butylester                                       | 12           | 1   |
| Acrylsäureethylester  | 208          | 2   |
| Acrylsäure-2-ethylhexylester                                  | 13           | 1   |
| Acrylsäuremethylester   | 147          | 2   |
| Actinomycin C-1   | 863          | 3   |

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| Adenosin-5'-O-(thiodiphosphat), Trilithiumsalz  | 1093 | 3 |
| Adipinsäure <sup>14</sup>   | 474  | 1 |
| Adipinsäuredi-2-ethylhexylester   | 626  | 1 |
| Adipinsäuredinitril   | 209  | 1 |
| Adipinsäure-Hexamethylendiaminsalz  | 1342 | 1 |
| Adonitoxin  | 1054 | 3 |
| Aldrin  | 464  | 3 |
| n-Alkansulfochloride (C10-21)   | 1250 | 1 |
| sek.Alkan(C13-C17)-sulfonate  | 663  | 2 |
| Alkan(C10-21)sulfonsäurephenylester   | 819  | 1 |
| 1-Alkene(C14-16)dibutylmaleat(oder fumarat)copolymer                                    | 1916 | 1 |
| Alkoholethersulfate C12-C18 und 2-3 mol EO, Na-Salze                                    | 665  | 2 |
| Alkoholethoxylate   | 670  | 2 |
| Alkyl-(C16-18)asparaginsäure-di-natriumsalz   | 1910 | 1 |
| Alkyl-(C10/13)-benzol   | 90   | 1 |
| Alkylbenzolsulfonate (C10-C14), linear  | 449  | 2 |
| Alkyl (C15 - C30)-benzolsulfonate, verzweigt, Calcium- und Magnesiumsalze <sup>35</sup> | 1945 | 2 |
| Alkyl(C10-16)-benzolsulfonsäure, linear   | 1334 | 2 |
| Alkyl(C8-C18)-benzoldimethylammoniumchlorid und-bromid                                  | 599  | 3 |
| Alkyl(C10-18)-chlorid   | 1092 | 3 |
| Alkylolamide  | 673  | 2 |
| N-Alkyl(C12/18)-oxi-2-hydroxypropyldimethyl-cyclohexylammoniumchlorid                   | 1091 | 3 |
| Alkylpolyglycoside (mit 1-2 Glucoseeinheiten; Alkylrest: C8-C16)                        | 1363 | 1 |
| Alkyl(C12-C16)-pyridiniumchlorid und -bisulfat  | 601  | 3 |
| Alkyl (C >13)-salicylate, verzweigt, Calcium- und Magnesiumsalze <sup>35</sup>          | 1946 | 2 |
| Alkyl(C12-C16)-trimethylammoniumchlorid und-bromid                                      | 600  | 3 |
| Allylalkohol  | 444  | 2 |
| Allylamin   | 14   | 2 |
| Allylammoniumchlorid  | 525  | 2 |
| Allylchlorid  | 15   | 2 |
| Allyl-2,3-epoxypropylether  | 1378 | 3 |
| N-Allylthioharnstoff  | 16   | 2 |
| Altöle <sup>9</sup>   | 438  | 3 |
| Aluminiumchlorid <sup>8</sup>   | 507  | 1 |
| Aluminiumdiethylmonochlorid   | 1206 | 1 |
| Aluminiummethylessquichlorid  | 1207 | 1 |
| Aluminiumhydroxychlorid <sup>8</sup>  | 508  | 1 |
| Aluminiumnitrat <sup>8</sup>  | 509  | 1 |
| Aluminiumphosphid   | 551  | 2 |
| Aluminiumsulfat <sup>8</sup>  | 486  | 1 |
| α-Amanitin  | 1064 | 3 |
| Ameisensäure  | 210  | 1 |
| Ameisensäuremethylester   | 733  | 1 |
| ortho-Ameisensäuretriethylester   | 1195 | 1 |
| p-Aminoacetanilid   | 1649 | 1 |
| m-Aminoacetanilid, Hydrochlorid   | 1711 | 2 |
| 3-Aminoacetanilid-4-sulfonsäure   | 1532 | 2 |
| 4-Aminoacetanilid-3-sulfonsäure   | 1560 | 1 |



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| 2-Amino-5-aminomethylnaphthalin-1-sulfonsäure                  | 1873 | 2 |
| 1-Aminoanthrachinon  | 1215 | 1 |
| 4-Aminoazobenzol-3,4'-disulfonsäure, Dinatriumsalz             | 1406 | 1 |
| 4-Aminoazobenzol-4'-sulfonsäure, Natriumsalz                   | 1761 | 1 |
| 2-Aminobenzamid  | 1534 | 1 |
| 7-[(4-Amino)benzamido]-4-hydroxynaphthalin-2-sulfonsäure       | 1638 | 1 |
| 4-Aminobenzoessäureethylester                                  | 1119 | 2 |
| 2-Aminobenzoessäuremethylester                                 | 1661 | 1 |
| 2-Amino-5-benzoylaminohydrochinondiethylether                  | 1641 | 2 |
| 3-(4'-Aminobenzoylamino)-5-sulfosalicylsäure                   | 1806 | 1 |
| Aminobenzoldimethylamin (Isomerengemisch)                      | 1820 | 2 |
| 1-Amino-2-brom-4-hydroxyanthrachinon                           | 1625 | 1 |
| 2-Aminobutan   | 1171 | 2 |
| 3-Amino-2-carbomethoxy-4-methylthiophen                        | 1436 | 2 |
| 2'-Amino-3-carboxy-4-hydroxy-4'-sulfodiphenylsulfon            | 1822 | 2 |
| 3-Amino-5-chlor-4-hydroxybenzolsulfonsäure                     | 1804 | 2 |
| 2-Amino-4-chlorphenol Hydrochlorid                             | 1802 | 2 |
| 2-Amino-4-chlorphenol-6-sulfonsäure                            | 1526 | 2 |
| 2-Amino-4,6-dichlorphenol, Hydrochlorid                        | 1805 | 2 |
| 2-Amino-5-diethylaminopentan                                   | 1664 | 1 |
| 2-2'-Aminoethoxyethanol  | 1731 | 1 |
| Aminoethylethanolamin  | 1617 | 1 |
| Aminoethylpiperazin  | 1662 | 2 |
| 2-Amino-1-ethoxybenzol   | 1552 | 2 |
| Aminoguanidinbicarbonat  | 1440 | 2 |
| 3-Amino-4-hydroxybenzolsulfonamid, Hydrochlorid                | 1886 | 2 |
| 4-Amino-5-hydroxy-2,7-naphthalindisulfonsäure, Mononatriumsalz | 1242 | 1 |
| 7-Amino-4-hydroxy-2-naphthalinsulfonsäure                      | 1219 | 1 |
| 6-Amino-4-hydroxy-2-naphthalinsulfonsäure                      | 1221 | 1 |
| D,L-4-(2-Amino-1-hydroxy-propyl)-1,2-benzoldiol                | 1397 | 2 |
| 3-Amino-2-hydroxy-5-sulfobenzoessäure                          | 1807 | 1 |
| Aminoiminomethansulfinsäure                                    | 1751 | 1 |
| 3-Amino-4-methoxyacetanilid                                    | 1818 | 1 |
| 2-Amino-4-methoxy-6-methyl-s-triazin                           | 1404 | 1 |
| 2-Amino-4-methylphenol   | 1557 | 2 |
| 2-Aminonaphthalin-6-sulfonsäure                                | 1545 | 1 |
| 8-Amino-naphthalin-2-sulfonsäure                               | 1633 | 2 |
| 5-Amino-naphthalin-2-sulfonsäure                               | 1639 | 1 |
| 6-Aminonaphthalin-2-sulfonsäure, Na-Salz                       | 1882 | 2 |
| 8-Amino-naphthalin-1,3,6-trisulfonsäure, Dinatriumsalz         | 1800 | 1 |
| 1-Amino-7-naphthol   | 1630 | 2 |
| 4-Amino-5-naphthol-1,3-disulfonsäure, Mononatriumsalz          | 1875 | 2 |
| 3-Amino-5-naphthol-2,7-disulfonsäure, Mononatriumsalz          | 1877 | 1 |
| 2-Amino-5-nitrobenzoessäure                                    | 1706 | 2 |
| 2-Amino-6-nitrobenzothiazol                                    | 1809 | 2 |
| 2-Amino-5-nitrophenol  | 1648 | 2 |
| 2-Amino-4-nitrophenol-6-sulfonsäure                            | 1559 | 2 |
| 6-Aminopenicillansäure   | 1324 | 2 |
| 2-Aminophenol  | 1554 | 2 |
| N-(4-Aminophenyl)-carbaminsäuremethylester                     | 1415 | 2 |

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| m-Aminophenylharnstoff, Hydrochlorid                         | 1884 | 2 |
| 3-Aminophenylhydroxyethylsulfon                              | 1414 | 2 |
| 3-Aminopropan-1-ol   | 1672 | 1 |
| 4-(3-Aminopropyl)-morpholin                                  | 1651 | 2 |
| 3-Aminopropyltriethoxysilan                                  | 1730 | 1 |
| Aminopterin  | 871  | 3 |
| 5-Aminosalicylsäure  | 1536 | 2 |
| Aminostilbentriazol  | 1890 | 2 |
| 2-(4-Amino-3-sulfophenyl)-6-methylbenzothiazol-7-sulfonsäure | 1803 | 2 |
| 4-Aminotoluol-2-sulfethylanilid                              | 1870 | 2 |
| 2-Amino-1-trifluormethylbenzol                               | 1523 | 1 |
| 3-Amino-4,N',N'-trimethylbenzolsulfonamid                    | 1811 | 2 |
| Aminotrimethylenphosphonsäure                                | 1821 | 1 |
| Amitrol  | 1210 | 2 |
| Ammoniak   | 211  | 2 |
| Ammoniumarsenat  | 289  | 3 |
| Ammoniumchlorid  | 213  | 1 |
| Ammoniumdichromat  | 290  | 3 |
| Ammoniumeisen(II)-sulfat                                     | 513  | 1 |
| Ammoniumfluorid  | 291  | 1 |
| Ammoniumhexafluorsilikat                                     | 544  | 2 |
| Ammoniumhydrogenfluorid                                      | 292  | 1 |
| Ammoniumhydrogensulfat                                       | 293  | 1 |
| Ammoniummolybdat   | 637  | 1 |
| Ammoniummonochromat  | 1033 | 3 |
| Ammoniumnitrat   | 212  | 1 |
| Ammoniumperchlorat   | 294  | 1 |
| Ammoniumperoxodisulfat                                       | 836  | 1 |
| Ammoniumpikrat   | 295  | 2 |
| Ammoniumsulfat   | 296  | 1 |
| Ammoniumsulfid   | 297  | 2 |
| Ammoniumthiocyanat   | 1442 | 1 |
| Ammoniumthiosulfat   | 193  | 1 |
| Amphotericin B   | 981  | 3 |
| n-Amylalkohol  | 18   | 1 |
| tert.-Amylalkohol  | 19   | 1 |
| tert.-Amylperbenzoat   | 1472 | 2 |
| tert.-Amylperoxy-2-ethylhexanoat                             | 1467 | 2 |
| tert.-Amylperoxyneodecanoat <sup>21</sup>                    | 1465 | 2 |
| tert.-Amylperoxypivalat <sup>21</sup>                        | 1466 | 2 |
| Anilazin   | 911  | 3 |
| Anilin   | 20   | 2 |
| Anilin-2,4-disulfonsäure, Mononatriumsalz                    | 1895 | 2 |
| Anilinhydrochlorid   | 298  | 2 |
| 7-Anilino-4-hydroxynaphthalin-2-sulfonsäure                  | 1384 | 2 |
| Anisaldehyddimethylacetal                                    | 1167 | 1 |
| 2-Anisidin   | 1118 | 3 |
| 4-Anisidin   | 1128 | 2 |
| Anisol   | 21   | 2 |
| Anisotropinmethylbromid                                      | 900  | 3 |

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| p-Anissäure  | 1402 | 1 |
| Anthrachinon   | 1217 | 1 |
| Antimon(III)-oxid  | 979  | 2 |
| Antimycin A  | 982  | 3 |
| Antrachinon-1-sulfonsäure, Kaliumsalz                            | 1860 | 1 |
| Arsen(III)-oxid  | 299  | 3 |
| Arsen(V)-oxid  | 300  | 3 |
| Arsensäure   | 301  | 3 |
| Arsenwasserstoff   | 214  | 3 |
| L(+)-Ascorbinsäure <sup>14</sup>                                 | 737  | 1 |
| Atrazin  | 24   | 2 |
| Atropin  | 867  | 3 |
| Atropinmethonitrat   | 869  | 3 |
| Atropinmethylbromid  | 998  | 3 |
| Atropinsulfat  | 876  | 3 |
| Azinphos-ethyl   | 627  | 3 |
| Azinphos-methyl  | 628  | 3 |
| 1,1'-Azobiscarbamid  | 1354 | 1 |
| Azocyclotin  | 534  | 3 |
| Bariumchlorat  | 302  | 2 |
| Bariumchlorid  | 25   | 1 |
| Bariumcyanid   | 303  | 3 |
| Bariumnitrat   | 304  | 1 |
| Bariumoxid   | 305  | 1 |
| Bariumperchlorat   | 306  | 1 |
| Bariumperoxid  | 307  | 1 |
| Bariumselenat  | 1830 | 2 |
| Bariumselenit  | 1841 | 2 |
| Bentazon   | 711  | 2 |
| Benzalchlorid  | 1225 | 3 |
| Benzaldehyd  | 26   | 2 |
| 4-Benzamido-5-hydroxynaphthalin-2,7-disulfonsäure, Dinatriumsalz | 1793 | 2 |
| Benzidin   | 905  | 3 |
| Benzildimethylketal  | 1444 | 2 |
| Benzoessäure   | 30   | 1 |
| Benzoessäuremethylester  | 1547 | 1 |
| Benzoguanamin  | 785  | 2 |
| Benzol   | 29   | 3 |
| Benzolsulfonylchlorid  | 215  | 1 |
| Benzonitril  | 31   | 2 |
| Benzothiazol   | 1376 | 2 |
| Benzothiazyl-2-dicyclohexylsulfenamid                            | 1321 | 2 |
| Benzotrithlorid  | 32   | 3 |
| Benzoxoniumchlorid   | 1058 | 3 |
| Benzoylcyanid  | 1703 | 3 |
| Benzylalkohol  | 216  | 1 |
| 4-Benzylbiphenyl   | 848  | 1 |
| Benzylchlorid  | 33   | 3 |
| 2-Benzyl-4-chlorphenol   | 1643 | 2 |
| Benzoldiphenylmethan (mit 0-3 Methylgruppen)                     | 814  | 2 |

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| Benzylisobutyrat   | 1574 | 1 |
| Bernsteinsäure <sup>14</sup>                               | 476  | 1 |
| Berylliumnitrat  | 34   | 2 |
| Bezafibrat   | 1424 | 1 |
| Bis-(2-Aminobenzolsulfonsäure)-diphenylpropanester         | 1893 | 2 |
| Bis-(2-chlorethyl)ether                                    | 718  | 2 |
| 1,2-Bis-(chlormethyl)-benzol                               | 1701 | 2 |
| Bis-(chlormethyl)ether                                     | 956  | 3 |
| (Bis-(N-Cyclohexyldiazeniumdioxy))-Kupfer                  | 759  | 3 |
| Bis-(2,4-dichlorbenzoyl)peroxid                            | 1110 | 2 |
| 4,4'-Bis-(diethylamino)-benzophenon                        | 1539 | 2 |
| 2,2-bis-(p-Hydroxyethoxyphenyl)propan                      | 1729 | 1 |
| Bis-2-hydroxyethyl-kokosalkylbenzylammoniumchlorid         | 1086 | 3 |
| Bis-(2-methoxyethyl)ether                                  | 1258 | 1 |
| Bisphenol-A-propoxylat                                     | 1624 | 1 |
| N,N'-Bis(2,2,6,6-tetramethyl-4-piperidiny)-1,6-hexandiamin | 1427 | 2 |
| Bis-(tributylzinn)-tetrachlorphthalat                      | 565  | 3 |
| Bis(3-triethoxysilylpropyl)-tetrasulfan                    | 1863 | 1 |
| Blausäure  | 309  | 3 |
| Blei(II)-acetat  | 36   | 2 |
| Blei(II)-arsenat   | 310  | 3 |
| Blei(II)-arsenit   | 311  | 3 |
| Blei(II)-cyanid  | 312  | 3 |
| Blei(II)-nitrat  | 313  | 2 |
| Blei(II)-perchlorat  | 314  | 2 |
| Bleitetraethyl   | 35   | 3 |
| Bleitetramethyl  | 538  | 3 |
| Borsäure   | 315  | 1 |
| Braunkohlenteer  | 496  | 3 |
| Brenzcatechin  | 536  | 2 |
| Bromaminsäure, Natriumsalz                                 | 1328 | 1 |
| 1-Brom-3-chlorpropan                                       | 920  | 3 |
| Bromcyan   | 947  | 3 |
| 1-Brom-3,5-difluorbenzol                                   | 1480 | 2 |
| Bromelain  | 1036 | 3 |
| Bromessigsäure   | 728  | 2 |
| 2-Bromethanol  | 955  | 3 |
| 1-(2-Bromethoxy)-2-methoxy-benzol                          | 1791 | 3 |
| Brom-N-ethyl-naphtholactam-1,8                             | 1904 | 2 |
| 1-Brom-2-fluorethan  | 972  | 3 |
| Bromophos  | 617  | 3 |
| Bromophos-ethyl  | 618  | 3 |
| Bromtrifluormethan <sup>14</sup>                           | 782  | 1 |
| Bromwasserstoff  | 217  | 1 |
| Brucin   | 941  | 3 |
| $\alpha$ -Bungarotoxin                                     | 1041 | 3 |
| $\beta$ -Bungarotoxin                                      | 1043 | 3 |
| Busulfan   | 877  | 3 |
| 1,3-Butadien   | 218  | 2 |
| 1,4-Butandiol <sup>14</sup>                                | 1338 | 1 |

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| Butandiolformal  | 1678 | 1 |
| n-Butanol  | 39   | 1 |
| sek.Butanol  | 40   | 1 |
| tert.Butanol   | 219  | 1 |
| 1,2,4-Butantriol   | 1408 | 1 |
| 1,4-Butendiol  | 1148 | 1 |
| 1,4-Butindiol  | 1149 | 2 |
| 2-(2-Butoxyethoxy)ethylacetat  | 1262 | 1 |
| (2-Butoxyethyl)acetat  | 592  | 1 |
| Butoxypolyethylen-/propylenglycol<br>(Mittl. MW > 500) <sup>11</sup> | 563  | 1 |
| n-Buttersäure  | 41   | 1 |
| n-Buttersäureanhydrid  | 1229 | 1 |
| n-Buttersäureethylester  | 100  | 1 |
| n-Butylaldehyd   | 48   | 1 |
| n-Butylamin  | 44   | 1 |
| tert.-Butylamin  | 1510 | 1 |
| n-Butylammoniumchlorid   | 527  | 1 |
| p-tert. Butylbenzaldehyd   | 1732 | 2 |
| tert.-Butylbenzol  | 45   | 1 |
| tert.-Butylcumylperoxid  | 1455 | 2 |
| 4-tert. Butylcyclohexanol  | 1186 | 1 |
| Butyldiethanolamin   | 1572 | 1 |
| tert.-Butyl-2-ethylperoxyhexanoat                                    | 1104 | 2 |
| tert.-Butylhydroperoxid  | 1106 | 3 |
| 1-N-Butyl-4-hydroxy-2-chinolon                                       | 1819 | 2 |
| n-Butylmalonsäurediethylester  | 1660 | 1 |
| 2-tert.-Butyl-5-methylphenol   | 1530 | 2 |
| Butylmonoethanolamin   | 1618 | 1 |
| Butylnaphthalinsulfonsäure, verzweigt oder linear, Natriumsalz       | r    | 2 |
| tert.-Butylperbenzoat  | 1105 | 2 |
| tert.-Butylperoxyacetat <sup>21</sup>                                | 1461 | 2 |
| tert.-Butylperoxyisobutyrat <sup>21</sup>                            | 1459 | 2 |
| tert.-Butylperoxy-2-methylbenzoat <sup>21</sup>                      | 1473 | 2 |
| tert.-Butylperoxyneodecanoat   | 1460 | 2 |
| tert.-Butylperoxypivalat <sup>21</sup>                               | 1464 | 2 |
| tert.-Butylperoxy-3,5,5-trimethylhexanoat                            | 1463 | 2 |
| 2-sek. Butylphenol   | 745  | 2 |
| 4-tert. Butylphenol  | 1187 | 2 |
| 2-tert.-Butylphenol  | 1524 | 2 |
| Butylstannonsäure  | 577  | 1 |
| Butylthiostannonsäure  | 578  | 1 |
| 4-tert. Butyltoluol  | 1185 | 2 |
| γ-Butyrolacton   | 1286 | 1 |
| Cacodylsäure, Natriumsalz  | 897  | 3 |
| Cadmiumacetat  | 851  | 3 |
| Cadmiumjodid   | 1034 | 3 |
| Cadmiumnitrat  | 49   | 3 |
| Cadmiumsulfat  | 564  | 3 |
| Cadmiumsulfid  | 1740 | 3 |

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| Calciumacetat <sup>14</sup>  | 1943 | 1 |
| Calciumarsenat   | 360  | 3 |
| Calciumarsenit   | 316  | 3 |
| Calciumcarbid  | 791  | 1 |
| Calciumchlorat   | 318  | 2 |
| Calciumchlorid <sup>14</sup>   | 220  | 1 |
| Calciumcyanamid  | 790  | 2 |
| Calciumcyanid  | 319  | 3 |
| Calciumformiat   | 1237 | 1 |
| Calciumhexacyanoferrat (II)  | 1417 | 2 |
| Calciumhydroxid <sup>8</sup>   | 320  | 1 |
| Calciumnitrat  | 321  | 1 |
| Calciumoxid  | 322  | 1 |
| Calcium-D-pantothenat <sup>14</sup>  | 1387 | 1 |
| Calciumperchlorat  | 323  | 1 |
| Calciumperoxid   | 324  | 1 |
| Calciumsulfat <sup>14</sup>  | 325  | 1 |
| ε-Caprolactam  | 221  | 1 |
| Capronaldehyd  | 1507 | 1 |
| Capronsäure  | 1667 | 1 |
| Carbaryl   | 50   | 3 |
| Carbofuran   | 984  | 3 |
| Carbonylcyanid-m-chlorphenylhydrazon   | 958  | 3 |
| Carboxymethylzellulose, Natriumsalz  | 829  | 1 |
| β-Carotin <sup>14</sup>  | 1416 | 1 |
| Cefodizim-Dinatriumsalz  | 1437 | 2 |
| Chinidinsulfat   | 1501 | 1 |
| Chininhydrochlorid   | 1658 | 1 |
| Chinolin   | 1299 | 2 |
| Chinomethionat   | 993  | 3 |
| Chlor <sup>8</sup>   | 223  | 2 |
| Chloracetamid  | 1517 | 2 |
| Chloralhydrat  | 51   | 3 |
| Chloralkane (C10-C13)  | 649  | 3 |
| Chloralkane C >17 (fest)   | 155  | 1 |
| Chloralkane (C >17), flüssig, organozinnfrei, mit einem Anteil an kurzkettigen, flüssigen Chloralkanen (C 10-13) <3%   | 740  | 2 |
| Chloralkane (C 14-17), flüssig, organozinnfrei, mit einem Anteil an kurzkettigen, flüssigen Chloralkanen (C 10-13) <3% | 840  | 2 |
| Chloralkansulfonsäure, Na-Salz   | 1430 | 3 |
| Chlorameisensäuremethylester   | 1138 | 2 |
| Chloramin T  | 640  | 2 |
| 4-Chlor-2-aminodiphenylether   | 1548 | 2 |
| 4-Chloranilin  | 224  | 3 |
| 2-Chloranilin  | 694  | 2 |
| 3-Chloranilin  | 695  | 2 |
| 2-Chloranthrachinon  | 1659 | 1 |
| 4-Chlorbenzaldehyd   | 1583 | 2 |
| 2-Chlorbenzoesäure   | 225  | 2 |
| 4-Chlorbenzoesäure   | 226  | 2 |

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| Chlorbenzol  | 53   | 2 |
| p-Chlorbenzonnitril                                    | 1713 | 2 |
| o-Chlorbenzonnitril                                    | 1727 | 2 |
| p-Chlorbenzotrithchlorid                               | 1265 | 3 |
| p-Chlorbenzotrifluorid                                 | 1112 | 2 |
| o-Chlorbenzoylchlorid                                  | 1697 | 1 |
| 3-Chlorbenzoylchlorid                                  | 1708 | 1 |
| 1-Chlorbutan   | 1190 | 2 |
| Chlorcyan  | 948  | 3 |
| 1-Chlor-2-(dichlormethyl)-benzol                       | 1533 | 2 |
| 1-Chlor-4-(dichlormethyl)-benzol                       | 1842 | 2 |
| 1-Chlor-2,4-dinitrobenzol                              | 1120 | 2 |
| Chloressigsäure  | 227  | 2 |
| Chloressigsäureethylester                              | 1129 | 2 |
| Chloressigsäuremethylester                             | 228  | 2 |
| Chlorethan   | 793  | 2 |
| 2-Chlorethanol   | 229  | 3 |
| N-Chlorethyl-N-ethylanilin                             | 1541 | 2 |
| Chlorfenvinphos  | 631  | 3 |
| 2-Chlor-6-fluorbenzalchlorid                           | 1888 | 2 |
| Chlorhexidin   | 602  | 3 |
| Chlorhexidindigluconat                                 | 852  | 3 |
| 3-Chlor-2-hydroxypropyl-N,N,N-trimethylammoniumchlorid | 839  | 2 |
| Chloridazon  | 1748 | 2 |
| Chlormequat-chlorid                                    | 755  | 2 |
| 3-Chlor-4-methylanilin                                 | 719  | 2 |
| 7-Chlor-3-methyl-8-chinolincarbonsäure                 | 1911 | 2 |
| 5-Chlor-2-methyl-4-isothiazolin-3-on                   | 1097 | 3 |
| 4-Chlor-3-methylphenol                                 | 231  | 2 |
| 4-Chlor-2-methylphenol                                 | 1164 | 2 |
| 1-Chlornaphthalin                                      | 232  | 2 |
| 4-Chlor-6-nitro-2-aminophenol, Hydrochlorid            | 1814 | 2 |
| 6-Chlor-4-nitro-2-aminophenol, Hydrochlorid            | 1889 | 2 |
| 4-Chlor-2-nitroanilin                                  | 706  | 2 |
| 2-Chlor-4-nitroanilin                                  | 1261 | 2 |
| 2-Chlor-5-nitroanilin                                  | 1808 | 2 |
| 2-Chlor-5-nitrobenzoesäure                             | 1762 | 1 |
| 4-Chlornitrobenzol                                     | 233  | 2 |
| 3-Chlornitrobenzol                                     | 709  | 2 |
| 2-Chlornitrobenzol                                     | 710  | 2 |
| 2-Chlor-4-nitrotoluol                                  | 1260 | 2 |
| 1-Chloroctan   | 1192 | 2 |
| Chloroform   | 54   | 3 |
| Chlorpentafluorethan                                   | 1115 | 1 |
| 2-Chlorphenol  | 234  | 2 |
| 4-Chlorphenol  | 1593 | 2 |
| 4-Chlorphenylisocyanat                                 | 1377 | 3 |
| 3-Chlor-1-propin                                       | 1715 | 2 |
| 3-Chlorpropionsäure                                    | 235  | 1 |
| 2-Chlorpropionsäure                                    | 1694 | 1 |

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|---------------------------------------|------|---|
| 2-Chlorpropionsäuremethylester        | 1848 | 1 |
| 3-Chlorpropyltrimethoxysilan          | 1763 | 1 |
| Chlorpyrifos                          | 622  | 3 |
| Chlorsilane <sup>13</sup>             | 557  | 1 |
| Chlorsulfonsäure                      | 236  | 2 |
| 4-Chlorthiophenol                     | 916  | 3 |
| Chlorthiophos                         | 619  | 3 |
| 2-Chlortoluol                         | 55   | 2 |
| 4-Chlortoluol                         | 237  | 2 |
| 2-Chlor-6-trichlormethylpyridin       | 539  | 2 |
| Chlorwasserstoff <sup>8</sup>         | 238  | 1 |
| Cholinchlorid                         | 1134 | 1 |
| Chrom(III)-chlorid, Hexahydrat        | 807  | 2 |
| Chrom(III)-chlorid, wasserfrei        | 844  | 1 |
| Chrom(III)-kaliumsulfat, Dodecahydrat | 808  | 2 |
| Chrom(III)-nitrat, Nonahydrat         | 810  | 2 |
| Chromomycin A                         | 1027 | 3 |
| Chromschwefelsäure                    | 327  | 3 |
| Chrom(III)-sulfat, basisch            | 809  | 2 |
| Chrom(III)-sulfat, wasserfrei         | 841  | 1 |
| Chromtrioxid (Chromsäure)             | 328  | 3 |
| Chromylchlorid                        | 329  | 3 |
| Cimetropiumbromid                     | 1080 | 3 |
| Citral                                | 1173 | 1 |
| Citronellal                           | 1591 | 1 |
| Citronellol                           | 1590 | 1 |
| Citronensäure <sup>14</sup>           | 57   | 1 |
| Climbazol                             | 1078 | 3 |
| Clonidinhydrochlorid                  | 1005 | 3 |
| Clonitralid                           | 862  | 3 |
| Colcemid                              | 944  | 3 |
| Colchicin                             | 888  | 3 |
| Crotonaldehyd                         | 239  | 3 |
| Crotonsäure                           | 1787 | 1 |
| Cumatetralyl                          | 1017 | 3 |
| Cumol                                 | 58   | 1 |
| Cumolhydroperoxid                     | 59   | 2 |
| Cumylperoxyneodecanoat <sup>21</sup>  | 1470 | 2 |
| Cyanacetylmethylharnstoff             | 1825 | 1 |
| Cyanamid                              | 789  | 2 |
| 2-Cyaniminobarbitursäure              | 1878 | 1 |
| p-Cyanobenzylchlorid                  | 1728 | 2 |
| Cyanurchlorid                         | 1600 | 1 |
| Cyclododecanol                        | 1201 | 1 |
| Cyclododecanon                        | 1198 | 1 |
| 1,5,9-Cyclododecatrien                | 1204 | 2 |
| Cycloheptan                           | 61   | 1 |
| Cyclohepten                           | 62   | 1 |
| Cyclohexan                            | 63   | 1 |
| Cyclohexanol                          | 240  | 1 |



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| Cyclohexanon  | 64   | 1 |
| Cyclohexanonoxim                                      | 1566 | 1 |
| Cyclohexen  | 65   | 1 |
| Cycloheximid  | 890  | 3 |
| Cyclohexylamin  | 67   | 1 |
| 2-Cyclohexylaminoethanol                              | 1774 | 1 |
| Cyclohexylammoniumchlorid                             | 529  | 1 |
| N-Cyclohexyldiazoniumdioxy-Kalium                     | 758  | 2 |
| Cyclohexylmethanol                                    | 1564 | 1 |
| Cyclohexylmethylketon                                 | 1396 | 1 |
| 2-Cyclohexylphenol                                    | 1636 | 3 |
| Cyclopentan   | 478  | 1 |
| Cyclopentanol   | 68   | 1 |
| Cyclopentanon   | 69   | 1 |
| Cyclophosphamid                                       | 860  | 3 |
| Cyclopropylmethylbromid                               | 1026 | 3 |
| Cyfluthrin  | 678  | 3 |
| Cyhexatin   | 451  | 3 |
| Cymarin   | 950  | 3 |
| Cymarol   | 942  | 3 |
| Cypermethrin  | 679  | 3 |
| Dazomet   | 1180 | 3 |
| p,p'-DDD  | 465  | 3 |
| p,p'-DDE  | 466  | 3 |
| p,p'-DDT  | 70   | 3 |
| n-Decanol   | 71   | 1 |
| Decyloxiran   | 1775 | 1 |
| Dehydrodigoxigenin-3                                  | 1010 | 3 |
| 2-Dehydrolinalool                                     | 1175 | 1 |
| Dehydrothio-4-toluidindisulfonsäure, Di-Na-salz       | 1872 | 2 |
| Deltamethrin  | 680  | 3 |
| Demeton-S-methyl                                      | 655  | 3 |
| Demeton-S-methylsulphon                               | 607  | 2 |
| Desacetyl-Lanatosid C                                 | 1052 | 3 |
| Diacetonalkohol                                       | 72   | 1 |
| $\alpha,\beta$ -Diacetyldigoxin                       | 1072 | 3 |
| Dialifos  | 629  | 3 |
| Dialkyl(C16-C18)-dimethylammoniumchlorid              | 674  | 2 |
| 2,4-Diaminoanisol                                     | 963  | 3 |
| 2,5-Diaminobenzolsulfonsäure                          | 1527 | 2 |
| 1,4-Diaminocyclohexan                                 | 1000 | 3 |
| 4,4'-Diaminodiphenylaminsulfat                        | 1876 | 2 |
| 4,4'-Diaminodiphenylmethan                            | 913  | 3 |
| Diaminomesitylensulfonsäure                           | 1861 | 2 |
| 2,4-Diamino-5-methylbenzolsulfonsäure                 | 1528 | 1 |
| 1,3-Diaminopropan                                     | 1605 | 2 |
| 4,4'-Diaminostilben-2,2'-disulfonsäure                | 1213 | 1 |
| 4,4'-Diaminostilben-2,2'-disulfonsäure, Dinatriumsalz | 1243 | 1 |
| Diazinon  | 609  | 3 |
| Dibenzothiazyl-2-disulfid                             | 1322 | 2 |

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| Dibenzoylperoxid  | 1100 | 1 |
| 1,2-Dibromethan   | 241  | 3 |
| 2,3-Dibrompropanol-1  | 242  | 2 |
| Di-n-butylamin  | 593  | 1 |
| Di-n-butylammoniumchlorid                                   | 610  | 1 |
| N,N-Dibutylanilin   | 1702 | 2 |
| Di-(4-tert.-butylcyclohexyl)-peroxydicarbonat               | 1493 | 1 |
| Dibutylethanolamin  | 1573 | 1 |
| Di-n-butylether   | 73   | 2 |
| Di-n-Butylformal  | 1764 | 1 |
| N,N-Dibutylformamid   | 1721 | 1 |
| 2,6-Di-tert.butyl-4-methylphenol                            | 724  | 1 |
| Di-tert. Butylperoxid                                       | 1103 | 1 |
| 2,5-Di-(tert.-butylperoxy)-2,5-dimethylhexan                | 1456 | 1 |
| 1,4-Di-(tert.-butylperoxyisopropyl)-benzol                  | 1454 | 1 |
| Dicetylperoxydicarbonat                                     | 1476 | 1 |
| Dichlofluanid   | 974  | 3 |
| Dichloracetylchlorid  | 1117 | 1 |
| 2,3-Dichloranilin   | 696  | 3 |
| 2,4-Dichloranilin   | 697  | 3 |
| 2,5-Dichloranilin   | 698  | 3 |
| 2,6-Dichloranilin   | 699  | 3 |
| 3,4-Dichloranilin   | 700  | 3 |
| 2,5-Dichloranilin-4-sulfonsäure, Natriumsalz                | 1865 | 2 |
| 2,3-Dichlorbenzaldehyd                                      | 1813 | 2 |
| 3,3'-Dichlorbenzidin  | 903  | 3 |
| 1,2-Dichlorbenzol   | 74   | 2 |
| 1,3-Dichlorbenzol   | 641  | 2 |
| 1,4-Dichlorbenzol   | 642  | 2 |
| 2,4-Dichlorbenzotrifluorid                                  | 1389 | 2 |
| Di-(p-chlorbenzoyl)-peroxid                                 | 1479 | 2 |
| 2,6-Dichlorbenzylchlorid                                    | 990  | 3 |
| 2,4-Dichlorbenzylchlorid                                    | 1553 | 3 |
| 1,4-Dichlor-2-buten   | 973  | 3 |
| 3,7-Dichlorchinolin-8-carbonsäure                           | 1432 | 2 |
| 1,4-Dichlor-5,8-dihydroxyanthrachinon                       | 1773 | 1 |
| Dichloressigsäure   | 243  | 1 |
| 1,2-Dichlorethan  | 102  | 3 |
| 1,1-Dichlorethan  | 895  | 3 |
| 1,1-Dichloethen   | 794  | 3 |
| 1,2-Dichloethen (cis und trans)                             | 795  | 2 |
| Dichlormethan   | 149  | 2 |
| 1,2-Dichlor-3-nitrobenzol                                   | 749  | 3 |
| 3,4-Dichlor-1-nitrobenzol                                   | 845  | 3 |
| 1,3-Dichlor-4-nitrobenzol                                   | 1274 | 3 |
| 2,3-Dichlorphenol   | 75   | 3 |
| 2,4-Dichlorphenol   | 244  | 3 |
| 3,4-Dichlorphenol   | 907  | 3 |
| 2,4-Dichlorphenoxyessigsäure                                | 1177 | 2 |
| 2-(4-(2',4'-Dichlorphenoxy)phenoxy)-propionsäuremethylester | 1871 | 2 |

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| 2-(2,4-Dichlorphenoxy)-propionsäure                             | 1178 | 2 |
| 3,4-Dichlorphenylisocyanat                                      | 1126 | 2 |
| N-(3,4-Dichlorphenyl)-propionamid                               | 736  | 3 |
| 4,5-Dichlor-2-phenyl-3(2H)pyridazinon                           | 1165 | 2 |
| 1,2-Dichlorpropan   | 446  | 3 |
| 1,3-Dichlorpropen (cis u. trans)                                | 245  | 3 |
| 2,3-Dichlorpropen   | 246  | 3 |
| 2,2-Dichlorpropionsäure, Na-Salz                                | 731  | 1 |
| 2,4-Dichlortoluol   | 1224 | 2 |
| 2,6-Dichlortoluol   | 1233 | 2 |
| 3,4-Dichlortoluol   | 1556 | 2 |
| Dichlorvos  | 632  | 3 |
| Dicumylperoxid  | 1102 | 2 |
| Dicyandiamid  | 247  | 1 |
| Dicyclohexylamin  | 1226 | 2 |
| Dicyclopentadien  | 1514 | 3 |
| Didecanoylperoxid   | 1451 | 1 |
| Didodecylzinnbis-(thioglycolsäureisooctylester)                 | 574  | 1 |
| Didodecylzinndichlorid  | 572  | 1 |
| Didodecylzinnoxid   | 573  | 1 |
| Dieldrin  | 467  | 3 |
| Diesekraftstoff   | 76   | 2 |
| Diethanolamin   | 77   | 1 |
| Diethanolammoniumchlorid  | 531  | 1 |
| Diethylamin   | 248  | 1 |
| 3-Diethylaminoacetanilid  | 1817 | 1 |
| p-Diethylaminobenzaldehyd                                       | 1642 | 2 |
| Diethylaminoethylacrylat  | 1759 | 2 |
| 2-Diethylaminoethylamin   | 1563 | 1 |
| Diethylaminopentanol  | 1836 | 1 |
| 3-Diethylaminophenol  | 1540 | 2 |
| N-(3-Diethylaminopropyl)amin                                    | 1580 | 1 |
| Diethylammoniumchlorid  | 447  | 1 |
| N,N-Diethylanilin   | 1340 | 2 |
| 2,6-Diethylanilin   | 1690 | 2 |
| 1,2-Diethylbenzol   | 78   | 2 |
| Diethyl-N,N-di-(2-hydroxyethyl)aminomethylphosphonat            | 1770 | 1 |
| Diethylenglycol   | 79   | 1 |
| Diethylenglycolmono-n-butylether                                | 46   | 1 |
| Diethylenglycolmonoethylether                                   | 101  | 1 |
| Diethylenglycolmonomethylether                                  | 746  | 1 |
| Diethylentriamin  | 1231 | 2 |
| Diethylentriaminpentaessigsäure, Natriumsalz                    | 1157 | 2 |
| Diethylethanolamin  | 1288 | 1 |
| Diethylether  | 80   | 1 |
| N,N-Diethylformamid   | 1707 | 1 |
| 2,5-Di-(2-ethylhexanoyl-peroxy)-2,5-dimethylhexan <sup>21</sup> | 1458 | 2 |
| Di-(2-ethylhexyl)amin   | 1589 | 2 |
| Di-(2-ethylhexyl)-peroxydicarbonat                              | 1477 | 2 |
| Diethylketon  | 747  | 1 |

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| Diethylmetanilsäure                                    | 1562 | 1 |
| 2,6-Diethyl-4-methylanilin                             | 1855 | 2 |
| Diethylthioharnstoff                                   | 915  | 2 |
| Diethyltoluylendiamin                                  | 1896 | 2 |
| Digitonin  | 1040 | 3 |
| Digitoxigenin  | 931  | 3 |
| Digitoxigenin-Bisdigitoxosid                           | 1047 | 3 |
| Digitoxigenin-Glucomethylosid                          | 1079 | 3 |
| Digitoxigenin-Monodigitoxosid                          | 1056 | 3 |
| Digitoxigenon  | 975  | 3 |
| Digitoxin  | 892  | 3 |
| Digoxigenin  | 986  | 3 |
| Digoxigenin-Bisdigitoxosid                             | 1013 | 3 |
| Digoxigenin-Monodigitoxosid                            | 1069 | 3 |
| Digoxin  | 1059 | 3 |
| Di-n-hexylamin   | 1670 | 2 |
| Dihydrazinsulfat                                       | 1045 | 3 |
| Dihydro-Digitoxigenin                                  | 1008 | 3 |
| Dihydro-Digitoxin                                      | 1004 | 3 |
| Dihydro-Digoxigenin                                    | 1009 | 3 |
| Dihydro-Digoxin  | 1014 | 3 |
| Dihydroergotamintartrat                                | 1020 | 3 |
| 6,7-Dihydrolinalool                                    | 1174 | 1 |
| Dihydro- $\beta$ -methyldigoxin                        | 1083 | 3 |
| 1,8-Dihydroxyanthrachinon                              | 1626 | 1 |
| 2,4-Dihydroxybenzoesäure                               | 1538 | 1 |
| 2,2'-Dihydroxybiphenyl                                 | 1753 | 2 |
| 4,4'-Dihydroxybiphenyl                                 | 1222 | 2 |
| 4,5-Dihydroxy-1,3-bis-(hydroxymethyl)-2-imidazolidinon | 1166 | 1 |
| 1,5-Dihydroxy-4,8-dinitroanthrachinon                  | 1657 | 1 |
| N,N-Di(2-hydroxyethyl)anilin                           | 1385 | 2 |
| 1,7-Dihydroxynaphthalin                                | 1687 | 2 |
| 1,6-Dihydroxynaphthalin                                | 1688 | 2 |
| 2,6-Dihydroxynaphthalin                                | 1691 | 2 |
| 2,7-Dihydroxynaphthalin                                | 1692 | 2 |
| 9,10-Dihydroxystearinsäure, Ammoniumsalz               | 1433 | 1 |
| Diisobutylformamid                                     | 1766 | 2 |
| Diisobutylketon  | 591  | 1 |
| Diisopropanolamin                                      | 827  | 1 |
| Diisopropanolammoniumchlorid                           | 828  | 1 |
| Diisopropylamin  | 614  | 2 |
| Diisopropylammoniumchlorid                             | 605  | 2 |
| 1,3-Diisopropylbenzolhydroperoxid                      | 1098 | 2 |
| Diisopropylethanolamin                                 | 1561 | 2 |
| Diisopropylether                                       | 598  | 1 |
| Diisopropyl-naphthalin (DIPN)                          | 727  | 1 |
| Diisopropylperoxydicarbonat                            | 1494 | 1 |
| Diketen  | 1287 | 1 |
| Dilauroylperoxid                                       | 1101 | 1 |
| 1,3-Dimercaptopropanol-2                               | 961  | 3 |

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|--|------|---|
| Dimethoat  | 249  | 3 |
| 2,5-Dimethoxy-2,5-dihydrofuran                                     | 1674 | 1 |
| Dimethoxymethan  | 1380 | 1 |
| 2,5-Dimethoxytetrahydrofuran                                       | 1718 | 1 |
| Dimethylacetamid   | 1289 | 1 |
| 2',4'-Dimethylacetoacetanilid                                      | 1121 | 1 |
| Dimethyladipat   | 1716 | 1 |
| N,N-Dimethyl-C12/14-alkylamin                                      | 1362 | 2 |
| Dimethylamin   | 250  | 2 |
| Dimethylaminoboran   | 1369 | 2 |
| N,N-Dimethylaminoethanol   | 738  | 1 |
| Dimethylaminoethylacrylat  | 1760 | 2 |
| N,N-Dimethylamino-2-propanol                                       | 1598 | 1 |
| 3-Dimethylaminopropanol  | 1782 | 1 |
| 3-Dimethylaminopropionsäurenitril                                  | 1358 | 1 |
| Dimethylammoniumchlorid  | 457  | 1 |
| 2,4-Dimethylanilin   | 82   | 2 |
| 3,4-Dimethylanilin   | 595  | 2 |
| 2,3-Dimethylanilin   | 596  | 2 |
| N,N-Dimethylanilin   | 1152 | 2 |
| 2,6-Dimethylanilin   | 1521 | 2 |
| Di-(2-methylbenzoyl)-peroxid                                       | 1450 | 1 |
| N,N-Dimethylbenzylamin   | 1577 | 2 |
| N,N-Dimethylcyclohexylamin   | 1144 | 1 |
| Di-(Methylcyclohexyl)-phthalat                                     | 1859 | 1 |
| Dimethyldicycan  | 1335 | 3 |
| 4,4'-Dimethyldiphenylether   | 1745 | 2 |
| N,N'-Dimethyl-N,N'-diphenylharnstoff                               | 1700 | 2 |
| N,N-Dimethylethanolammoniumchlorid                                 | 739  | 1 |
| Dimethylether  | 714  | 1 |
| 2-(1,1-Dimethylethyl)-cyclohexanon                                 | 1750 | 1 |
| Dimethylethylkokosalkylammoniummethosulfat                         | 1089 | 3 |
| Dimethylformamid   | 83   | 1 |
| N,N'-Dimethylharnstoff   | 1142 | 1 |
| 1,4-Dimethylhexahydroterephthalat                                  | 1550 | 1 |
| Dimethyl-N-(2-hydroxyethyl)-N-(2-hydroxyhexadecyl)-ammoniumchlorid | 1096 | 3 |
| N,N-Dimethylisopropylamin  | 1734 | 2 |
| cis-2,6-Dimethylmorpholin  | 1824 | 2 |
| N,N-Dimethyl-n-octadecyl-(2-hydroxy-3-chlorpropyl)-ammoniumchlorid | 1407 | 3 |
| 2,6-Dimethyl-6-octanol   | 1516 | 1 |
| 3,5-Dimethylphenol   | 1367 | 2 |
| 2,6-Dimethylphenol   | 1689 | 2 |
| 2,2-Dimethylpropan <sup>14</sup>                                   | 463  | 1 |
| 2,2-Dimethylpropan-1,3-diol  | 744  | 1 |
| N,N-Dimethylpropylendiamin   | 1604 | 2 |
| N,N'-Dimethylpropylenharnstoff                                     | 1827 | 2 |
| N,N-Dimethylsulfamoylchlorid                                       | 1044 | 3 |
| Dimethylsulfat   | 734  | 2 |
| Dimethyltetradecylamin   | 1622 | 3 |

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| N,N-Dimethyl-m-toluidin  | 1386 | 2 |
| N,N-Dimethyl-o-toluidin  | 1698 | 1 |
| Dimethylzinnbis-(thioglycolsäureisooctylester)                               | 575  | 2 |
| Dimyristylperoxydicarbonat   | 1107 | 1 |
| Dinatriumhydrogenphosphat  | 330  | 1 |
| 2,4-Dinitroanilin  | 704  | 2 |
| 1,3-Dinitrobenzol  | 84   | 3 |
| 1,4-Dinitrobenzol  | 707  | 3 |
| 1,2-Dinitrobenzol  | 708  | 3 |
| 4,4'-Dinitrostilbene-2,2'-disulfonsäure, Dikaliumsalz                        | 1249 | 1 |
| 2,4-Dinitrotoluol  | 251  | 3 |
| 2,5-Dinitrotoluol  | 645  | 3 |
| 2,6-Dinitrotoluol  | 646  | 3 |
| Dinoseb  | 85   | 2 |
| Diocanoylperoxid   | 1452 | 1 |
| Diocylzinnbis-(thioglycolsäureisooctylester)                                 | 571  | 2 |
| Diocylzinndichlorid  | 569  | 2 |
| Diocylzinnoxid   | 570  | 2 |
| 1,4-Dioxan   | 86   | 2 |
| 4-(1,4-Dioxaspiro(4,5)-decan-8-yl)-cyclohexanon                              | 1939 | 1 |
| Dipenten   | 87   | 1 |
| Diphenyl   | 1309 | 2 |
| Diphenylamin   | 726  | 3 |
| Diphenylcarbonat   | 1227 | 1 |
| 4,4'-Diphenyldisulfonsäure   | 1796 | 1 |
| Diphenylether  | 88   | 2 |
| N,N'-Diphenylguanidin  | 1337 | 2 |
| Diphenylmethan   | 89   | 2 |
| Diphenylmethandiisocyanat  | 635  | 1 |
| 3-Diphenylmethoxy-8-isopropyl-8-azoniabicyclo-<br>[3.2.1]octanmethansulfonat | 1053 | 3 |
| Diphenylolpropan   | 1308 | 2 |
| Diphenylphosphinchlorid  | 1399 | 2 |
| Diphenylphosphinoxid   | 1445 | 2 |
| Diphenyl-4-sulfonsäure, Natriumsalz  | 1757 | 2 |
| Dipikrylamin   | 928  | 3 |
| Di-n-propylamin  | 1668 | 1 |
| Dipropylenglykoldiacrylat  | 1881 | 2 |
| Dipropylentriamin  | 1503 | 2 |
| Dischwefelsäure (Oleum)  | 331  | 2 |
| Disulfoton   | 620  | 3 |
| Dithiokohlensäure-O-ethylester, Na-Salz                                      | 1665 | 2 |
| Ditolyether  | 720  | 2 |
| Di-(3,5,5-trimethylhexanoyl)-peroxid <sup>21</sup>                           | 1453 | 1 |
| Diuron   | 1294 | 3 |
| DL-Methionin <sup>14</sup>   | 1353 | 1 |
| DL-Methionin, Na-Salz  | 1866 | 1 |
| 1,2-Dodecandiol  | 1739 | 1 |
| 1-Dodecanol  | 1482 | 1 |
| tert.Dodecanthiol  | 1067 | 2 |

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| 1-Dodecylamin                                  | 1654 | 2 |
| Dodecyldimethylamin                            | 1259 | 2 |
| Dodecyloxiran                                  | 1784 | 1 |
| Dodecylstannonsäure                            | 584  | 1 |
| Edifenphos                                     | 1048 | 3 |
| Eisen(III)-chlorid <sup>8</sup>                | 515  | 1 |
| Eisen(II)-chlorid                              | 524  | 1 |
| Eisen(III)-chloridsulfat <sup>8</sup>          | 721  | 1 |
| Eisen(III)-nitrat <sup>8</sup>                 | 516  | 1 |
| Eisen(II)-sulfat <sup>8</sup>                  | 514  | 1 |
| Embutramid                                     | 1846 | 2 |
| Emetin-Dihydrochlorid                          | 937  | 3 |
| $\alpha,\beta$ -Endosulfan                     | 468  | 3 |
| Endrin   | 469  | 3 |
| Epichlorhydrin                                 | 92   | 3 |
| (-)-Epinephrin                                 | 866  | 3 |
| (+)-Epinephrin                                 | 934  | 3 |
| (-)-Epinephrinhydrochlorid                     | 875  | 3 |
| (+)-Epinephrinhydrochlorid                     | 938  | 3 |
| Epinephrinhydrogentartrat                      | 865  | 3 |
| 2,3-Epoxypropan-1-ol                           | 1685 | 3 |
| 2,3-Epoxypropyl-N,N,N-trimethylammoniumchlorid | 1365 | 3 |
| Erysimosid                                     | 1028 | 3 |
| Erysimosol                                     | 1039 | 3 |
| Essigsäure (>25%)                              | 93   | 1 |
| Essigsäure-n-amylester                         | 17   | 1 |
| Essigsäure-n-butylester                        | 42   | 1 |
| Essigsäure-tert.-butylester                    | 43   | 1 |
| Essigsäurecyclohexylester                      | 66   | 1 |
| Essigsäure-2-ethoxyethylester                  | 106  | 1 |
| Essigsäureethylester                           | 95   | 1 |
| Essigsäure-2-ethylhexylester                   | 1319 | 2 |
| Essigsäureisobornylester                       | 1273 | 1 |
| Essigsäureisobutylester                        | 133  | 1 |
| Essigsäureisopentylester                       | 1653 | 1 |
| Essigsäureisopropenylester                     | 1292 | 1 |
| Essigsäureisopropylester                       | 136  | 1 |
| Essigsäuremethylester                          | 146  | 1 |
| Essigsäurephenylester                          | 171  | 2 |
| Essigsäure-n-propylester                       | 178  | 1 |
| Essigsäurevinylester                           | 203  | 2 |
| Esterzinn                                      | 587  | 2 |
| Ethanol <sup>10, 14</sup>                      | 96   | 1 |
| Ethanolamin                                    | 94   | 1 |
| Ethanolammoniumchlorid                         | 533  | 1 |
| Ethephon                                       | 689  | 2 |
| 1-Ethin-1-cyclohexanol                         | 1370 | 1 |
| 1-Ethinyl-2-methylpent-2-enylchrysanthemmat    | 1084 | 3 |
| Ethoprophos                                    | 650  | 3 |
| 2-Ethoxy-5-methyl-anilin                       | 1812 | 2 |

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| 2-Ethoxynitrobenzol  | 1699 | 1 |
| 3-Ethoxypropylamin   | 1810 | 1 |
| Ethylamin  | 97   | 1 |
| 2-Ethylaminobenzoessäure                                   | 1375 | 1 |
| 3-Ethylamino-4-kresol                                      | 1644 | 2 |
| 2-Ethylamino-5-sulfobenzoessäure                           | 1632 | 2 |
| 3-Ethylamino-p-toluolsulfonsäure                           | 1143 | 1 |
| Ethylammoniumchlorid                                       | 558  | 1 |
| Ethyl-n-amylketon  | 98   | 1 |
| N-Ethylanilin  | 252  | 1 |
| 2-Ethylanthrachinon  | 1373 | 1 |
| Ethylbenzol  | 99   | 1 |
| N-Ethyl-N-benzylanilin                                     | 1544 | 2 |
| N-Ethyl-N-benzyl-m-toluidin                                | 1640 | 2 |
| 2-Ethylbuttersäure   | 1522 | 1 |
| Ethylbiglykolacetat  | 1620 | 1 |
| N,N'-Ethylenbis-(N-acetylacetamid)                         | 1268 | 1 |
| Ethylendiamin  | 103  | 2 |
| Ethylendiamin-Hydrochlorid                                 | 535  | 2 |
| Ethylendiamintetraessigsäure mit Natrium- und Kaliumsalzen | 104  | 2 |
| Ethylenglycol <sup>11, 14</sup>                            | 105  | 1 |
| Ethylenglycolmono-n-butylether                             | 47   | 1 |
| Ethylenglycolmonomethylether                               | 107  | 1 |
| Ethylenglycolmonomethyletheracetat                         | 1147 | 1 |
| Ethylenharnstoff   | 1646 | 1 |
| Ethylenimin  | 108  | 3 |
| Ethylenoxid  | 253  | 2 |
| Ethylformiat   | 1607 | 1 |
| Ethylglykol-monoethylether                                 | 5058 | 1 |
| 2-Ethylhexanal   | 1153 | 1 |
| 2-Ethylhexanol-1   | 134  | 2 |
| 2-Ethylhexansäure  | 1179 | 1 |
| 2-Ethylhexansäurechlorid                                   | 1160 | 1 |
| 2-Ethylhexenal   | 1857 | 1 |
| 2-Ethylhexylamin-1   | 109  | 2 |
| 2-Ethylhexylammoniumchlorid                                | 537  | 2 |
| 2-Ethylhexylchlorformiat                                   | 1854 | 2 |
| 2-Ethylhexylnitrat   | 1947 | 2 |
| N-Ethylmaleinimid  | 927  | 3 |
| 4-Ethyl-3-(2-methoxy-5-chlorbenzamido)-benzolsulfonamid    | 1418 | 1 |
| 2-Ethyl-6-methylanilin                                     | 1247 | 2 |
| 2-Ethyl-4-methyl-1,3-dioxolan (cis/trans-Gemisch)          | 1500 | 1 |
| N-Ethylmorpholin   | 1567 | 1 |
| N-Ethyl- $\alpha$ -naphthylamin                            | 1629 | 2 |
| N-Ethyl-p-nitro-o-toluidin                                 | 1879 | 2 |
| N-Ethylpiperidin   | 1722 | 1 |
| Ethylpolysilikat   | 488  | 1 |
| Ethylthiocarbaminsäure-O-isopropylester                    | 1388 | 2 |
| 2-Ethylthioethanol   | 1611 | 2 |
| N-Ethyl-o-toluidin   | 1551 | 1 |



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| Etrimphos  | 623  | 3 |
| Evomonosid   | 951  | 3 |
| Farbmittelzubereitungen, organische <sup>25</sup>  | 1492 | 2 |
| Farnesylaceton   | 1738 | 1 |
| Fenaminosulf   | 930  | 3 |
| Fenamiphos   | 1062 | 3 |
| Fenbutatinoxid   | 532  | 3 |
| Fenitrothion   | 926  | 3 |
| Fenpropathrin  | 681  | 3 |
| Fensulfothion  | 924  | 3 |
| Fenthion   | 616  | 3 |
| Fenvalerat   | 682  | 3 |
| Ferrocen   | 1489 | 2 |
| Fettalkohole, C16-18, Destillationsrückstände  | 1900 | 1 |
| Fettalkohol-EO/PO-Addukte  | 672  | 2 |
| Fettsäureethylhexylester (Fettsäurerest<br>- gesättigt, ungesättigt oder epoxidiert<br>- mit geradzahligem unverzweigter C-Kette<br>- und C-Zahl $\geq 12$ ) <sup>11</sup> | 838  | 1 |
| Fettsäuremethylester<br>(Fettsäurerest gesättigt oder ungesättigt<br>- mit geradzahligem unverzweigter C-Kette<br>- und C-Zahl $\geq 6$ ) <sup>11</sup>                    | 834  | 1 |
| Fettsäuren, C16-18, Ester mit Ethylenglykol  | 1912 | 1 |
| Fettsäuren, gesättigt, unverzweigt mit<br>-C-Zahl $\geq 8 - \leq 12$ und einer<br>-endständigen Carboxylgruppe <sup>11</sup>   | 657  | 1 |
| Fettsäuren, Natrium- und Kaliumsalze (Fettsäuren<br>-gesättigt und ungesättigt<br>-mit geradzahligem unverzweigter C-Kette<br>-und C-Zahl $\geq 12$ )                      | 669  | 1 |
| Fettsäuren, C8-10, Trimethylolpropan-Neopentylglykolester  | 1313 | 1 |
| Fettsäuren, ungesättigt, unverzweigt mit<br>- geradzahligem C-Kette und<br>- C-Zahl 16 - 18 und<br>- einer endständigen Carboxylgruppe <sup>11</sup>                       | 659  | 1 |
| Fischöl, bisulfitiert <sup>11</sup>  | 1327 | 1 |
| Flubenzimin  | 1077 | 3 |
| p-Fluorbenzalchlorid   | 1735 | 1 |
| p-Fluorbenzotrichlorid   | 1390 | 2 |
| p-Fluorbenzylchlorid   | 1675 | 2 |
| Fluoessigsäure   | 156  | 3 |
| Fluorsulfonsäure   | 774  | 1 |
| o-Fluortoluol  | 906  | 3 |
| p-Fluortoluol  | 940  | 3 |
| Fluorwasserstoff   | 254  | 1 |
| Flutropiumbromid   | 1088 | 3 |
| Folsäure   | 1504 | 1 |
| Formaldehyd  | 112  | 2 |
| Formamid   | 1509 | 1 |

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|---|------|---|
| Formetanat  | 1065 | 3 |
| Formetanat-hydrochlorid   | 1066 | 3 |
| Fuchsin   | 857  | 3 |
| Fumarsäure  | 1191 | 1 |
| Furfural  | 113  | 2 |
| Furfurylalkohol   | 114  | 1 |
| Beta-D-Galactosepentaacetat   | 1412 | 1 |
| Geranylaceton   | 1410 | 2 |
| Gitalin   | 980  | 3 |
| Gitaloxigenin   | 952  | 3 |
| Gitaloxin   | 1001 | 3 |
| Gitoxigenin   | 957  | 3 |
| Gitoxin   | 1011 | 3 |
| Glibenclamid  | 1835 | 2 |
| Glutardialdehyd   | 712  | 2 |
| Glutarsäure   | 1296 | 1 |
| Glycerin <sup>14</sup>  | 116  | 1 |
| Glycerindiester (Fettsäurerest unverzweigt mit C-Zahl $\geq 8$ und endständiger Carboxylgruppe) <sup>11, 14</sup>   | 691  | 1 |
| Glycerinmonoester (Fettsäurerest unverzweigt mit C-Zahl $\geq 8$ und endständiger Carboxylgruppe) <sup>11, 14</sup> | 690  | 1 |
| Glycolsäure-n-butylester  | 117  | 1 |
| Glyoxal   | 1130 | 1 |
| Guanidin, cyano-, Polymer mit Ammoniumchlorid, 1,2-Ethandiamin und Formaldehyd <sup>8</sup>                         | 1930 | 3 |
| Guanidinhydrochlorid  | 788  | 1 |
| Guanidinnitrat  | 787  | 1 |
| Harnstoff   | 118  | 1 |
| Heizöl EL   | 119  | 2 |
| Heizöl, schwer  | 443  | 1 |
| Helveticosid  | 967  | 3 |
| n-Heptan  | 120  | 1 |
| n-Heptanol-1  | 121  | 1 |
| n-Hepten-1  | 122  | 1 |
| Heptenophos   | 651  | 3 |
| Hexabromcyclododecan, 1,2,5,6,9,10-   | 778  | 1 |
| Hexachlorbenzol   | 470  | 3 |
| Hexachlorbutadien   | 123  | 3 |
| Hexachlorcyclopentadien   | 799  | 3 |
| Hexachlorethan  | 798  | 3 |
| Hexadecylmercaptan  | 999  | 3 |
| Hexafluorkieselsäure  | 491  | 2 |
| Hexahydrophthalsäureanhydrid  | 1520 | 1 |
| Hexamethyldiamin  | 1355 | 1 |
| Hexamethylentetramin  | 1568 | 1 |
| n-Hexan   | 124  | 1 |
| 1,6-Hexandiol <sup>14</sup>   | 1394 | 1 |
| 3,4-Hexandion   | 1790 | 1 |
| n-Hexanol-1   | 125  | 1 |
| n-Hexanol-2   | 126  | 1 |

|   |      |   |
|---|------|---|
| n-Hexanol-3   | 127  | 1 |
| 1-Hexen   | 832  | 1 |
| 3-Hexin-2,5-diol  | 1780 | 2 |
| n-Hexylamin   | 1615 | 1 |
| Homatropin  | 901  | 3 |
| Homatropinhydrobromid   | 868  | 3 |
| Homatropinhydrochlorid  | 968  | 3 |
| Homatropinmethylbromid  | 899  | 3 |
| Hydrazin  | 130  | 3 |
| Hydrochinon   | 128  | 2 |
| Hydrochinon-bis(2-hydroxyethyl)ether  | 1579 | 1 |
| Hydrochinonmonomethylether  | 129  | 1 |
| Hydrocumol  | 1717 | 1 |
| Hydrodehydrolinalool  | 1331 | 2 |
| Hydroxyaceton   | 1623 | 1 |
| 4-Hydroxybenzoesäure  | 1303 | 1 |
| 3-Hydroxy-2-butanon   | 1679 | 1 |
| Hydroxycitronellaldimethylacetal  | 1666 | 2 |
| 2-Hydroxy-dibenzofuran-3-carbonsäure  | 1627 | 2 |
| 1-Hydroxyethan-1,1-diphosphonsäure  | 1772 | 2 |
| 2-Hydroxyethansulfonsäure, Na-Salz  | 1744 | 1 |
| 2-Hydroxyethylacrylat   | 1724 | 2 |
| N-Hydroxyethyl-N-ethylanilin  | 1542 | 2 |
| N-Hydroxyethyl-N-methylanilin   | 1549 | 2 |
| 4-(2-Hydroxyethyl)-morpholin  | 1712 | 1 |
| N-[4-[(2-Hydroxyethyl)-sulfonyl]phenyl]acetamid   | 1270 | 1 |
| 1-Hydroxy-1-hydroxyperoxy-dicyclohexylperoxid   | 1109 | 1 |
| 2-Hydroxy-5-methyl-benzoesäure  | 1535 | 1 |
| 4-Hydroxy-2-methyl-pentyl-(2)-peroxyneodecanoat <sup>21</sup>                                     | 1468 | 2 |
| 1-Hydroxy-4-methyl-6-(2,4,4-trimethylpentyl)pyridin-2(1H)-on, Verbindung mit 2-Aminoethanol (1:1) | 5106 | 2 |
| 7-Hydroxy-1,3-naphthalindisulfonsäure, Dikaliumsalz   | 1238 | 1 |
| 2-Hydroxy-1-naphthoesäure   | 1405 | 2 |
| 4-Hydroxy-6-(phenylamino)-naphthalin-2-sulfonsäure  | 1631 | 2 |
| Hydroxypivalinsäureneopentylglycolester   | 1163 | 1 |
| (-)-Hyoscyamin  | 912  | 3 |
| (-)-Hyoscyaminhydrobromid   | 936  | 3 |
| (-)-Hyoscyaminhydrochlorid  | 1019 | 3 |
| Hyoscyaminsulfat  | 964  | 3 |
| 1H-Imidazol   | 1448 | 1 |
| Imidazoliniumsalz   | 675  | 2 |
| Indigo  | 818  | 1 |
| Indomethacin  | 870  | 3 |
| Iodixanol   | 1934 | 1 |
| Iohexol   | 1932 | 1 |
| Iopentol  | 1933 | 1 |
| Ipratropiumbromid   | 1063 | 3 |
| Isatosäureanhydrid  | 783  | 1 |
| Isoamylalkohol  | 597  | 1 |
| Isobutanol  | 131  | 1 |

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| Isobuttersäure   | 1139 | 1 |
| Isobuttersäurenitril   | 132  | 2 |
| Isobutylacrylat  | 1595 | 2 |
| Isobutylidendiharnstoff                                      | 1168 | 1 |
| Isobutyltrimethoxysilan                                      | 1849 | 1 |
| Isobutyraldehyd  | 1136 | 1 |
| Isodecanol   | 1291 | 1 |
| Isofenphos   | 684  | 3 |
| Isolieröle auf Mineralölbasis nach DIN 57370<br>Teil 1 und 2 | 802  | 1 |
| Isononanol   | 831  | 2 |
| Isononansäure  | 1277 | 1 |
| Isononansäurechlorid   | 1880 | 1 |
| Isooctylphenol   | 1205 | 2 |
| Isopentan  | 648  | 1 |
| Isophoron  | 1183 | 2 |
| Isophorondiamin  | 1202 | 1 |
| Isophorondiisocyanat   | 1203 | 2 |
| Isopropanol  | 135  | 1 |
| Isopropanolamin  | 1137 | 1 |
| 3-Isopropoxypropylamin                                       | 1777 | 1 |
| Isopropylisocyanat   | 1752 | 1 |
| N-Isopropyl-nortropin  | 1003 | 3 |
| p-Isopropylphenylisocyanat                                   | 1271 | 1 |
| Isotridecanol  | 1172 | 2 |
| Isovaleraldehyd  | 1356 | 1 |
| Jod  | 492  | 1 |
| Jodwasserstoff   | 332  | 1 |
| Kaliumacetat   | 757  | 1 |
| Kaliumalaun  | 510  | 1 |
| Kaliumantimonat (V)  | 22   | 3 |
| Kaliumantimonyltartrat                                       | 334  | 3 |
| Kaliumarsenat  | 335  | 3 |
| Kaliumarsenit  | 336  | 3 |
| Kaliumcarbonat   | 337  | 1 |
| Kaliumchlorat  | 52   | 2 |
| Kaliumchlorid  | 230  | 1 |
| Kaliumcyanid   | 338  | 3 |
| Kaliumdichromat  | 339  | 3 |
| Kaliumdicyanoargentat  | 946  | 3 |
| Kaliumfluoracetat  | 340  | 3 |
| Kaliumfluorid  | 341  | 1 |
| Kaliumhexacyanoferrat (II)                                   | 489  | 2 |
| Kaliumhexacyanoferrat (III)                                  | 490  | 2 |
| Kaliumhexafluorsilikat                                       | 517  | 2 |
| Kaliumhydrogenfluorid  | 342  | 1 |
| Kaliumhydrogensulfat   | 343  | 1 |
| Kaliumhydrogensulfid   | 344  | 2 |
| Kaliumhydroxid   | 345  | 1 |
| Kaliumnitrat   | 346  | 1 |

|   |      |   |
|---|------|---|
| Kaliumnitrit  | 347  | 2 |
| Kaliumoxid  | 348  | 1 |
| Kalium-O-pentyldithiocarbonat   | 1275 | 3 |
| Kaliumperchlorat  | 169  | 1 |
| Kaliumpermanganat   | 1936 | 2 |
| Kaliumperoxid   | 349  | 1 |
| Kaliumperoxodisulfat  | 1350 | 1 |
| Kaliumperoxomonosulfat  | 1332 | 1 |
| Kaliumsulfat  | 255  | 1 |
| Kaliumsulfid  | 350  | 2 |
| Kaliumtetracyanomercurat (II)   | 351  | 3 |
| Kaliumtetrajodomercurat (II)  | 352  | 3 |
| Kampfer   | 1116 | 1 |
| Kieselsäure, Aluminium-Natriumsalz  | 805  | 1 |
| Kieselsäure, Kalium-Salz  | 1316 | 1 |
| Kieselsäure, Natrium-Salz   | 1314 | 1 |
| Kobalt(II)-chlorid  | 493  | 2 |
| Kobalt(II)-nitrat   | 520  | 2 |
| Kobalt(II)-sulfat   | 521  | 2 |
| Königswasser  | 353  | 2 |
| Kohlenstoffmonoxid <sup>14</sup>  | 257  | 1 |
| Kohlenwasserstoff-Lösemittel: <5% Aromaten, nicht als krebserzeugend (R45) gekennzeichnet | 27   | 1 |
| Kohlenwasserstoff-Lösemittel: >5% Aromaten, nicht als krebserzeugend (R45) gekennzeichnet | 775  | 2 |
| Kokosalkylamin  | 1885 | 2 |
| Kokosamin-10EO-acetat   | 1087 | 3 |
| Kolophonium   | 754  | 1 |
| Koratin MAT   | 1907 | 1 |
| m-Kresol  | 140  | 2 |
| o-Kresol  | 1223 | 2 |
| p-Kresol  | 1592 | 2 |
| Kryolith  | 1329 | 1 |
| Kupfer(II)-arsenit  | 355  | 3 |
| Kupfer(II)-arsenitacetat  | 356  | 3 |
| Kupfer(II)-chlorat  | 357  | 2 |
| Kupfer(I)-chlorid   | 358  | 2 |
| Kupfer(II)-chlorid  | 359  | 2 |
| Kupfer(II)-nitrat   | 1347 | 2 |
| Kupfer(II)-oxid   | 1401 | 1 |
| Kupferron   | 858  | 3 |
| Kupfer(II)-sulfat   | 141  | 2 |
| Lachgas <sup>14</sup>   | 767  | 1 |
| Lanatosid A   | 1050 | 3 |
| Lanatosid C   | 1051 | 3 |
| Laurinlactam  | 1199 | 1 |
| Ligninsulfonsäure, Natrium-Salz   | 1320 | 1 |
| Linalool  | 1135 | 1 |
| Linalylacetat   | 1381 | 1 |
| Lindan  | 143  | 3 |

|  |      |   |
|--|------|---|
| Linuron                                    | 258  | 3 |
| Magnesiumacetat <sup>14</sup>              | 1944 | 1 |
| Magnesiumarsenat                           | 361  | 3 |
| Magnesiumchlorat                           | 362  | 2 |
| Magnesiumchlorid <sup>14</sup>             | 259  | 1 |
| Magnesiumhexafluorsilikat                  | 518  | 2 |
| Magnesiumnitrat                            | 363  | 1 |
| Magnesiumperchlorat                        | 364  | 1 |
| Magnesiumperoxid <sup>14</sup>             | 365  | 1 |
| Magnesiumphosphid                          | 552  | 2 |
| Magnesiumsulfat <sup>14</sup>              | 366  | 1 |
| Malathion                                  | 615  | 3 |
| Maleinsäure                                | 260  | 1 |
| Maleinsäureanhydrid                        | 261  | 1 |
| Maleinsäuredi-n-butylester                 | 1189 | 1 |
| Maleinsäuredimethylester                   | 1325 | 1 |
| Malonsäurediethylester                     | 1188 | 1 |
| Malonsäurediisobutylester                  | 1869 | 1 |
| Mangan(II)-chlorid                         | 494  | 1 |
| Mangan(II)-sulfat                          | 522  | 1 |
| Mecoprop                                   | 1826 | 2 |
| Mehrbereichsschaummittel <sup>38</sup>     | 1954 | 2 |
| Melaminharz, sulfitmodifiziert             | 1483 | 1 |
| Mercaptane (außer tert. Dodecanthiol)      | 144  | 3 |
| 8-Mercapto-7,8-dihydroguanosin             | 1068 | 3 |
| Mercaptodimethur                           | 991  | 3 |
| 2-Mercaptoethanol                          | 884  | 3 |
| 2,3-Mercaptopropanol-1                     | 882  | 3 |
| 3-Mercaptopropionsäure                     | 918  | 3 |
| 6-Mercaptopurin                            | 861  | 3 |
| Merthiolat                                 | 872  | 3 |
| Mesityloxid                                | 262  | 1 |
| Metamitron                                 | 835  | 2 |
| Metanilsäure                               | 1647 | 1 |
| Methabenzthiazuron                         | 1282 | 2 |
| Methacrylamid                              | 1251 | 1 |
| Methacrylsäure                             | 1252 | 1 |
| Methacrylsäure-n-butylester                | 1254 | 1 |
| Methacrylsäure-2-(dimethylamino)ethylester | 1257 | 1 |
| Methacrylsäure-2-hydroxyethylester         | 1255 | 1 |
| Methacrylsäurehydroxypropylester           | 1256 | 1 |
| Methacrylsäureisobutylester                | 1253 | 1 |
| Methacrylsäuremethylester                  | 154  | 1 |
| Methallylchlorid                           | 1196 | 2 |
| Methamidophos                              | 688  | 3 |
| Methanol                                   | 145  | 1 |
| Methansulfonylchlorid                      | 1655 | 2 |
| Methanthiophosphonsäuredichlorid           | 970  | 3 |
| Methidathion                               | 653  | 3 |
| 4-Methoxybenzylalkohol                     | 1586 | 1 |

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|--|------|---|
| 2-Methoxy-2,3-dihydro-4H-pyran   | 1413 | 1 |
| Methoxyessigsäure  | 5060 | 1 |
| 2-Methoxyethylchlorid  | 965  | 3 |
| 2-Methoxy-4-nitroanilin-5-sulfonsäure, Na-Salz   | 1883 | 2 |
| 2-Methoxypropanol-1  | 1746 | 1 |
| 3-Methoxypropylamin  | 1798 | 1 |
| 4-Methoxytoluol  | 1585 | 1 |
| Methylamin   | 263  | 2 |
| 2-Methylaminoethanol   | 1379 | 1 |
| Methylammoniumchlorid  | 459  | 1 |
| 2-Methylanilin   | 195  | 3 |
| 3-Methylanilin   | 453  | 2 |
| 4-Methylanilin   | 693  | 2 |
| N-Methylbenzamid   | 1392 | 1 |
| Methyl-1H-benzotriazol   | 1449 | 2 |
| 3-Methylbenzoylchlorid   | 1749 | 1 |
| N-Methylbenzylamin   | 1576 | 1 |
| N-Methyl-N-benzylanilin  | 1704 | 2 |
| o-Methylbenzylchlorid  | 1684 | 2 |
| m-Methylbenzylchlorid  | 1709 | 2 |
| Methylbenzylpropionat  | 1645 | 1 |
| Methylbromid   | 264  | 3 |
| 2-Methyl-1,3-butadien  | 1285 | 1 |
| 3-Methyl-2-butanon   | 1686 | 1 |
| 3-Methyl-2-butenal   | 1145 | 2 |
| 2-Methyl-3-buten-2-ol  | 1150 | 1 |
| 3-Methyl-2-buten-1-ol  | 1158 | 1 |
| 3-Methyl-3-buten-1-ol  | 1161 | 1 |
| 2-Methyl-3-buten-2-ol  | 1151 | 1 |
| 1-Methyl-2-chlor-5-amino-4-benzolsulfonsäure   | 1529 | 2 |
| Methylchlorid  | 265  | 2 |
| 4-Methyl-1-chlormethylbenzol   | 1581 | 1 |
| 2-Methyl-4-chlorphenoxyessigsäure  | 1176 | 2 |
| Methylcyclohexanol   | 1856 | 1 |
| 2-Methylcyclohexanon   | 148  | 1 |
| Methylcyclohexanon Isomerengemisch   | 1741 | 1 |
| Methylcyclohexanonperoxid <sup>23</sup>  | 1478 | 1 |
| N-Methylcyclohexylamin   | 1565 | 1 |
| N-Methyldicyclohexylamin   | 1828 | 2 |
| N-Methyldiethanolamin  | 1588 | 1 |
| Methyldigoxin  | 1071 | 3 |
| Methyldiisopropanolamin  | 1789 | 1 |
| Methyldistearylamin  | 830  | 2 |
| 4, 4'-Methylen-bis(2,6-di-tert.-butylphenol)   | 1383 | 1 |
| 4,4'-Methylenbis-(methylimino)-bis-(1,2-dihydro-1,5-dimethyl-2-phenyl)-3H-pyrazol-3-on | 1264 | 1 |
| $\alpha$ -Methylestersulfonate C12-C18, Na-Salze                                       | 668  | 2 |
| 1-Methylethylbenzol, oxidiert, Polyphenylrückstände <sup>14</sup>                      | 1488 | 1 |
| Methylethylketon   | 150  | 1 |
| Methylethylketonperoxid <sup>17</sup>  | 1108 | 1 |

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|---|------|---|
| Methylethylketoxim  | 1558 | 1 |
| N-Methylformamid  | 1330 | 1 |
| 2-Methylfuran   | 151  | 1 |
| 6-Methyl-2-heptanon   | 1162 | 1 |
| 2-Methylhepten-2-on-6   | 1613 | 1 |
| 4-Methylhexahydrophthalsäureanhydrid  | 1851 | 1 |
| 2-Methylhydrochinon   | 1555 | 2 |
| 4-Methylimidazol  | 1486 | 2 |
| Methylisoamylketon  | 152  | 1 |
| Methylisobutylketon   | 137  | 1 |
| Methylisobutylketonperoxid <sup>21</sup>  | 1495 | 1 |
| O-Methylisoharnstoffsulfat  | 1874 | 1 |
| Methylisothiocyanat   | 266  | 3 |
| Methylmercaptan   | 267  | 3 |
| 6-Methylmercaptopurinribosid  | 939  | 3 |
| 5-Methyl-2-(1-methylethyl)cyclohexanol  | 1743 | 1 |
| N-Methylmorpholin   | 763  | 1 |
| N-Methylmorpholin-N-oxid  | 764  | 1 |
| 2-Methyl-4-nitroanilin  | 705  | 2 |
| 4-Methyl-2-nitrophenol  | 1635 | 2 |
| 2-Methyl-2-penten-1-al  | 1714 | 1 |
| 3-Methyl-1-pentin-3-ol  | 1515 | 1 |
| N-Methyl-N-phenyl-carbaminsäure-ethylester  | 1767 | 2 |
| 2-Methylphenylisocyanat   | 1705 | 3 |
| 3-Methylphenylisocyanat   | 1710 | 2 |
| 1-Methyl-3-phenylpropylamin   | 1853 | 2 |
| Methylphosphonsäuredimethylester  | 1720 | 2 |
| N-Methylphthalimid  | 1683 | 1 |
| N-Methylpiperazin   | 1602 | 2 |
| Methylpropylketon   | 590  | 1 |
| Methylproxitol  | 1597 | 1 |
| 3-Methylpyridin   | 1601 | 1 |
| 2-Methylpyridin   | 1603 | 1 |
| N-Methylpyrrolidon  | 1181 | 1 |
| (-)-Methylscopolaminmethylsulfat  | 1055 | 3 |
| Methyl-tert.butylether  | 1200 | 1 |
| 2-Methylthio-4,6-dichloro-1,3,5-triazin   | 853  | 3 |
| 3-(Methylthio)propanal  | 1785 | 3 |
| 6-Methyl-1,3,5-triazin-2,4-diyldiamin   | 1682 | 2 |
| 3-Methylxanthin   | 1737 | 1 |
| Mevinphos   | 633  | 3 |
| Mineralöl-Halbfertigprodukte, flüssige,<br>> 5% Aromaten, nicht als krebserzeugend (R45) gekennzeichnet | 442  | 2 |
| Mineralöl-Halbfertigprodukte, flüssige,<br><5% Aromaten, nicht als krebserzeugend (R45) gekennzeichnet  | 771  | 1 |
| Mineralöl-Halbfertigprodukte, flüssige, als krebserzeugend (R45)<br>gekennzeichnet                      | 441  | 3 |
| Mitomycin C   | 859  | 3 |
| Monobutylzintrichlorid  | 579  | 1 |
| Monobutylzintris-(thioglycolsäureisooctylester)   | 580  | 1 |



|   |      |   |
|---|------|---|
| Monododecylzintrichlorid                          | 585  | 1 |
| Monododecylzintris-(thioglycolsäureisooctylester) | 586  | 1 |
| Monoethylethanolamin                              | 1610 | 1 |
| Monolinuron                                       | 157  | 3 |
| Monomethylzintris-(thioglycolsäureisooctylester)  | 576  | 2 |
| Monooctylzintrichlorid                            | 582  | 1 |
| Monooctylzintris-(thioglycolsäureisooctylester)   | 583  | 1 |
| Monothioglycerol                                  | 909  | 3 |
| Morpholin   | 158  | 2 |
| Morpholincarbonylchlorid                          | 1844 | 3 |
| 2-(4-Morpholinyl)ethylamin                        | 1755 | 2 |
| Morpholinyl-4-ethylisocyanid-2                    | 1095 | 3 |
| Mucochlorsäure                                    | 1140 | 2 |
| Muscimol  | 997  | 3 |
| Myxothiazol                                       | 1094 | 3 |
| Naphthalin  | 269  | 2 |
| Naphthalin-1,8-dicarbonsäureimid                  | 1518 | 1 |
| 1,5-Naphthalindiol                                | 1216 | 2 |
| Naphthalin-1,5-disulfonsäure, Dinatriumsalz       | 1326 | 1 |
| $\beta$ -Naphthochinaldin                         | 1519 | 2 |
| 2-Naphthol  | 1263 | 2 |
| 1-Naphthol-5-sulfonsäure, Natriumsalz             | 1801 | 1 |
| 1-Naphthylamin                                    | 822  | 2 |
| 2-Naphthylamin-5,7-disulfonsäure                  | 833  | 2 |
| 1-Naphthylamin-3,7-disulfonsäure                  | 1815 | 2 |
| 1-Naphthylamin-3,7-disulfonsäure, Dinatriumsalz   | 1901 | 2 |
| 2-Naphthylamin-3,6-disulfonsäure Mononatriumsalz  | 1797 | 1 |
| 1-Naphthylamin-3,6-disulfonsäure, Mononatriumsalz | 1903 | 2 |
| 2-Naphthylamin-1-sulfonsäure                      | 1214 | 1 |
| 1,5-Naphthylendiamin                              | 1283 | 2 |
| Natrium   | 772  | 2 |
| Natriumacetat <sup>14</sup>                       | 367  | 1 |
| Natriumadipat <sup>14</sup>                       | 475  | 1 |
| Natriumalkyl(C8-C20)-sulfate                      | 664  | 2 |
| Natriumaluminat                                   | 1344 | 1 |
| Natriumamid                                       | 1280 | 2 |
| Natriumarsenat                                    | 23   | 3 |
| Natriumarsenit                                    | 368  | 3 |
| Natriumazid                                       | 636  | 2 |
| Natriumbenzoat                                    | 1284 | 1 |
| Natriumbenzolphosphinat                           | 1788 | 1 |
| Natriumbromid                                     | 38   | 1 |
| Natriumbutyrat                                    | 1485 | 1 |
| Natriumcarbonat <sup>8</sup>                      | 222  | 1 |
| Natriumchloracetat                                | 369  | 2 |
| Natriumchlorat                                    | 370  | 2 |
| Natriumchlorid <sup>14</sup>                      | 270  | 1 |
| Natriumchlorit <sup>8</sup>                       | 487  | 2 |
| Natriumcumolsulfonat                              | 1366 | 1 |
| Natriumcyanat                                     | 1357 | 1 |

|                                       |      |   |
|---------------------------------------|------|---|
| Natriumcyanid                         | 60   | 3 |
| Natriumdichromat                      | 56   | 3 |
| Natriumdihydrogenphosphat             | 371  | 1 |
| Natriumdisulfit                       | 1169 | 1 |
| Natriumdithionit                      | 1170 | 1 |
| Natriumfluoracetat                    | 372  | 3 |
| Natriumfluorid                        | 111  | 1 |
| Natriumformiat                        | 373  | 1 |
| Natriumgluconat                       | 5223 | 1 |
| Natriumhexacyanoferrat (II)           | 1293 | 2 |
| Natriumhexafluorsilikat               | 519  | 2 |
| Natriumhydrogencarbonat <sup>14</sup> | 374  | 1 |
| Natriumhydrogenfluorid                | 375  | 1 |
| Natriumhydrogensulfat                 | 376  | 1 |
| Natriumhydrogensulfid                 | 377  | 2 |
| Natriumhydroxid <sup>8</sup>          | 142  | 1 |
| Natriumhypochlorit <sup>8</sup>       | 815  | 2 |
| Natriumjodid                          | 138  | 1 |
| Natriummetasilikat                    | 847  | 1 |
| Natriummethylallylsulfonat            | 756  | 1 |
| Natriummethylat                       | 1155 | 1 |
| Natriumethylensulfonat <sup>15</sup>  | 1279 | 1 |
| Natriummolybdat                       | 638  | 1 |
| Natriummonochromat                    | 1032 | 3 |
| Natriumnitrat                         | 378  | 1 |
| Natriumnitrit                         | 161  | 2 |
| Natriumoxalat                         | 379  | 1 |
| Natriumoxid                           | 380  | 1 |
| Natriumpentachlorphenolat             | 381  | 3 |
| Natriumpentobarbital                  | 878  | 3 |
| Natriumperborat                       | 1333 | 1 |
| Natriumperchlorat                     | 382  | 1 |
| Natriumperoxid                        | 383  | 1 |
| Natriumperoxocarbonat                 | 1364 | 1 |
| Natriumperoxodisulfat                 | 1352 | 1 |
| Natriumphenolat                       | 384  | 2 |
| Natrium-2-phenylphenolat, Tetrahydrat | 1681 | 1 |
| Natriumphthalat <sup>14</sup>         | 482  | 1 |
| Natriumpropionat                      | 484  | 1 |
| Natriumselenat                        | 385  | 2 |
| Natriumselenit                        | 184  | 2 |
| Natriumsuccinat <sup>14</sup>         | 477  | 1 |
| Natriumsulfat <sup>14</sup>           | 286  | 1 |
| Natriumsulfid <sup>8</sup>            | 188  | 2 |
| Natriumsulfit <sup>8</sup>            | 282  | 1 |
| Natriumtetraborat                     | 37   | 1 |
| Natriumthiocyanat                     | 1441 | 1 |
| Natriumthiosulfat <sup>14</sup>       | 386  | 1 |
| Natriumtrichloracetat                 | 730  | 2 |
| Neodecansäure                         | 1858 | 2 |

|   |      |   |
|---|------|---|
| Neodigoxin  | 1085 | 3 |
| Neopentylalkohol                                  | 1511 | 1 |
| Neriifolin  | 943  | 3 |
| trans-Nerolidol                                   | 1864 | 1 |
| Nickel(II)-chlorid                                | 159  | 2 |
| Nickel(II)-nitrat                                 | 387  | 2 |
| Nickel(II)-nitrit                                 | 388  | 2 |
| Nicotinsäure                                      | 1368 | 1 |
| Nitriersäure                                      | 389  | 2 |
| Nitrietriessigsäure mit Natrium- und Kaliumsalzen | 160  | 2 |
| 5-Nitro-4-amino-1-methylbenzol                    | 1537 | 2 |
| 4-Nitroanilin                                     | 162  | 2 |
| 2-Nitroanilin                                     | 702  | 2 |
| 3-Nitroanilin                                     | 703  | 2 |
| 2-Nitroanisol                                     | 647  | 3 |
| 4-Nitroanisol                                     | 725  | 1 |
| 4-Nitrobenzoesäure                                | 1505 | 1 |
| Nitrobenzol                                       | 163  | 2 |
| 3-Nitrobenzolsulfonsäure, Natriumsalz             | 1156 | 1 |
| 6-Nitro-1-diazo-2-naphthol-4-sulfonsäure          | 1428 | 2 |
| Nitroethan  | 588  | 2 |
| p-Nitro-m-kresol                                  | 1765 | 3 |
| Nitromethan                                       | 589  | 2 |
| 1-Nitronaphthalin                                 | 1218 | 2 |
| 3-Nitrophenacylbromid                             | 992  | 3 |
| 4-Nitrophenol                                     | 1124 | 2 |
| 4-Nitro-N-phenylanilin                            | 1398 | 3 |
| 4-Nitro-1,3-phenylendiamin                        | 1794 | 2 |
| 2-Nitro-1,4-phenylendiamin                        | 1795 | 2 |
| 4-Nitropyridin-N-oxid                             | 978  | 3 |
| 4-Nitrosophenol                                   | 1584 | 2 |
| Nitrosylchlorid                                   | 271  | 2 |
| 3-Nitro-4-toluidin                                | 1634 | 1 |
| 2-Nitrotoluol                                     | 164  | 3 |
| 3-Nitrotoluol                                     | 643  | 2 |
| 4-Nitrotoluol                                     | 644  | 2 |
| 4-Nonylphenol                                     | 272  | 3 |
| Nonylphenoethoxylate                              | 671  | 2 |
| (+)-Norepinephrin                                 | 929  | 3 |
| Norscopolamin                                     | 1012 | 3 |
| Nortropin   | 954  | 3 |
| Octadecylamin                                     | 1272 | 2 |
| Octadecyltrimethoxysilan                          | 1409 | 1 |
| n-Octan   | 479  | 1 |
| Octandinitril                                     | 1395 | 1 |
| n-Octanol-1                                       | 165  | 1 |
| n-Octen-1   | 480  | 1 |
| n-Octylamin                                       | 1619 | 2 |
| Octylstannonsäure                                 | 581  | 1 |
| 1,8-Oktandiamin                                   | 1676 | 2 |

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| $\alpha$ -Olefinsulfonate C14-C18  | 666  | 2 |
| Oligomycin   | 983  | 3 |
| Omethoat   | 273  | 3 |
| Orinoco-Naturbitumen (emulgiert)   | 1447 | 1 |
| Ottokraftstoffe, als krebserzeugend (R45) gekennzeichnet                           | 204  | 3 |
| Ottokraftstoffe, nicht als krebserzeugend (R45) gekennzeichnet                     | 820  | 2 |
| Oxalsäure  | 166  | 1 |
| Oxalsäurediethylester  | 81   | 1 |
| 1-Oxalyl-1,4-phenylendiamin  | 1578 | 2 |
| Oxidemeton-methyl  | 608  | 3 |
| Oxideprofos  | 996  | 3 |
| $\alpha$ -Oximinophenylelessigsäurenitril  | 1725 | 2 |
| Oxitropiumbromid   | 1070 | 3 |
| $\alpha$ -Oxophenylelessigsäuremethylester   | 1246 | 1 |
| Oxydiethylenbis(chlorformiat)  | 837  | 2 |
| Pankreatin   | 1831 | 1 |
| Pantolacton  | 1391 | 1 |
| Paracetamol  | 1208 | 1 |
| Paraffingatsche, hydriert, flüssig, nicht als krebserzeugend (R 45) gekennzeichnet | 1490 | 1 |
| Paraformaldehyd  | 1422 | 2 |
| Parafuchsin  | 891  | 3 |
| Parathionethyl   | 167  | 3 |
| Parathionmethyl  | 274  | 3 |
| Pentaacetylgitoxin   | 1029 | 3 |
| Pentachlorphenol   | 275  | 3 |
| Pentachlorthiophenol   | 1301 | 3 |
| Pentaerythrit  | 276  | 1 |
| 1,1,4,7,7-Pentamethyldiethylentriamin  | 1779 | 2 |
| n-Pentan   | 452  | 1 |
| Pentatriumtriphosphat  | 1209 | 1 |
| 1,5-Pentandiol   | 1616 | 1 |
| 1,2-Pentandiol <sup>14</sup>   | 1799 | 1 |
| 2,4-Pentandion   | 168  | 1 |
| 2,3-Pentandion   | 1695 | 1 |
| Pentylamin   | 1609 | 1 |
| Perchlorsäure  | 390  | 1 |
| Perfluoroctansäure, Ammoniumsalz   | 1411 | 2 |
| Permethrin   | 683  | 3 |
| Peroxyessigsäure   | 1371 | 2 |
| Phalloidin   | 1049 | 3 |
| Phenazon   | 1113 | 1 |
| p-Phenetidin   | 1323 | 1 |
| Phenol   | 170  | 2 |
| 2-Phenoxyethanol   | 1650 | 1 |
| 2-Phenoxypropionsäure  | 1733 | 1 |
| Phenylarsonsäure   | 910  | 3 |
| 4-Phenyl-1,3-dioxan  | 1723 | 1 |
| [Phenylbis(1-methylethyliden)]-bis(1,1-dimethylethyl)peroxid                       | 1111 | 1 |
| o-Phenylendiamin   | 821  | 3 |

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|--|------|---|
| m-Phenylendiamin                                       | 1312 | 2 |
| p-Phenylendiamin                                       | 1594 | 3 |
| 1,3-Phenylendiamin-4-sulfonsäure                       | 1531 | 2 |
| Phenylethanol  | 1133 | 1 |
| 2-Phenylethylacetat                                    | 1575 | 1 |
| 2-Phenylethylamin                                      | 1506 | 1 |
| N-Phenylformamid                                       | 1228 | 2 |
| Phenylhydrazinhydrochlorid                             | 883  | 3 |
| Phenylisocyanat  | 1302 | 2 |
| N-Phenyl-N'-isopropyl-1,4-phenylendiamin               | 1336 | 3 |
| Phenylmercuriborat                                     | 914  | 3 |
| N-Phenylmorpholin                                      | 1543 | 2 |
| 2-Phenylphenol   | 1310 | 2 |
| 2-Phenylpropanal                                       | 1546 | 1 |
| Phenylquecksilberacetat                                | 885  | 3 |
| Phosalon   | 630  | 3 |
| Phosgen  | 1304 | 2 |
| Phosphamidon   | 652  | 3 |
| 2-Phosphonobutan-1,2,4-tricarbonsäure                  | 1306 | 1 |
| Phosphonsäure  | 1269 | 1 |
| Phosphonsäuredialkylester (9-octadecenyl, hexadecanyl) | 1481 | 1 |
| Phosphonsäurediethylester                              | 817  | 1 |
| Phosphonsäuredimethylester                             | 1281 | 1 |
| Phosphorigsäuretrimethylester                          | 1234 | 1 |
| Phosphorpentoxid                                       | 391  | 1 |
| Phosphorsäure  | 392  | 1 |
| Phosphorsäurebis-(2-ethylhexyl)-ester                  | 1236 | 1 |
| Phosphorsäuredi-n-butylester                           | 1230 | 1 |
| Phosphorsäurediphenylkresylester                       | 1248 | 2 |
| Phosphorsäure-2-ethylhexyldiphenylester                | 1239 | 2 |
| Phosphorsäuretri-n-butylester                          | 196  | 2 |
| Phosphorsäuretriethylester                             | 456  | 1 |
| Phosphorsäuretrikresylester                            | 1240 | 2 |
| Phosphorsäuretriphenylester                            | 1232 | 2 |
| Phosphorsäuretris-(2-chlorethyl)-ester                 | 28   | 2 |
| Phosphorsäuretris-(2-ethylhexyl)-ester                 | 1212 | 2 |
| Phosphortrichlorid                                     | 1245 | 1 |
| Phosphorwasserstoff                                    | 277  | 2 |
| Phoxim   | 686  | 3 |
| Phthalimid   | 722  | 1 |
| Phthalsäure <sup>14</sup>                              | 481  | 1 |
| Phthalsäureanhydrid <sup>14</sup>                      | 732  | 1 |
| Phthalsäurebenzyl-n-butylester                         | 278  | 2 |
| Phthalsäure-(C9/11)-dialkylester                       | 1359 | 1 |
| Phthalsäuredi-(C16/18)-alkylester <sup>14</sup>        | 1361 | 1 |
| Phthalsäurediallylester                                | 173  | 2 |
| Phthalsäuredi-n-butylester                             | 186  | 2 |
| Phthalsäurediethylester                                | 174  | 2 |
| Phthalsäuredi-(2-ethylhexyl)ester                      | 115  | 1 |
| Phthalsäurediisobutylester                             | 1184 | 2 |

|   |      |   |
|---|------|---|
| Phthalsäurediisodecylester  | 606  | 1 |
| Phthalsäurediisononylester  | 1295 | 1 |
| Phthalsäuredimethylester  | 205  | 1 |
| Phthalsäure, di-C11-14-verzweigte Alkylester, C13-reich   | 1897 | 1 |
| Physostigmin  | 879  | 3 |
| Physostigminsalicylat   | 880  | 3 |
| Physostigminsulfat  | 887  | 3 |
| Pigmentgelb 83 <sup>16</sup>  | 1276 | 1 |
| Pikrinsäure   | 175  | 2 |
| Pilocarpin  | 904  | 3 |
| Pilocarpinhydrochlorid  | 873  | 3 |
| Pilocarpinnitrat  | 932  | 3 |
| Pirimiphos-methyl   | 676  | 3 |
| Pivalinsäure  | 1512 | 1 |
| Pivaloylchlorid   | 1786 | 1 |
| Plifenat  | 1061 | 3 |
| Polyacrylamide, kationisch mit Kationenstärke > 15 % <sup>8</sup>   | 812  | 3 |
| Polyacrylamide, kationisch mit Kationenstärke ≤ 15 % und einem Restmonomergehalt < 0,1 % <sup>8</sup>             | 717  | 2 |
| Polyacrylamide, nicht ionisch und anionisch mit einem Restmonomergehalt < 0,1 % <sup>8</sup>                      | 813  | 2 |
| Polyacrylsäure, schwach vernetzt  | 1832 | 1 |
| Polyaldehydocarbonsäuren und Natriumsalze (Mittl. MW 5000 - 10000) <sup>8</sup>                                   | 639  | 1 |
| Polycarboxilat <sup>8</sup>   | 811  | 1 |
| Polychlorierte Biphenyle und Terphenyle <sup>1</sup>  | 471  | 3 |
| Polychlorierte Naphthaline  | 523  | 3 |
| Polyesterharze <sup>27</sup>  | 1950 | 1 |
| Polyethylenglycol <sup>11</sup>   | 279  | 1 |
| Polyethylenglycol-Sorbitanmonolaurat  | 1833 | 1 |
| Polyethylenglykoldi(polydodecylenglykol)ether   | 1906 | 1 |
| Polyglycerin  | 1420 | 1 |
| Polymerdispersionen <sup>12</sup>   | 662  | 1 |
| Poly(oxy-1,2-ethandiyl)alpha-hydro-omega-hydroxy-,Ether mit Oxy bis (propandil) (4:1), Octacleanoat <sup>14</sup> | 1905 | 1 |
| Promecarb   | 995  | 3 |
| Prometon  | 613  | 2 |
| 1,3-Propandiol  | 1677 | 1 |
| n-Propanol  | 176  | 1 |
| 1,3-Propansulton  | 977  | 3 |
| Propanthiol-2   | 894  | 3 |
| Propargylalkohol  | 177  | 2 |
| Propargylbromid   | 917  | 3 |
| Propineb  | 1298 | 2 |
| Propionaldehyd  | 1652 | 1 |
| Propionitril  | 1596 | 1 |
| Propionsäure  | 483  | 1 |
| Propionsäureanhydrid  | 1235 | 1 |

|  |      |   |
|--|------|---|
| Propionsäureethylester   | 110  | 1 |
| Propionsäuremethylester  | 153  | 1 |
| Propoxur   | 922  | 3 |
| 1,2-Propylendiamin   | 825  | 1 |
| 1,3-Propylendiamintetraessigsäure  | 1754 | 2 |
| 1,2-Propylendiammoniumchlorid  | 826  | 1 |
| 1,2-Propylenglycol <sup>14</sup>   | 280  | 1 |
| Propylenimin   | 896  | 3 |
| n-Propylglykol   | 1771 | 1 |
| n-Propylisocyanat  | 1612 | 1 |
| Proscalun  | 1018 | 3 |
| Proteinhydrolysat  | 1431 | 1 |
| Proteinschaummittel <sup>37</sup>  | 1953 | 1 |
| Prothiofos   | 1074 | 3 |
| Pyrazophos   | 624  | 3 |
| Pyrethrin  | 1035 | 3 |
| Pyridin  | 179  | 2 |
| 2-Pyrrolidon   | 1290 | 1 |
| Quab 342   | 1867 | 2 |
| Quecksilber  | 393  | 3 |
| Quecksilber(II)-acetat   | 394  | 3 |
| Quecksilber(II)-arsenat  | 395  | 3 |
| Quecksilber(II)-benzoat  | 396  | 3 |
| Quecksilber(I)-bromid  | 397  | 3 |
| Quecksilber(II)-bromid   | 398  | 3 |
| Quecksilber(II)-chlorid  | 180  | 3 |
| Quecksilber(I)-chlorid   | 399  | 3 |
| Quecksilber(II)-cyanid   | 400  | 3 |
| Quecksilber(II)-diamminchlorid   | 401  | 3 |
| Quecksilber(II)-disulfat   | 402  | 3 |
| Quecksilber(II)-gluconat   | 403  | 3 |
| Quecksilber(II)-jodid  | 404  | 3 |
| Quecksilber(I)-nitrat  | 405  | 3 |
| Quecksilber(II)-nitrat   | 406  | 3 |
| Quecksilber(II)-oleat  | 407  | 3 |
| Quecksilber(II)-oxid   | 408  | 3 |
| Quecksilber(II)-oxidcyanid   | 409  | 3 |
| Quecksilber(II)-salicylat  | 410  | 3 |
| Quecksilber(I)-sulfat  | 411  | 3 |
| Quecksilber(II)-sulfat   | 412  | 3 |
| Quecksilber(II)-thiocyanat   | 413  | 3 |
| Quinalphos   | 1046 | 3 |
| (±)-(R*, R* und R*, S*)-6-Fluoro-3,4-dihydro-2-oxiranyl-2H-1-benzopyran          | 1931 | 2 |
| Reaktionsprodukt aus Naphthalinsulfonsäure, Formaldehyd und Bisphenolsulfonsäure | 1914 | 1 |
| Remazol-Brillantblau R spez.   | 5003 | 1 |
| Resorcin   | 1599 | 1 |
| Rohöle (leichtflüssige, kin. Visk. bei 20°C <30 cSt, <0,1 % Benzol)              | 440  | 2 |

|  |      |   |
|--|------|---|
| Rohöle (leichtflüssige, kin. Visk. bei 20°C <30 cSt, ≥0,1 % Benzol)  | 1937 | 3 |
| Rohöle (zähflüssige und feste, kin. Visk. bei 20 °C ≥30 cST)   | 439  | 1 |
| Rolitettracyclin   | 1719 | 1 |
| Säureteer  | 333  | 3 |
| Salicylaldehyd   | 181  | 2 |
| Salicylsäure   | 281  | 1 |
| Salpetersäure (außer rauchende)  | 414  | 1 |
| Salpetersäure (rauchende)  | 415  | 2 |
| Schmieröle auf Mineralölbasis (Grundöle, unlegierte, außer dunkle Prozeßöle, obere Siedegrenze >400 °C)                | 435  | 1 |
| Schmieröle auf Mineralölbasis (legierte, emulgierbare und nicht emulgierbare, obere Siedegrenze >400 °C) <sup>19</sup> | 436  | 2 |
| Schwefeldioxid <sup>8</sup>  | 416  | 1 |
| Schwefelkohlenstoff  | 183  | 2 |
| Schwefel, kolloidal  | 753  | 1 |
| Schwefelsäure <sup>8</sup>   | 182  | 1 |
| Schwefeltrioxid  | 417  | 2 |
| Schwefelwasserstoff  | 283  | 2 |
| Schweflige Säure   | 418  | 1 |
| (-)-Scopolamin   | 864  | 3 |
| (-)-Scopolamin-n-butylbromid   | 933  | 3 |
| (-)-Scopolaminhydrobromid  | 923  | 3 |
| (-)-Scopolaminhydrochlorid   | 874  | 3 |
| (-)-Scopolaminmethylbromid   | 935  | 3 |
| (-)-Scopolaminmethylnitrat   | 1021 | 3 |
| (-)-Scopolamin-N-oxidhydrobromid   | 1022 | 3 |
| Scopolin   | 945  | 3 |
| Selendioxid  | 419  | 2 |
| Selensäure   | 420  | 2 |
| Selenwasserstoff   | 284  | 3 |
| Silane (feste und flüssige) <sup>13</sup>  | 566  | 1 |
| Silane (gasförmige) <sup>13, 14</sup>  | 567  | 1 |
| Silanole <sup>13</sup>   | 568  | 1 |
| Silberarsenit  | 421  | 3 |
| Silber, kolloidal  | 1031 | 3 |
| Silbernitrat <sup>8</sup>  | 185  | 3 |
| Silicone A <sup>13</sup>   | 542  | 1 |
| Silicone B <sup>13</sup>   | 543  | 1 |
| Simazin  | 603  | 2 |
| Sonnenblumenölfettsäure, konjugiert  | 1902 | 1 |
| Sorbinsäure <sup>14</sup>  | 1131 | 1 |
| Stickoxide   | 285  | 1 |
| Strontiumchlorid, Hexahydrat   | 843  | 1 |
| Stropesid  | 962  | 3 |
| Strophanthidin   | 889  | 3 |
| Strophanthidol   | 959  | 3 |
| Strophanthin-G   | 966  | 3 |
| Strophanthin-K   | 1038 | 3 |
| γ-Strophanthol-K   | 1076 | 3 |



|   |      |   |
|---|------|---|
| Strophanthosid-K  | 1073 | 3 |
| Styrol  | 187  | 2 |
| Sulfamidsäure   | 1266 | 1 |
| Sulfobernsteinsäureester, Na-Salze                                  | 667  | 2 |
| Sulfotepp   | 687  | 3 |
| Sulprofos   | 1075 | 3 |
| Talgfettsäuremethylester, chloriert, (30% Chlor)                    | 1090 | 3 |
| Talg, hydriert, Reaktionsprodukt mit 2-((2-Aminoethyl)amino)ethanol | 1894 | 1 |
| Talgnitril  | 1278 | 2 |
| Tallöl  | 497  | 2 |
| Tallölfettsäuren  | 692  | 2 |
| Terbufos  | 621  | 3 |
| Terbutryn   | 612  | 2 |
| Terbutylazin  | 604  | 2 |
| Terephthalsäuredimethylester  | 723  | 1 |
| Tetrabenzylthiuramdisulfid  | 1837 | 2 |
| Tetrabutylammoniumbromid  | 985  | 3 |
| Tetrabutylzinn  | 498  | 3 |
| 1,2,4,5-Tetrachlorbenzol  | 1311 | 3 |
| 1,1,2,2-Tetrachlorethan   | 797  | 3 |
| Tetrachlorethen   | 287  | 3 |
| Tetrachlorkohlenstoff   | 189  | 3 |
| 2,3,4,6-Tetrachlorphenol  | 881  | 3 |
| Tetraethylammoniumbromid  | 893  | 3 |
| Tetraethylglykoldiheptanoat   | 769  | 1 |
| Tetraethylenpentamin  | 1621 | 2 |
| Tetraethylsilikat   | 450  | 1 |
| 1,1,2,2-Tetrafluor-1,2-dichlorethan                                 | 1114 | 1 |
| Tetrafluoroborsäure   | 1300 | 1 |
| 2,2,3,3-Tetrafluorpropanol-1  | 1513 | 1 |
| Tetrahydrofuran   | 190  | 1 |
| Tetrahydronaphthalin  | 1194 | 2 |
| Tetrahydrophthalsäureanhydrid                                       | 1374 | 1 |
| Tetrahydrothiophen-1,1-dioxid                                       | 1656 | 1 |
| Tetrakis(2-butoxyethoxy)silan                                       | 1850 | 1 |
| 1,1,3,3-Tetramethoxypropan  | 1570 | 2 |
| Tetramethylammoniumbromid   | 886  | 3 |
| 1,2,4,5-Tetramethylbenzol   | 191  | 1 |
| 4-(1,1,3,3-Tetramethylbutyl)phenol                                  | 1663 | 2 |
| Tetramethylpropylendiamin   | 1614 | 2 |
| Tetramethylsuccinodinitril  | 1002 | 3 |
| Tetraoctylzinn  | 554  | 2 |
| Tetraphenylzinn   | 553  | 3 |
| Tetrapropylammoniumbromid   | 988  | 3 |
| Tetrodotoxin  | 1007 | 3 |
| Thallium(I)-chlorat   | 422  | 2 |
| Thallium(I)-nitrat  | 192  | 2 |
| Thallium(III)-nitrat  | 423  | 2 |
| Thallium(I)-sulfat  | 555  | 2 |
| Theobromin  | 1372 | 1 |

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|---|------|---|
| Thiabendazol                                  | 713  | 2 |
| 3-Thiocyanatopropyltriethoxysilan             | 1862 | 2 |
| Thioessigsäure                                | 949  | 3 |
| Thioglycolsäure                               | 485  | 1 |
| Thioharnstoff                                 | 786  | 2 |
| 6-Thioinosin                                  | 960  | 3 |
| Thionylchlorid                                | 1244 | 1 |
| Thiophen                                      | 921  | 3 |
| Thiophenol                                    | 919  | 3 |
| Thiophosphorylchlorid                         | 1241 | 2 |
| Thiosemicarbazid                              | 898  | 3 |
| Thymol  | 1220 | 2 |
| D,L- $\alpha$ -Tocopherolacetat <sup>14</sup> | 1132 | 1 |
| Tolclofos-methyl                              | 685  | 3 |
| Toluol  | 194  | 2 |
| 2,4-Toluoldiamin                              | 908  | 3 |
| p-Toluolsulfonamid                            | 1508 | 1 |
| o-Toluolsulfonamid                            | 1525 | 2 |
| 4-Toluolsulfonsäure                           | 1127 | 1 |
| 2,4-Toluylendiisocyanat                       | 511  | 2 |
| 2,6-Toluylendiisocyanat                       | 512  | 2 |
| p-Tolylaldehyd                                | 1582 | 1 |
| Tolylfluorid                                  | 971  | 3 |
| Triacetonamin                                 | 1726 | 1 |
| Triadimefon                                   | 1305 | 2 |
| Triadimenol                                   | 1307 | 2 |
| Triallylcyanurat                              | 1569 | 2 |
| 1,2,4-Triazol                                 | 1341 | 2 |
| Triazophos                                    | 625  | 3 |
| Tri-n-butylamin                               | 594  | 2 |
| Tri-n-butylammoniumchlorid                    | 611  | 2 |
| Tributylzinnacetat                            | 500  | 3 |
| Tributylzinnaphthenat                         | 548  | 3 |
| Tributylzinnbenzoat                           | 546  | 3 |
| Tributylzinnchlorid                           | 501  | 3 |
| Tributylzinnfluorid                           | 545  | 3 |
| Tributylzinnlinoleat                          | 549  | 3 |
| Tributylzinnoleat                             | 550  | 3 |
| Tributylzinnoxid                              | 502  | 3 |
| Tributylzinnphosphat                          | 547  | 3 |
| 2,4,6-Trichloranilin                          | 701  | 3 |
| 1,2,4-Trichlorbenzol                          | 454  | 3 |
| 1,3,5-Trichlorbenzol                          | 715  | 3 |
| 1,2,3-Trichlorbenzol                          | 902  | 3 |
| Trichloressigsäure                            | 197  | 2 |
| 1,1,1-Trichlorethan                           | 198  | 3 |
| 1,1,2-Trichlorethan                           | 796  | 3 |
| Trichlorethen                                 | 199  | 3 |
| Trichlorfluormethan                           | 448  | 2 |
| Trichlorfon                                   | 634  | 3 |

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|--|------|---|
| 1,1,1-Trichlor-2-methyl-2-propanol   | 855  | 3 |
| 2,4,5-Trichlorphenol   | 455  | 3 |
| 2,4,5-Trichlorphenoxyessigsäure  | 200  | 3 |
| 1,1,2-Trichlortrifluorethan  | 458  | 2 |
| Tridecylamin   | 823  | 3 |
| Triethanolamin   | 201  | 1 |
| Triethanolaminlaurylsulfat   | 1317 | 2 |
| Triethanolamin-tris-glykoether   | 1425 | 2 |
| Triethanolammoniumchlorid  | 473  | 1 |
| Triethoxyoctadecylsilan  | 1778 | 1 |
| 3-Triethoxysilylpropyl-trimethylammoniumchlorid  | 1434 | 1 |
| Triethylamin   | 556  | 1 |
| Triethylammoniumchlorid  | 559  | 1 |
| Triethylenglycol   | 202  | 1 |
| Triethylenglykolmonobutylether   | 773  | 1 |
| Triethylentetramin   | 1297 | 2 |
| Trifluoressigsäure   | 729  | 2 |
| 3-Trifluormethylanilin   | 1123 | 2 |
| Trifluormethylbenzol   | 1122 | 1 |
| 3-Trifluormethyl-phenylisocyanat   | 1673 | 2 |
| Triglyceride (techn. unbehandelt, Carbonsäure gesättigt<br>- mit geradzahligem, unverzweigter C-Kette<br>- und C-Zahl $\leq 6$ ) <sup>11</sup> | 761  | 1 |
| Triglycidylisocyanurat   | 994  | 3 |
| Triglyceride (geblasen oder thermisch behandelt) <sup>11</sup>   | 768  | 1 |
| Trihydroxymethoxystearin   | 1909 | 1 |
| Triisopropanolamin   | 1154 | 1 |
| 2,4,6-Trimercaptotriazin <sup>8</sup>  | 540  | 2 |
| 2,4,6-Trimercaptotriazin, Trinatriumsalz <sup>8</sup>  | 541  | 2 |
| 3,4,5-Trimethoxybenzoesäure  | 1628 | 1 |
| 3,4,5-Trimethoxybenzoylchlorid   | 1792 | 1 |
| Trimethoxyhexadecylsilan   | 1847 | 1 |
| Trimethoxyoctylsilan   | 1781 | 1 |
| Trimethoxypropylsilan  | 1736 | 1 |
| Trimethoxyvinylsilan   | 1769 | 1 |
| Trimethylamin  | 460  | 2 |
| Trimethylammoniumchlorid   | 461  | 1 |
| 3,3,5-Trimethylcyclohexanol  | 776  | 2 |
| 2,3,6-Trimethylcyclohexen-1-on   | 1852 | 1 |
| 2,2,4-Trimethyl-1,2-dihydrochinolin, polymer   | 1318 | 2 |
| N,N,N-Trimethyl-N-(4-dodecylbenzyl)-ammoniumchlorid  | 1057 | 3 |
| Trimethylhexamethyldiamin  | 824  | 2 |
| 2,3,6-Trimethylhydrochinon   | 1159 | 2 |
| 2,3,3-Trimethylindol   | 1403 | 1 |
| 1,3,3-Trimethyl-2-methylenindol  | 1382 | 2 |
| Trimethylolpropan  | 1211 | 1 |
| Trimethylolpropantriacylat   | 1845 | 1 |
| 2,2,4-Trimethylpentandiol  | 1671 | 1 |
| 2,4,4-Trimethylpenten  | 780  | 2 |
| 2,4,4-Trimethylpentyl-2-peroxyneodecanoat <sup>21</sup>  | 1469 | 2 |

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|---|------|---|
| 2,3,6-Trimethylphenol   | 1758 | 1 |
| Trimethylsilylcyanid  | 1829 | 3 |
| Trinatriumphosphat  | 172  | 1 |
| Trioctylamin  | 1400 | 2 |
| Triphenylphosphin   | 1696 | 1 |
| Triphenylsulfoniumchlorid   | 1006 | 3 |
| Triphenylzinnacetat   | 503  | 3 |
| Triphenylzinnchlorid  | 504  | 3 |
| Triphenylzinnfluorid  | 505  | 3 |
| Triphenylzinnhydroxid   | 506  | 3 |
| Tri-n-propylamin  | 1571 | 2 |
| Tripropylenglycol   | 779  | 1 |
| Tripropylenglykoldiacrylat  | 1868 | 2 |
| Tris(1,3-dichlorisopropyl)phosphat                                  | 1840 | 2 |
| Tri-tert.butylzinnoxid  | 854  | 3 |
| 1,2,4-Trivinylcyclohexan  | 1776 | 2 |
| Tropin  | 925  | 3 |
| Tropinon  | 953  | 3 |
| Tropiumchlorid  | 1037 | 3 |
| Tubocurarin-dichloride, Pentahydrat                                 | 1025 | 3 |
| Tunicamycin   | 1042 | 3 |
| Turbinenkraftstoffe, als krebserzeugend (R 45) gekennzeichnet       | 1938 | 3 |
| Turbinenkraftstoffe, nicht als krebserzeugend (R 45) gekennzeichnet | 139  | 2 |
| Ultramarinblau <sup>14</sup>  | 1426 | 1 |
| Uranylacetatdihydrat  | 1023 | 3 |
| Valinomycin   | 989  | 3 |
| Vanadin(IV)-oxidsulfat  | 856  | 3 |
| Vanadiumpentoxid  | 654  | 2 |
| Vinylchlorid  | 462  | 2 |
| Vinylcyclohexylether  | 1756 | 1 |
| Vinylethylether   | 1606 | 1 |
| Vinylisobutylether  | 1146 | 1 |
| N-Vinyl-N-methylacetamid  | 1783 | 1 |
| Vinylpropionat  | 1587 | 1 |
| Vinylpyrrolidon   | 1141 | 3 |
| Vossenblau  | 1843 | 1 |
| Wasserstoffperoxid <sup>14</sup>                                    | 288  | 1 |
| Weißöle nach DAB  | 434  | 1 |
| 2,4-Xylidin-6-sulfonsäure, Natriumsalz                              | 1892 | 2 |
| Xylol (alle Isomere)  | 206  | 2 |
| Zinkammoniumnitrat  | 424  | 1 |
| Zinkarsenat   | 425  | 3 |
| Zinkarsenit   | 426  | 3 |
| Zinkchlorat   | 427  | 2 |
| Zinkchlorid   | 207  | 1 |
| Zinkcyanid  | 428  | 3 |
| Zink-dialkyl(C3 - C10)-dithiophosphat <sup>35</sup>                 | 1948 | 2 |
| Zink-di(alkyl(C7 - C12)-phenyl)-dithiophosphat <sup>35</sup>        | 1949 | 2 |
| Zinknitrat  | 429  | 1 |
| Zinkperoxid   | 430  | 1 |

|                  |      |   |
|------------------|------|---|
| Zinkphosphid     | 431  | 2 |
| Zinkselenit      | 1839 | 2 |
| Zinksulfat       | 432  | 1 |
| Zinn(II)-chlorid | 495  | 1 |
| Zinntetrachlorid | 1267 | 1 |

## Fußnoten:

<sup>8</sup> Eine bestimmungsmäßige und fachgerechte Anwendung dieses Stoffes zur Trinkwasseraufbereitung, Oberflächenwassersanierung oder Abwasserbehandlung wird durch diese Einstufung nicht eingeschränkt.

<sup>9</sup> Die Bewertung bezieht sich allgemein auf Altöle gemäß § 5a(1) AbfG bzw. TRbF 200, Nr. 1.3, Abs. 4. Im Einzelfall können Altöle, deren Zusammensetzung aufgrund von Herkunft und Gebrauch oder durch Analyse bekannt ist (z. B. gebrauchte Isolier- oder Hydrauliköle, nicht jedoch gebrauchte Motoröle), gemäß Anhang 4 (Einstufung von Gemischen in Wassergefährdungsklassen) einer WGK <3 zuzuordnen sein.

<sup>10</sup> Die Bewertung bezieht sich auf reinen, unvergällten Alkohol; vergällter Alkohol ist gemäß Anhang 4 (Einstufung von Gemischen in Wassergefährdungsklassen) einzustufen.

<sup>11</sup> Die Bewertung bezieht sich auf den unadditivierten Stoff. Bei Zusatz von Additiven sind entsprechend den in Anhang 4 (Einstufung von Gemischen in Wassergefährdungsklassen) genannten Regeln höhere WGK möglich.

<sup>12</sup> Siehe beigefügte ergänzende Definition Polymerdispersionen (Kenn-Nr. 662).

<sup>13</sup> Siehe beigefügte ergänzende Definition zu Siliziumverbindungen (Kenn-Nr. 542, 543, 557, 566, 567, 568).

<sup>14</sup> In der Verwaltungsvorschrift wassergefährdende Stoffe (VwVwS) vom 18.04.1996 der Wassergefährdungsklasse 0 (im allgemeinen nicht wassergefährdend) zugeordnet.

<sup>15</sup> Die Bewertung bezieht sich auf eine wäßrige Zubereitung.

<sup>16</sup> Die Bewertung bezieht sich auf eine Zubereitung mit Wasser und Ethylenglycol.

<sup>17</sup> Die Bewertung bezieht sich auf eine Zubereitung mit Phthalsäuredimethylester.

<sup>19</sup> Falls die Wassergefährdungsklassen der Zusatzstoffe zum unlegierten Schmieröl bekannt sind und sich nach Anhang 4 (Einstufung von Gemischen in Wassergefährdungsklassen) eine abweichende WGK ergibt, ist diese vorrangig.

<sup>21</sup> Zubereitung in Isododecan

<sup>23</sup> Zubereitung in Triethylphosphat

<sup>25</sup> Siehe beigefügte ergänzende Definition Farbmittelzubereitungen (Kenn-Nr. 1492).

<sup>26</sup> Die Bewertung bezieht sich auf eine Zubereitung mit Diacetonalkohol.

<sup>27</sup> Siehe beigefügte ergänzende Definition Polyesterharze (Kenn-Nr. 1950).

<sup>34</sup> Abweichend von Anhang 4 (Einstufung von Gemischen in Wassergefährdungsklassen) gelten für PCB-haltige Gemische folgende Einstufungsregeln: > 2000 ppm: WGK 3, > 50 bis 2000 ppm: WGK 2, soweit sich nicht aufgrund anderer Komponenten die WGK 3 ergibt. Weniger als 50 ppm PCB werden nicht berücksichtigt.

<sup>35</sup> Die Bewertung bezieht sich auf ein Gemisch mit hochraffiniertem Mineralöl.

<sup>37</sup> Siehe beigefügte ergänzende Definition Proteinschaummittel (Kenn-Nr. 1953).

<sup>38</sup> Siehe beigefügte ergänzende Definition Mehrbereichsschaummittel (Kenn-Nr. 1954).

## Ergänzende Definitionen zu den Fußnoten

**Fußnote 12:            Rahmenrezeptur für Polymerdispersionen der  
WGK 1  
(Kenn-Nr. 662)**

### **Begriffsbestimmung**

Polymerdispersionen (auch als Latex bezeichnet) im Sinne dieser Regelung sind Polymere, die als fein verteilte Partikel in wässriger Phase vorliegen und durch Tenside oder Schutzkolloide in stabiler Verteilung gehalten werden. Sie werden als Primärdispersionen nach DIN 55 947 polymerisiert oder als Dispersion auf natürlicher Basis (Naturkautschuk-Latex) gewonnen.

Polymerdispersionen sind bereits aufgrund ihrer physikalisch-chemischen Eigenschaften grundsätzlich wassergefährdend i. S. von § 19 g WHG.

Polymerdispersionen, die Stoffe in höheren Konzentrationen als in den nachfolgenden Positivlisten aufgeführt enthalten oder Polymerdispersionen mit Komponenten, die in den Positivlisten nicht erfaßt sind, müssen im Einzelfall geprüft und nach Anhang 4 der VwVwS bewertet werden. Dies gilt nicht für solche Stoffe, die grundsätzlich nicht wassergefährdend i. S. des § 19 g WHG oder bereits in WGK 1 eingestuft sind. In diesem Fall kann die stoffbezogene Mengenbegrenzung überschritten werden oder ein bisher nicht in den Positivlisten genannter Stoff enthalten sein. Allerdings müssen die entsprechenden Gesamtgehalte, z.B. für Emulgatoren, Schutzkolloide etc., auch weiterhin eingehalten werden.

Grundsätzlich bleiben nicht kanzerogene Stoffe unterhalb 0,2 % Massenanteil (bezogen auf die Summe der nicht in den Positivlisten genannten Stoffe) unberücksichtigt.

### **1. Ausgangsmonomere für Polymerdispersionen**

Krebserzeugende (kanzerogene) Monomere dürfen in Polymerdispersionen nur bis zu einem Restgehalt von 0,1 % Massenanteil enthalten sein, sofern gemäß Gefahrstoffverordnung (GefStoffV) nicht geringere Massenanteile als krebserzeugend einzustufen sind. Als krebserzeugend im Sinne dieser Regelung gelten alle Stoffe, die gemäß Gefahrstoffverordnung (GefStoffV) in R 45 („kann Krebs erzeugen“) eingestuft sind. Kanzerogen sind auch Stoffe, die gemäß § 52, Abs. 3 GefStoffV als krebserzeugend der Kategorie 1 oder 2 nach Anhang I GefStoffV bekanntgemacht werden. Stoffe, die nur auf inhalativem Wege krebserzeugend wirken, sind nicht krebserzeugend im Sinne dieser Regeln. Darüber hinaus sind die Festlegungen der Positivliste nach Abschnitt 1.1 für Monomere, die nur < 50 ppm enthalten sein dürfen, zu berücksichtigen.

1.1 Zulässige Restgehalte nicht umgesetzter Monomere bei einer Ausgangskonzentrationen > 2 %

Von den nachfolgend aufgeführten Monomeren (Positivliste) können zur Herstellung der Polymerdispersionen mehr als 2 % (Mengenanteil im Polymeren) eingesetzt sein. Für den Restgehalt an nicht umgesetzten Monomeren in der Polymerdispersion gelten folgende Beschränkungen, sofern nicht die Mengenbegrenzung nach Abschnitt 1 für kanzerogene Monomere zutrifft:

|  | < 50 ppm | < 5000 ppm |
|--|----------|------------|
| Acrylamid  | x        |            |
| Acrylamido-2-methylpropansulfonsäure (AMPS)              |          | x          |
| Acrylsäure   |          | x          |
| Acrylsäure-alkylester (C <sub>1</sub> -C <sub>18</sub> ) |          | x          |

|  |   |   |
|--|---|---|
| Acrylsäure-glycidylester   |   | X |
| Acrylnitril  | X |   |
| Alkyl-diol-diacrylate  | X |   |
| Alkyl-diol-dimethacrylate  |   | X |
| Alkyl-diol-monoacrylate  |   | X |
| Alkyl-diol-monomethacrylate                                      |   | X |
| Allylalkoholester  |   | X |
| Butadien   | X |   |
| Chloropren   | X |   |
| Crotonsäure  |   | X |
| Crotonsäure-alkylester (C <sub>1</sub> -C <sub>4</sub> )         |   | X |
| 2,3-Dichlorbutadien  |   | X |
| Dimethylamino-alkyl-(C <sub>2</sub> -C <sub>5</sub> )-acrylat    |   | X |
| Dimethylamino-alkyl-(C <sub>2</sub> -C <sub>5</sub> )methacrylat |   | X |
| Divinylbenzol  |   | X |
| Ethylen  |   | X |
| Fumarsäure   |   | X |
| Fumarsäure-alkylester (C <sub>1</sub> -C <sub>8</sub> )          |   | X |
| Isopren  |   | X |
| Itakonsäure (Methylenbernsteinsäure)                             |   | X |
| Maleinsäure  |   | X |
| Maleinsäure-dialkylester (C <sub>1</sub> -C <sub>8</sub> )       |   | X |
| Maleinsäure-monoalkylester (C <sub>1</sub> -C <sub>8</sub> )     |   | X |
| Methacrylamid  |   | X |
| Methacrylsäure   |   | X |
| Methacrylsäure-alkylester (C <sub>1</sub> -C <sub>18</sub> )     |   | X |
| Methacrylsäure-glycidylester                                     |   | X |
| Methallylsulfonsäure   |   | X |
| Methylol-acrylamid   |   | X |
| Methylolacrylamidether (C <sub>1</sub> -C <sub>4</sub> )         |   | X |
| Methylol-methacrylamid   |   | X |
| Methylolmethacrylamidether (C <sub>1</sub> -C <sub>4</sub> )     |   | X |
| 2-Methylstyrol   |   | X |
| Styrol   |   | X |
| Styrolsulfonsäure  |   | X |
| Vinylester (C <sub>1</sub> -C <sub>18</sub> )                    |   | X |
| Vinyl-alkyl-(C <sub>1</sub> -C <sub>4</sub> )-ether              |   | X |
| Vinylchlorid   | X |   |
| Vinylidenchlorid   | X |   |
| Vinylimidazol  |   | X |
| 2-Vinylpyridin   |   | X |
| Vinylpyrrolidon  |   | X |
| Vinylsulfonsäure   |   | X |

## 1.2 Zulässige Restgehalte nicht umgesetzter Monomere bei einer Ausgangskonzentrationen < 2 %

Sofern zur Herstellung der Polymerdispersion weniger als 2 % (Mengenanteil in Polymeren) an Monomeren eingesetzt sind, wird keine Positivliste vorgegeben. Es gelten jedoch folgende Beschränkungen:

Für kanzerogene Monomere nach Abschnitt 1 sind die dort genannten Restgehalte an n Restgehalt an sonstigen nicht umgesetzten Monomeren: < 5000 ppm



## 2. Initiatoren

Es gelten folgende Positivliste und Beschränkungen:

- Organische Peroxide [Zulässige Restgehalte an Peroxid in der Polymerdispersion (bestimmt bzw. berechnet als H<sub>2</sub>O<sub>2</sub>)]

|                                       |           |
|---------------------------------------|-----------|
| Benzoylperoxid                        |           |
| tert. Butylhydroperoxid               |           |
| tert. Butylperpivalat                 |           |
| tert. Butylperoctoat                  |           |
| 1,4-Diisopropylbenzolmonohydroperoxid |           |
| Summe                                 | < 50 mg/l |

- Anorganische Peroxide [Zulässige Restgehalte an Peroxid in der Polymerdispersion (bestimmt bzw. berechnet als H<sub>2</sub>O<sub>2</sub>)]

|   |              |
|---|--------------|
| Peroxodisulfat, Na-, K-, NH <sub>4</sub> -salze | < 50 mg/l    |
| Wasserstoffperoxid                              | < 1 000 mg/l |

- Azoverbindungen [Zulässiger Gehalt an Ausgangsstoff in der Polymerdispersion]

|                                  |            |
|----------------------------------|------------|
| 4,4'-Azobis-4-cyanovaleriansäure | max. 0,2 % |
|----------------------------------|------------|

## 3. Schutzkolloide

Es gelten folgende Positivliste und Beschränkungen [Zulässiger Gehalt an Ausgangsstoff in der Polymerdispersion]:

|                                       |       |
|---------------------------------------|-------|
| Cellulosederivate                     | ≤ 3 % |
| Stärke                                | ≤ 3 % |
| Dextrin                               | ≤ 3 % |
| Polyacrylsäure (und Copolymere)-Salze | ≤ 3 % |
| Poly-N-vinylmethylacetamid            | ≤ 3 % |
| Polyvinylalkohol                      | ≤ 8 % |
| Vinylpyrrolidon-Copolymerisate        | ≤ 3 % |
| Summe Schutzkolloide                  | ≤ 8 % |

## 4. Emulgatoren

Es gelten folgende Positivliste und Beschränkungen [Zulässiger Gehalt an Ausgangsstoff in der Polymerdispersion]:

|   |         |
|---|---------|
| Ethylenoxid/Propylenoxidcopolymerisat<br>auch sulfiert  | ≤ 3,0 % |
| Alkyl(C <sub>10</sub> -C <sub>20</sub> )-arylsulfonat   | ≤ 3,0 % |
| Alkylaryloxethylat  | ≤ 3,0 % |
| Alkylaryloxethylat, auch sulfiert   | ≤ 2,5 % |
| Alkylsulfate  | ≤ 3,0 % |
| Alkyloxethylate   | ≤ 3,0 % |
| Hydroxyfettsäuren, C <sub>12</sub> -C <sub>20</sub> , auch sulfiert   | ≤ 2,0 % |
| Alkylsulfonat   | ≤ 2,5 % |
| Dodecyliertes Diphenyletherdisulfonat   | ≤ 1,5 % |
| Alkalisalze von Mono- und Diestern der<br>Sulfobernsteinsäure   | ≤ 2,0 % |
| Alkalisalze und Sorbitanester von geradkettigen<br>aliphatischen Carbonsäuren (C <sub>12</sub> -C <sub>20</sub> ) | ≤ 4,0 % |

|  |                |
|--|----------------|
| o-Phenylphenolat, Na-Salz  | ≤ 0,5 %        |
| Harzsäuren; hydriert, dehydriert oder disproportioniert und Alkalisalze                                  | ≤ 1,5 %        |
| Naphthalinsulfonsäure-Kondensationsprodukte bzw. Naphthalinsulfonsäure/Formaldehyd-kondensationsprodukte | ≤ 1,0 %        |
| C4-Alkyl-naphthalinsulfonate   | ≤ 1,0 %        |
| Phosphorsäure-polyglycolester  | ≤ 1,0 %        |
| Amphotensid (Alkyimidazolinderivat)  | ≤ 1,0 %        |
| <b>Summe Emulgatoren</b>   | <b>≤ 4,0 %</b> |

## 5.

### Filmbildehilfsmittel

Es gelten folgende Positivlisten und Beschränkungen [Zulässiger Gehalt an Ausgangsstoffen]

#### 5.1

#### Lösungsmittel

|  |       |                |
|--|-------|----------------|
| Aceton   | ≤ 3 % |                |
| Butyldiglycolacetat  | ≤ 3 % |                |
| Cyclohexan   | ≤ 3 % |                |
| Cetylalkohol   | ≤ 3 % |                |
| Essigsäureethylester   | ≤ 3 % |                |
| Ethanol  | ≤ 3 % |                |
| Glycolsäurebutylester  | ≤ 3 % |                |
| Hexylenglycol  | ≤ 3 % |                |
| Isobutylestergemisch der   |       | Bernsteinsäure |
| Glutarsäure  |       |                |
| Adipinsäure  | ≤ 3 % |                |
| Isooctandiolisobuttersäureester                                      | ≤ 3 % |                |
| Kohlenwasserstoffgemische (Alkane, Alkene, Cycloalkane, Cycloalkene) | ≤ 3 % | ≤ 3 %          |
| Methanol   | ≤ 3 % |                |
| <b>Summe Lösungsmittel</b>   |       | <b>≤ 5 %</b>   |

#### 5.2

#### Weichmacher

Es gelten die Beschränkungen gemäß Nr. 6.

## 6.

### Weichmacher

Es gelten folgende Positivliste und Beschränkungen [Zulässiger Gehalt an Ausgangsstoffen]

|                        |               |
|------------------------|---------------|
| Dioctylphthalat        | ≤ 8 %         |
| Dibutylphthalat        | ≤ 5 %         |
| Dimethylphthalat       | ≤ 3 %         |
| Dibutoxyglycolphthalat | ≤ 3 %         |
| Trichlorethylphosphat  | ≤ 5 %         |
| <b>Summe</b>           | <b>≤ 12 %</b> |

**7.****Mikrobizide**

Es gelten folgende Positivliste und Beschränkungen:

7.1 Mikrobizid-Wirkstoff [Zulässiger Gehalt an Wirkstoff in der Polymerdispersion]:

|  |        |
|--|--------|
| 1,2-Benzisothiazolin-3-on<br>(CAS-Nr. 2634-33-5)             | ≤ 0,1% |
| 2-Brom-2-nitropropandiol-1,3                                 | ≤ 0,1% |
| 5-Chlor-2-methyl-4-isothiazolin-3-on<br>(CAS-Nr. 26172-55-4) | ≤ 0,1% |
| 2-Methyl-4-isothiazolin-3-on<br>(CAS-Nr. 2682-20-4)          | ≤ 0,1% |
| 1,6-Dihydroxy-2,5-dioxohexan                                 | ≤ 0,1% |
| N,N-Dihydroxy-methylen-harnstoff                             | ≤ 0,1% |
| Tetramethylglycoluril  | ≤ 0,1% |
| Chloracetamid  | ≤ 0,1% |
| N-Methylchloracetamid  | ≤ 0,1% |
| Gemisch aus Hexahydrotriazin und Oxazolidin                  | ≤ 0,1% |
| Summe Mikrobizid-Wirkstoff                                   | ≤ 0,1% |
| Formaldehyd  | ≤ 0,2% |

7.2 Stellmittel [Zulässiger Gehalt an Hilfsstoff in der Polymerdispersion]:

|                   |         |
|-------------------|---------|
| Propylenglycol    | ≤ 0,5 % |
| Dipropylenglycol  | ≤ 0,5 % |
| 1,2-Propandiol    | ≤ 0,5 % |
| Summe Stellmittel | ≤ 0,5 % |

**8.****Entschäumer**

Es gelten folgende Positivliste und Beschränkungen [Zulässiger Gehalt an Ausgangsstoff in der Polymerdispersion]:

|  |       |
|--|-------|
| Weißöle  | ≤ 2 % |
| Tributylphosphat   | ≤ 2 % |
| Silikone A   | ≤ 2 % |
| Silikone B   | ≤ 2 % |
| N-Dibutyl-ölsäureamid  | ≤ 2 % |
| Copolymere aus Propenoxid mit 10 % Ethenoxid<br>verestert mit natürlichen Fettsäuren | ≤ 2 % |
| Summe Entschäumer  | ≤ 2 % |

**9. Stabilisatoren, Neutralisationsmittel, Komplexbildner**

Es gelten folgende Positivliste und Beschränkungen [Zulässiger Gehalt an Hilfsstoff in der Polymerdispersion]:

|   |         |
|---|---------|
| Alkali-, Ammonium- und Calcium-hydroxide  | ≤ 2,0 % |
| Anorganische Säuren und deren Alkali-,<br>Ammonium- und Calcium-Salze:<br>- Schwefelsäure | ≤ 2,0 % |

|  |         |
|--|---------|
| - Schweflige Säure   |         |
| - Kohlensäure  |         |
| - Phosphorsäure (und andere Phosphate)                               |         |
| - Salpetersäure  |         |
| - Chlorwasserstoffsäure  |         |
| - Thioschwefelsäure  |         |
| Organische Säuren und deren Alkali-,<br>Ammonium- und Calcium-Salze: | ≤ 2,0 % |
| - Ameisensäure   |         |
| - Ascorbinsäure  |         |
| - Citronensäure  |         |
| - Essigsäure   |         |
| - Hydroxymethansulfinsäure   |         |
| Eisen-II-sulfat  | ≤ 2,0 % |
| Ethylendiamintetraessigsäure und Na-Salze                            | ≤ 1,0 % |
| Nitrilotriessigsäure und Na-Salze                                    | ≤ 2,0 % |
| Alkali-alkyl-dithiocarbamate   | < 0,2 % |
| N,N-Diethylhydroxylamin  | ≤ 1,0 % |
| <hr/>  |         |
| Summe der Hilfsstoffe  | ≤ 2,0 % |
| Harnstoff  | ≤ 1,0 % |
| Ethylenharnstoff   | ≤ 1,0 % |

## 10. Antioxidantien

Es gelten folgende Positivliste und Beschränkungen [Zulässiger Gehalt an Ausgangsstoff in der Polymerdispersion]:

|   | CAS-Nr.    |         |
|---|------------|---------|
| Butyliertes Reaktionsprodukt von<br>p-Kresol mit Dicyclopentadien                 | 68610-51-5 | ≤ 1,0 % |
| isobutyliertes Octylphenol  | 68610-06-0 | ≤ 1,0 % |
| Bisphenole:   |            |         |
| 2,2'-Methylen-bis-(4-methyl-6- tert.-butylphenol)                                 | 119-47-1   | ≤ 1,0 % |
| 2,2'-Methylenbis-(4-methyl-6-cyclohexylphenol)                                    | 4066-02-8  | ≤ 1,0 % |
| 2,2'-Isobutyliden-bis-(4,6-di-methylphenol)                                       | 33145-10-7 | ≤ 1,0 % |
| 4,4'-Isopropyliden-bis-(2-tert.-butylphenol)                                      | 79-96-9    | ≤ 1,0 % |
| Bisphenole/Trisphenole:   |            |         |
| 2,2'-Methylen-bis-(4-methyl-6-nonylphenol)<br>neben                               | 7786-17-6  | < 0,2 % |
| Formaldehyd-Polymer mit 4-Methyl-2-nonylphenol<br>und 4-Methylphenol              | 63494-85-9 | < 0,2 % |
| Styrolisiertes Diphenylamin   | 68442-68-2 | < 0,2 % |
| Diethylenglykol-bis-(3-tert.butyl-4-hydroxy-5-methyl-<br>phenylpropion-säureester | 36443-68-2 | ≤ 1,0 % |
| Butyliertes Hydroxytoluol (BHT)   | 128-37-0   | ≤ 1,0 % |
| Butyliertes Hydroxyanisol (BHA)   | 121-00-6   | ≤ 1,0 % |
| 2,4-Bis-(n-octylthio)-6-(4-hydroxy-3,5-di.tert.butylanilino)-<br>1,3,5-triazin    | 991-84-4   | ≤ 1,0 % |
| 3-(3,5-Di-tert.butyl-4-hydroxy-phenyl-)propionsäure<br>octadecylester             | 2082-79-3  | ≤ 1,0 % |
| Thiodipropionsäure-bis-(dodecylester)   | 123-28-4   | ≤ 1,0 % |
| Dimethylphenol, Reaktionsprodukt mit<br>Tetrapropylen und Styrol                  | 91672-34-3 | ≤ 1,0 % |
| <hr/>   |            |         |
| Summe Antioxidantien  |            | ≤ 1,0 % |

**Fußnote 13: Definition der Siliziumverbindungen (Kenn-Nr. 542, 543, 557, 566, 567, 568)**

- Silicone A (Kenn-Nr. 542)  
Lineare, verzweigte oder cyclische Organopolysiloxane mit unsubstituierten Alkyl(C<sub>1</sub>-C<sub>32</sub>),  
-Alkenyl- und/oder Phenylgruppen am Siliciumatom, soweit sie flüssig sind.
- Silicone B (Kenn-Nr. 543)  
Organopolysiloxane wie Silicone A, aber zusätzlich mit Polyalkoxy- und/oder Polyalkoxyalkylgruppen und/oder Wasserstoffatomen und/oder Hydroxylgruppen am Siliciumatom.
- Silane  
gasförmige Silane: (Kenn-Nr. 567); feste und flüssige Silane: (Kenn-Nr. 566)  
Monosilane und Silane mit mindestens einem Wasserstoff am Siliciumatom sowie unsubstituierten Alkyl-, Alkenyl- und/oder Phenylgruppen.
- Silanole (Kenn-Nr. 568)  
Silane und Siloxane mit Hydroxylgruppen am Siliciumatom, die zusätzlich unsubstituierte Alkyl-, Alkenyl- und/oder Phenylgruppen enthalten können.
- Chlorsilane (Kenn-Nr. 557)  
Silane und Siloxane mit Chlorsubstituenten am Siliciumatom, die zusätzlich unsubstituierte Alkyl-, Alkenyl-, Phenylgruppen und/oder Wasserstoff enthalten können.

**Fußnote 25: Definition Farbmittelzubereitungen (Kenn-Nr. 1492):**

1. Farbmittel ist der Oberbegriff für alle farbgebenden Substanzen. Unter organischen Farbmittelzubereitungen sind Stoffmischungen aus einem oder mehreren organischen Farbmitteln und im Herstellungsprozeß entstandenen Stoffen oder bei der nachfolgenden Aufarbeitung zugesetzten Verarbeitungshilfsmitteln zu verstehen, die unmittelbar in dieser Form in den Verkehr gebracht werden. Wird in einem weiteren Verarbeitungsschritt aus dieser Farbmittelzubereitung durch Zugabe von anderen Stoffen ein Produkt hergestellt (beispielsweise Lacke, Druckfarben, Anstrichfarben), so ist diese Gruppeneinstufung nicht mehr gültig. In diesen Fällen gilt Anhang 4 dieser Verwaltungsvorschrift, und die Farbmittelzubereitung ist entsprechend als ein Mischungsbestandteil in der Berechnung zu berücksichtigen.

2. Organische Farbmittelzubereitungen werden (abweichend von der Gruppeneinstufung in WGK 2) in die WGK 1 eingestuft, wenn sie

- a) Farbmittel enthalten, deren Löslichkeit in Wasser 10 mg/l nicht übersteigt, sowie
- b) im Bereich der Wasserlöslichkeit keine toxischen Wirkungen auf aquatische Organismen zeigen (Untersuchungsergebnisse zu zwei Organismen (Fisch (LC<sub>50</sub>, bevorzugt Goldorfe), Bakterie (EC<sub>10</sub> (hilfsweise EC<sub>50</sub>), bevorzugt *Pseudomonas putida*), Alge (EC<sub>10</sub> (hilfsweise EC<sub>50</sub>), bevorzugt *Scenedesmus subspicatus*) oder Daphnie (EC<sub>50</sub>, bevorzugt *Daphnia magna*)) müssen bekannt sein; dies gilt auch als eingehalten, wenn die aquatische Toxizität an der Farbmittelzubereitung zu mehr als 100 mg/l ermittelt worden ist) sowie

- c) akute orale Toxizitäten beim Säuger (bevorzugt Ratte) von mehr als 2000 mg/kg KG aufweisen sowie
- d) keine Eigenschaften aufweisen, die eine Kennzeichnung mit den Gefahren(R)-Sätzen 39, 40, 45, 46, 60 oder 61 erforderlich machen (bei Azofarbstoffen muß eine krebserzeugende Wirkung aufgrund der bei der reduktiven Spaltung entstehenden Amine ausgeschlossen werden können, vgl. Teil III. der MAK-Liste) sowie
- e) nicht mehr als 20 ppm Cadmium, 4 ppm Quecksilber, 100 ppm Chrom(VI), 100 ppm Silber, 50 ppm Antimon oder 100 ppm Blei enthalten.

Der Einstufer hat die unter a), b) und c) genannten Anforderungen durch Untersuchungen nachzuweisen. Bei wasserunlöslichen Pigmenten (Löslichkeit kleiner 1 mg/l) kann der Nachweis zu b) unterbleiben.

3. Organische Farbmittelzubereitungen werden (abweichend von der Gruppeneinstufung in WGK 2) in die WGK 3 eingestuft, wenn sie

- a) akute orale Toxizitäten beim Säuger (bevorzugt Ratte) von 200 mg/kg KG und weniger aufweisen oder
- b) bei einem der unter 2. b) genannten aquatischen Organismen einen toxischen Effekt bei einer Konzentration von 10 mg/l und weniger aufweisen oder
- c) Eigenschaften aufweisen, die eine Kennzeichnung mit den Gefahren(R)-Sätzen 39, 45, 46, 60 oder 61 erforderlich machen.

Der Einstufer hat die Einstufung in die WGK 3 vorzunehmen, sobald ihm entsprechende Erkenntnisse zu den vorgenannten Punkten a) bis c) bekannt geworden sind.

Auf eine Berücksichtigung der algenhemmenden Wirkung wird verzichtet, wenn durch eine entsprechende Versuchsdurchführung sichergestellt wird, daß der ermittelte Effekt nicht auf eine toxische Wirkung, sondern nur auf Lichtabsorption durch das Farbmittel zurückzuführen ist.

4. Führt die vorgenannte Vorgehensweise zu nicht angemessenen Einstufungen von Farbmittelzubereitungen, werden diese in Anhang 1 oder 2 näher bestimmt.

### **Fußnote 27: Definition Polyesterharze (Kenn-Nr. 1950)**

Unter Polyesterharzen werden die Polykondensationsprodukte aus den Ausgangsstoffen Carbonsäuren und mehrwertigen Alkoholen zusammengefaßt. Ausgangsstoffe sind Stoffe, die nach der Kondensationsreaktion chemisch in das Polymer eingebunden sind.

Unter die Gruppeneinstufung fallen folgende Untergruppen:

- Polyesterharze: Polykondensationsprodukte aus ein-, zwei- und mehrwertigen Carbonsäuren und mehrwertigen Alkoholen.
- Alkydharze: Polyesterharze wie oben, die mit natürlichen Fetten und Ölen und/oder synthetischen Fettsäuren chemisch modifiziert sind (entsprechend DIN 53 183).

- Modifizierte Polyesterharze: Polyesterharze wie oben, die mit Carbonaten oder Diisocyanaten chemisch modifiziert sind.

Polyesterharze (fest (soweit sie nicht unter die Einstufung Nr. 766 („Kunststoffe, soweit sie fest, nicht dispergiert, wasserunlöslich und indifferent sind“) fallen) und flüssig) werden der Wassergefährdungsklasse 1 zugeordnet, wenn folgende Bedingungen erfüllt sind:

- a) Die Ausgangsstoffe sind entsprechend der VwVwS nicht wassergefährdend oder WGK 1 eingestuft. Der Anteil an Ausgangsstoffen der WGK 2 beträgt weniger als 5 %, der an Ausgangsstoffen der WGK 3 weniger als 0,2 %. Abweichend davon ist ein Gehalt von mehr als 5 % an Ausgangsstoffen der WGK 2 zulässig, wenn gezeigt wird, daß nach einwöchiger Hydrolyse weniger als 5 % (bezogen auf die Gesamtmasse des Polymers) der WGK 2-Stoffe freigesetzt werden. (Verfahren zur Bestimmung der Hydrolyse: 10 g Polyesterharz werden in 1 l destillierten Wasser bei  $25 \pm 2$  °C eine Woche gerührt und der Gehalt an Ausgangsstoffen in der wäßrigen Phase durch eine geeignete Methode bestimmt. Feste Polyesterharze werden dabei in gemahlener Form eingesetzt.)
- b) Die Eigenschaften der Polyesterharze erfordern keine Einstufung in die Gefahrensätze R 39, R 40, R 45, R 46, R 60 und R 61.

Polyesterharze, die nicht diesen Bedingungen entsprechen, sind von der Einstufung nicht erfaßt.

Bei Zusatz von weiteren Stoffen zu dem Polyesterharz (insbesondere von Additiven, Neutralisationsmitteln und Lösemitteln) ergibt sich die Wassergefährdungsklasse nach Anhang 4 dieser Verwaltungsvorschrift.

### **Fußnoten 37 und 38: Rahmenrezeptur für Proteinschaummittel und Mehrbereichsschaummittel (Kenn-Nr. 1953 und 1954)**

#### **Begriffsbestimmung**

Schaummittel im Sinne dieser Regelung ist ein flüssiger Zusatz zum Löschwasser zur Erzeugung von Löschaum. Ihr Anwendungsbereich, ihre Zusammensetzung, ihre Anforderungen an die Schaummittel sowie ihre Kennzeichnung sind in DIN 14 272 geregelt. Schaummittel unterliegen in Deutschland der Zulassung<sup>2</sup>. Die zugelassenen Rezepturen werden bei der Amtlichen Prüfstelle für Feuerlöschmittel und -geräte Münster/NRW bzw. Freiberg/Sachsen hinterlegt. Die Zulassung unterscheidet fünf Gruppen:

- Protein-Schäume

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<sup>2</sup> Ordnungsbehördliche Verordnung über Feuerlöschmittel und Feuerlöschgeräte vom 28.12.1984 (GV.NW 1985, Seite 44) des Landes Nordrhein-Westfalen und die gleichlautenden Verordnungen der Länder der Bundesrepublik Deutschland

- Fluorprotein-Schäume
- Mehrbereichs-Schäume
- Wasserfilmbildende Schäume
- Alkoholbeständige Schäume.

Diese Rahmenrezepturen dienen der Einstufung von Protein-Schäumen sowie von Mehrbereichs-Schäumen in WGK. Dafür sind die nachfolgenden Positivlisten maßgeblich. Für Zubereitungen, die nicht diesen Rahmenrezepturen entsprechen, ergibt sich die WGK nach Anhang 4 dieser Verwaltungsvorschrift.

### 1.1 Proteinschaummittel (Kenn-Nr. 1953, WGK 1)

Proteinschaummittel sind Schaummittel, die aus wasserlöslichen Eiweiß-Abbauprodukten aufgebaut sind.

Rahmenrezeptur für Proteinschaummittel  
in Anlehnung an DIN 14272 Teil 1 (Nr. 2.2)

| Rezepturbestandteil  | Anteil in % (m/m) |
|----------------------|-------------------|
| Schaumbildner        | < = 30            |
| Stabilisator         | < 3               |
| Frostschutzmittel    | < = 30            |
| Lösungsvermittler    | < 10              |
| Konservierungsmittel | < 1               |

### Rezepturbestandteile für Proteinschaummittel

#### Schaumbildner:

|   | <u>Kenn-</u><br><u>Nr.</u> | <u>WGK</u> |
|---|----------------------------|------------|
| Proteinhydrolysat   | 1431                       | 1          |
| Ligninsulfonsäure, Natrium-Salz                                 | 1320                       | 1          |
| Ligninsulfonsäure, Ammonium- und Magnesiumsalz (analog zu 1320) |                            | 1          |

#### Stabilisatoren (Komplexbildner):

|                  |     |   |
|------------------|-----|---|
| Eisen(II)-sulfat | 514 | 1 |
| Zinkchlorid      | 207 | 1 |

#### Frostschutzmittel:

|                    |     |   |
|--------------------|-----|---|
| Ethylenglykol      | 105 | 0 |
| 1,2-Propylenglykol | 280 | 0 |
| Glycerin           | 116 | 0 |
| n-Propanol         | 176 | 1 |
| Isopropanol        | 135 | 1 |
| Harnstoff          | 118 | 1 |
| Magnesiumchlorid   | 259 | 0 |



|                                   |      |   |
|-----------------------------------|------|---|
| Calciumchlorid                    | 220  | 0 |
| <b>Konservierungsmittel:</b>      |      |   |
| 4-Chlor-3-methylphenol            | 231  | 2 |
| <b>Lösungsvermittler:</b>         |      |   |
| Ethylenglycolmono-n-butylether    | 47   | 1 |
| Diethylenglycolmono-n-butylether  | 46   | 1 |
| 2-Methyl-2,4-pentandiol           | 5025 | 1 |
| Polyethylenglykol                 | 279  | 1 |
| Butoxypolyethylen-/propylenglykol | 563  | 1 |

## 1.2 Mehrbereichsschaummittel (Kenn-Nr. 1954, WGK 2)

Mehrbereichsschaummittel sind Schaummittel für die Erzeugung von Löschschaum in allen Verschäumungsbereichen. Sie sind aus grenzflächenaktiven Substanzen aufgebaut.

|   |                   |
|---|-------------------|
| Rahmenrezeptur für Mehrbereichsschaummittel<br>in Anlehnung an DIN 14272 Teil 2 |                   |
| Rezepturbestandteil   | Anteil in % (m/m) |
| Schaumbildner   | < = 30            |
| Stabilisator  | < 5               |
| Frostschutzmittel + Lösungsvermittler   | < = 45            |
| Konservierungsmittel  | < 0,2             |

### Rezepturbestandteile für Mehrbereichsschaummittel

| <b>Schaumbildner:</b>   | <u>Kenn-</u><br><u>Nr.</u> | <u>WGK</u> |
|---|----------------------------|------------|
| Alkybenzolsulfonate (C10 - C14), linear   | 449                        | 2          |
| sek. Alkan(C13 - C17)-sulfonate   | 663                        | 2          |
| Natriumalkyl(C8 - C20)-sulfate  | 664                        | 2          |
| $\alpha$ -Olefinsulfonate C14 - C18   | 666                        | 2          |
| Sulfobernsteinsäureester, Na-Salze  | 667                        | 2          |
| $\alpha$ -Methylestersulfonate C12 - C18, Na-Salze  | 668                        | 2          |
| Alkoholethoxylate   | 670                        | 2          |
| Fettalkohol-EO/PO-Addukte   | 672                        | 2          |
| Alkylpolyglycoside (mit 1-2 Glucoseeinheiten; Alkylrest: C8-C16)                                    | 1363                       | 1          |
| Natriumalkyl(C8 - 20)-sulfate   | 664                        | 2          |
| NH <sub>4</sub> -Laurylsulfate (analog zu 664)  |                            | 2          |
| TEA-Laurylsulfate (analog zu 664)   |                            | 2          |
| Imidazoliniumsalz   | 675                        | 2          |
| <b>Stabilisatoren:</b>  |                            |            |
| Fettalkohole, gesättigt, mit geradzahlicher C-Kette, C-Zahl $\geq 12$<br>und endständiger OH-Gruppe | 656                        | 0          |

**Frostschutzmittel:**

|                    |     |   |
|--------------------|-----|---|
| Ethylenglykol      | 105 | 0 |
| 1,2-Propylenglykol | 280 | 0 |
| Glycerin           | 116 | 0 |
| n-Propanol         | 176 | 1 |
| Isopropanol        | 135 | 1 |
| Harnstoff          | 118 | 1 |

**Konservierungsmittel:**

|              |     |   |
|--------------|-----|---|
| Formaldehyd  | 112 | 2 |
| Na-Propionat | 484 | 1 |
| Salicylsäure | 281 | 1 |

**Lösungsvermittler:**

|                                  |      |   |
|----------------------------------|------|---|
| Ethylenglycolmono-n-butylether   | 47   | 1 |
| Diethylenglycolmono-n-butylether | 46   | 1 |
| 2-Methyl-2,4-pentandiol          | 5025 | 1 |

## Annex 3

### Classification of substances hazardous to waters, on the basis of R-phrases

#### 1. R-phraser classifications and evaluation criteria

The basis for substance classification is classification into R-phrases pursuant to Article 4a (1) through (4) of the Ordinance on Hazardous Substances (Gefahrstoffverordnung - GefStoffV) of 26 October 1993 (Federal Law Gazette I p. 1782, cor. p. 2049) in its applicable version. The first sentence of this paragraph also applies mutatis mutandis for all other substances that must be classified into water hazard classes.

Following classification, the R-phrases are assigned evaluation points as follows:

| R-phrase | Points | Remarks   |
|----------|--------|---|
| R 21     | 1      | is not additively assigned to R 22, R 20/22, R 25, R 23/25, R 28 or R 26/28 |
| R 22     | 1      | is not additively assigned to R 24, R 23/24, R 27 or R 26/27                |
| R 24     | 3      | is not additively assigned to R 25, R 23/25, R 28 or R 26/28                |
| R 25     | 3      | is not additively assigned to R 27 or R 26/27                               |
| R 27     | 5      | is not additively assigned to R 28 or R 26/28                               |
| R 28     | 5      |   |
| R 29     | 2      |   |
| R 33     | 2      |   |
| R 40     | 2      |   |
| R 45     | 9      |   |
| R 46     | 9      | is not additively assigned to R 45  |
| R 50     | 6      |   |
| R 52     | 3      |   |
| R 53     | 3      |   |
| R 60     | 4      |   |
| R 61     | 4      | is not additively assigned to R 60  |
| R 62     | 2      | is not additively assigned to R 61  |
| R 63     | 2      | is not additively assigned to R 60 and R 62                                 |

|               |   |  |
|---------------|---|--|
| R 65          | 1 | is not additively assigned to R 21 and R 22      |
| R 15/29       | 2 |  |
| R 20/21       | 1 | is not additively assigned to R 22, R 25 or R 28 |
| R 20/22       | 1 | is not additively assigned to R 24 or R 27       |
| R 20/21/22    | 1 |  |
| R 21/22       | 1 |  |
| R 23/24       | 3 | is not additively assigned to R 25 or R 28       |
| R 23/25       | 3 | is not additively assigned to R 27               |
| R 23/24/25    | 3 |  |
| R 24/25       | 3 |  |
| R 26/27       | 5 | is not additively assigned to R 28               |
| R 26/28       | 5 |  |
| R 26/27/28    | 5 |  |
| R 27/28       | 5 |  |
| R 39/24       | 4 |  |
| R 39/25       | 4 |  |
| R 39/23/24    | 4 |  |
| R 39/23/25    | 4 |  |
| R 39/24/25    | 4 |  |
| R 39/23/24/25 | 4 |  |
| R 39/27       | 6 |  |
| R 39/28       | 6 |  |
| R 39/26/27    | 6 |  |
| R 39/26/28    | 6 |  |
| R 39/27/28    | 6 |  |
| R 39/26/27/28 | 6 |  |
| R 40/21       | 2 |  |
| R 40/22       | 2 |  |
| R 40/20/21    | 2 |  |
| R 40/20/22    | 2 |  |
| R 40/21/22    | 2 |  |
| R 40/20/21/22 | 2 |  |
| R 48/21       | 2 |  |
| R 48/22       | 2 |  |
| R 48/20/21    | 2 |  |
| R 48/20/22    | 2 |  |
| R 48/21/22    | 2 |  |
| R 48/20/21/22 | 2 |  |
| R 48/24       | 4 |  |
| R 48/25       | 4 |  |
| R 48/23/24    | 4 |  |

|               |   |  |
|---------------|---|--|
| R 48/23/25    | 4 |  |
| R 48/24/25    | 4 |  |
| R 48/23/24/25 | 4 |  |
| R 50/53       | 8 |  |
| R 51/53       | 6 |  |
| R 52/53       | 4 |  |

## 2. Default values (Vorgabewerte)

If, for a given substance, no proof of testing for certain toxic characteristics and for certain environmental impacts is available, and if the substance has not been classified into one of the R-phrases listed below, in Annex 1 of Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances, in its applicable version, the substance shall be assigned the following point values as default values:

- a) The default value shall be 5 points, if a substance, in Annex 1 of Directive 67/548/EEC, has not been classified into the R-phrases 21, 22, 24, 25, 27 or 28, either alone or in combination, and if no proof is available of testing for acute toxicity for a rodent species upon swallowing and in contact with skin.
- b) The default value shall be 6 points, if a substance, in Annex 1 of Directive 67/548/EEC, has not been classified into the R-phrases 50, 50/53, 51/53 or 52/53, and if no proof is available of testing for acute toxicity for a fish species and a water-flea species, and for inhibition of algae growth. Notwithstanding the first sentence of this paragraph, the default value shall be 8 points, if also
  - testing for ready biodegradability has shown that the substance is not readily biodegradable or
  - the substance is potentially bioaccumulative or
  - no proof of testing for biodegradability is available or
  - no proof of testing for potential bioaccumulation is available.
- c) The default value shall be 3 points, if a substance in Annex 1 of Directive 67/548/EEC has not been classified into the R-phrases 50/53, 51/53, 52/53 or 53 and
  - no proof of testing for biodegradability or for potential bioaccumulation is available or
  - no proof of testing for biodegradability is available and the substance is potentially bioaccumulative or
  - no proof of testing for potential bioaccumulation is available and the substance is not readily or inherently biodegradable.

Notwithstanding the first sentence, the default value shall be 4 points, if no proof of testing for biodegradability is available and a test is known whereby the acute toxicity for a fish species (96 h LC<sub>50</sub>) or a water-flea

species (48 h EC<sub>50</sub>) or for inhibition of algae growth (72 h IC<sub>50</sub>) is more than 10 mg/l and not more than 100 mg/l.

Notwithstanding the first sentence, the default value shall be 6 points, if no proof of testing for ready biodegradability or for potential bioaccumulation is available and a test is known whereby the acute toxicity for a fish species (96 h LC<sub>50</sub>) or a water-flea species (48 h EC<sub>50</sub>) or for inhibition of algae growth (72 h IC<sub>50</sub>) is more than 1 mg/l and not more than 10 mg/l.

Notwithstanding the first sentence, the default value shall be 2 points, if the substance is classified, pursuant to Number 1, in R 50 and if no proof of testing for ready biodegradability or for potential bioaccumulation is available.

### **3. Evaluation basis**

The basis for classification of substances hazardous to waters shall be scientific testing of the relevant substance in accordance with the specifications of Annex V in conjunction with Annexes VII (A) through (D) and VIII of Directive 67/548/EEC. In accordance with Article 20 (4) Chemicals Act (ChemG), in justified individual cases one or more tests may be eliminated.

Substances in which the log octanol/water-distribution coefficient (log Pow) is not less than 3.0 shall be considered potentially bioaccumulative if the experimentally determined bioconcentration factor (BCF) is not less than 100. A calculated log Pow may thus be used as a basis for evaluating the bioaccumulation behaviour (in keeping with Chapter 4 of the Technical Documents in Support of the Commission Directive 93/67/EEC on Risk Assessment of New Notified Substances and the Commission Regulation 1488/94 on Risk Assessment of Existing Substances, Ispra 1996).

Ready biodegradability shall be determined using a procedure named in Directive OECD 301 or another equivalent, generally accepted procedure.

Inherent biodegradability shall be determined in accordance with Directive OECD 302, Part B or C, or another equivalent, generally accepted procedure.

### **4. Classification into water hazard classes**

4.1 Each substance is assigned a total number of evaluation points, formed as the sum of points determined pursuant to Numbers 1 and 2.

4.2 The point total determined in accordance with Number 4.1 shall be assigned to water hazard classes in accordance with the following scheme:

0 through 4 points: WGK 1,  
5 through 8 points: WGK 2,  
9 and more points: WGK 3.



## **5. Substances non-hazardous to waters**

Notwithstanding Number 4.2, substances are non-hazardous to waters pursuant to Article 19g (5) second sentence WHG, if the following prerequisites are fulfilled:

- a) The point total pursuant to Number 4.1 is 0.
- b) The substance's solubility in water, at 20 degrees Celsius, is less than 100 mg/l, or, if the substance is a liquid under normal conditions, is less than 10 mg/l.
- c) No test is known whereby the acute toxicity for a fish species (96 h  $LC_{50}$ ) or a water-flea species (48 h  $EC_{50}$ ) or for inhibition of algae growth (72 h  $IC_{50}$ ) lies below the solubility threshold. Tests have been carried out with two of the aforementioned organisms.
- d) An organic substance that is a liquid under normal conditions is readily biodegradable.



## **Annex 4**

### **Classification of mixtures into water hazard classes**

#### **1. Scope of application**

This Annex describes the manner in which mixtures are to be classified into water hazard classes.

#### **2. Definitions**

Carcinogenic substances within the meaning of this Annex are all substances that have been classified, pursuant to the Ordinance on Hazardous Substances, into R-phrases 45 ("may cause cancer"). Also carcinogenic within the meaning of this Annex are substances that, pursuant to Article 52 (3) Ordinance on Hazardous Substances, are publicly listed as carcinogenic, Category 1 or 2, pursuant to Annex 1 Ordinance on Hazardous Substances. Substances that cause cancer only when inhaled are not carcinogenic within the meaning of this Annex.

Components within the meaning of this Annex are the substances contained in a relevant mixture. Components whose identity is unknown shall be treated like WGK 3 substances.

In determination of the WGK of mixtures in this Annex, non-carcinogenic substance shares are ignored if they have a mass share of less than 0.2 %, based on the individual substance in question.

Similarly, the relevant threshold for carcinogenic substances, in this Annex, is a mass share of less than 0.1 %, based on the individual substance in question. Where other mass shares are used as the criteria for classification of mixtures as carcinogenic (R 45) pursuant to the Ordinance on Hazardous Substances, then these other mass shares shall apply.

Where WGK 1 is derived, added carcinogenic components are exempted from this consideration threshold.

#### **3. Derivation of water hazard class on the basis of components**

##### **3.1 Derivation of water hazard class 3**

Mixtures shall be classified in WGK 3 if one of the following prerequisites is fulfilled:

- a) The mixture contains carcinogenic components classified in WGK 3.
- b) The mixture contains WGK 3 components with a mass share of 3 % and more, based on the sum.

### 3.2 Derivation of water hazard class 2

Mixtures shall be classified in WGK 2 if one of the following prerequisites is fulfilled:

- a) The mixture contains carcinogenic components classified in WGK 2.
- b) The mixture contains WGK 2 components with a mass share of 5 % and more, based on the sum.
- c) The mixture contains non-carcinogenic components classified in WGK 3 and with a mass share of 0.2 % and more, based on the individual substance, but less than 3 %, based on the sum.

### 3.3 Derivation of water hazard class 1

Mixtures shall be classified in WGK 1 if one of the following prerequisites is fulfilled:

- a) The mixture contains added carcinogenic components in amounts below the consideration threshold mentioned in Number 2.
- b) The mixture contains non-carcinogenic components classified in WGK 2 and with a mass share of 0.2 % and more, based on the individual substance, but less than 3 %, based on the sum.
- c) The mixture contains WGK 1 components with a mass share of 3 % and more, based on the sum.
- d) The mixture does not fulfil all the prerequisites, as listed in Number 2.2.2 of this Administrative Regulation, for mixtures that are non-hazardous to waters.

## **4. Determination of water hazard class using test data for the mixture**

### 4.1 Scope of application

The water hazard classes of mixtures whose components are not individually known, but for which the proofs named in Number 4.2 and 4.3 are available, may be determined by means of tests with the mixtures themselves. In individual cases, particular testing of a mixture is not necessary if only one component has been replaced, if the new component, pursuant to Number 2.1 of this Administrative Regulation, is classified in the same water hazard class as the replaced one and if the new component is not known to have any characteristics that could increase the water hazard potential of the mixture. The second sentence shall also apply mutatis mutandis for components non-hazardous to

waters pursuant to Number 1.2 of this Administrative Regulation. The first sentence shall also apply to mixture whose components are known and, when tested as mixture, are found to belong to a different water hazard class than that produced through derivation pursuant to Number 3.

#### 4.2 Testing of acute toxicity for mammals

If proof of testing for acute toxicity for a rodent species, following swallowing or skin contact, is available, then it must be determined whether the mixture must be classified into R-phrases pursuant to Article 4b Ordinance on Hazardous Substances.

The first sentence shall apply *mutatis mutandis* if such proof is available for the components but not for the mixture.

If proof of testing for acute toxicity for a rodent species, following swallowing or skin contact, is available neither for the mixture nor for the components, a default value of 5 points shall be assigned.

#### 4.3 Testing for ecotoxicity

If proof of testing for acute toxicity for a fish species (96 h LC<sub>50</sub>) or a water-flea species (48 h EC<sub>50</sub>) or for inhibition of algae growth (72 h IC<sub>50</sub>) is available for at least two of these organisms, then evaluation points shall be assigned as follows:

- 8 points, if the toxicity for the most sensitive organism is 1 mg/l or less,
- 6 points, if the toxicity for the most sensitive organism is more than 1 and up to 10 mg/l,
- 4 points, if the toxicity for the most sensitive organism is more than 10 and up to 100 mg/l,
- 3 points, if the toxicity for the most sensitive organism is more than 100 mg/l or is above the solubility threshold.

If one of the aforementioned organisms reacts particularly sensitively to one of the components contained in the mixture, then the mixture must also be tested with this organism.

If no proof is available of testing for acute toxicity for a fish species or a water flea species, or for inhibition of algae growth, or if such proofs have been carried out for only one of these species, then a default value of 8 points shall be assigned.

#### 4.4 Other hazard characteristics

If the mixture has been classified, pursuant to Article 4b Ordinance on Hazardous Substances, into one of the R-phrases listed in Annex 3 (1) of this Administrative Regulation (except for R 21 through R 28, R 50 through R 53 and R 65, in each case either alone or in combination), then the points listed in Annex 3 (1) shall be assigned.

#### 4.5 Classification into a water hazard class

A point total shall be determined for the mixture pursuant to Numbers 4.2 through 4.4. The mixture shall be classified into a water hazard class in keeping with this point total and the provisions in Annex 3 (4.2).

#### **5. Determination of the water hazard class for special mixtures**

Where the procedure pursuant to Numbers 3 and 4 results in unacceptable classifications of mixtures, the mixtures shall be specified in greater detail in Annex 1 or 2.

## **Reasons for the draft of an Administrative Regulation on Substances Hazardous to Waters (VwVwS)**

### **General section**

Pursuant to Article 19g (1) Federal Water Act (WHG), facilities that handle substances hazardous to waters must be designed, installed, erected, maintained and operated in such a manner that no contamination of waters, or any other detrimental change in their properties, is to be feared. In certain cases, pursuant to Article 19g (2) WHG, the best possible protection of waters against contamination or other detrimental change in their properties must be achieved.

The German Federal States (Länder) fill the framework provision of Article 19g WHG with their own laws, ordinances, administrative regulations and technical regulations. They establish technical requirements, in keeping with the relevant hazards, for facilities that handle substances hazardous to waters. The potential hazard is based on the type and location of the facility in question, and on the amount of and hazard potential of the relevant substance hazardous to waters. This approach is also in keeping with the principle of proportionality.

Pursuant to Article 19g (5) first sentence WHG, substances hazardous to waters include solid, liquid and gaseous substances that are able to persistently impair the physical, chemical or biological characteristics of waters. Pursuant to Article 19g (5) second sentence, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is empowered to issue, with the consent of the German Bundesrat, general administrative regulations in which substances hazardous to waters are specified in detail and classified in keeping with their hazard potential. This is the purpose of the present Administrative Regulation.

In the existing administrative regulation on substances hazardous to waters, of 18 April 1996, 1355 substances and substance groups were specified and classified in keeping with their hazard potential. In addition, it permitted manufacturers of mixtures to classify mixtures themselves, in keeping with an easily applied and checked mixing rule, into water hazard classes (WGK). As a result, some 60 % of the substances that are listed in the EU's Regulation on Evaluation and Control of Existing Substances (793/93/EEC) and that are manufactured and sold in large amounts in Europe were classified in WGK. At the same time, the number of conflicts between operators and authorities was reduced, and greater legal certainty was achieved; this helped to accelerate permit procedures.

Nonetheless, a large portion of the substances hazardous to waters that are used in Germany have remained unclassified in accordance with the administrative regulation. As long as a substance has not been reliably classified, state (*Land*) regulations require its hazard level to be determined in accordance with the highest WGK. At the same time, efforts are being intensified to design German safety regulations for handling substances hazardous to waters in such a manner that they can be more easily communicated within the EU and so that they will facilitate international trade.

In order to reduce the numbers of unclassified substances, and to enhance transparency with respect to EU-wide regulations, a fundamentally new approach was chosen. On the basis of European laws on hazardous substances, a classification procedure was developed that permits manufacturers and distributors to derive WGKs from the R-phrases classifications of laws on hazardous substances. The resulting greater links with chemicals laws valid throughout Europe simplifies matters for foreign companies and enhances their acceptance of Germany's proven regulations for dealing with substances hazardous to waters. The principle of concern of Article 19g WHG is fulfilled in that default values are assigned in cases where incomplete data is available; these default values are to be used in cases where information about certain substance characteristics is lacking. The new classification procedure thus helps to harmonise substance classifications in Europe and contributes to deregulation by ensuring that industry and authorities are not duplicating each others' work.

In addition to providing harmony with laws on hazardous substances, the regulation also differentiates between substances that are non-hazardous to waters and those that are. The previous division into four water hazard classes, WGK 0-3, is replaced with the three classes WGK 1-3. In addition, Annex 1 of the new administrative regulation contains a list of substances that are considered non-hazardous to waters within the meaning of Article 19g WHG. The previous WGK 0 includes substances that are termed "generally non-hazardous to waters". These substances present little or no hazard potential to waters. Previous WGK 0 substances that, according to the new classification criteria, are non-hazardous to waters, are listed in Annex 1 as "substances non-hazardous to waters". The remaining substances in the previous WGK 0 that have little hazard potential to waters meet the new criteria for WGK 1. Like other already classified substances, they are listed in Annex 2 along with their WGK.

The harmonisation with laws on hazardous substances simplifies administrative procedures and facilitates enforcement by water authorities. These aims also require adaptation of Federal States laws to the new classification system, however. The elimination of the previous WGK 0 requires harmonisation of requirements structures. This applies especially with respect to substances which are classified in WGK 1 in the future. Those substances present only a slight hazard to waters. They also include substances that previous were designated "generally non-hazardous to waters", as long as the new classification does not list them in Annex 1 as non-hazardous to waters within the meaning of Article 19g WHG or they are considered non-hazardous to waters under the criteria of Annex 3. This applies mainly to readily water-soluble substances that in higher concentrations (g/l range) have toxic effects on aquatic organisms.

The Federal States can be expected to establish appropriate transitional regulations until they adapt their own ordinances. Review as to whether such a transition regulation should be included in this Administrative Regulation showed that the empowerment contained in Article 19g (5) second sentence WHG does not suffice to enable the Federal Government to establish a transition regulation with requirements for facilities.

### **Costs, impacts on prices**

The administrative regulation will not create any new costs. No impacts on price levels are expected. The new classification procedure enables manufacturers and distributors to determine water hazard classifications themselves. Water hazard class

classifications can be used to establish graded levels of safety requirements for facilities. This will provide simplification in cases in which the hazard level of the highest water hazard class (WGK 3) had to be applied simply because the relevant water hazard class was not known. Additional simplification and facilitation could result from harmonisation with European laws on hazardous substances, since WGK can be determined with existing testing procedures.

Costs for public budgets:

No costs are expected for the Federal Government, the Federal States and the municipalities. Simplification is expected in the area of enforcement, since the new administrative regulation classifies all previously unclassified substances within a water hazard class. The Federal Government's cost for documentation pursuant to No. 3.1 can be offset through elimination of existing classification tasks.

Regarding the regulations themselves:

### **No. 1.1 (scope of application)**

The definition of substances hazardous to waters is in keeping with the provisions of the empowerment basis for this Administrative Regulation in Article 19g (5) WHG.

The definition of substance groups is adopted from the administrative regulation of 18 April 1996. The same also applies to the inclusion of preparations and mixtures within the scope of application.

Article 19g (5) WHG empowers the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) to make specific provisions for substances hazardous to waters and to classify such substances in keeping with their hazard potential. The empowerment does not include the authority to introduce amounts thresholds or to take certain forms of packaging into account in determining hazard potential to waters.

It is up to the Federal States to assess the potential hazards from facilities as a function of amounts thresholds for substances. As a rule, storage of individually packaged very small amounts, in so-called "blister" packages, and standard household types of consumer packaging, will not be included in the area relevant to water law.

### **No. 1.2 and Annex 1 (substances non-hazardous to waters)**

Substances and substance groups that are not able to persistently impair the physical, chemical or biological characteristics of waters are defined as substances that are non-hazardous to waters within the meaning of Article 19g (5) WHG. These substances are specified in greater detail in Annex 1 of this Administrative Regulation, which contains an itemised list of substances non-hazardous to waters that has been compiled on the basis of evaluation data of the Commission for the Evaluation of Substances Hazardous to Waters (KBwS) in the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). This list is not conclusive and may be modified in later versions

of this Administrative Regulation. The possible modifications include addition of mixtures.

In addition, the regulation defines substances as being non-hazardous to waters if the substances do not require classification into the R-phrases used in laws on hazardous substances and named in Annex 3 (1), and if the substances must not be assigned default values pursuant to Annex 3 (2). The tests underlying these classifications, within the framework of European laws on hazardous substances, have been developed for determination of the hazard potential of substances, but not their safety with respect to the assets/resources in question here. For this reason, Annex 3 (5) contains additional requirements for substances non-hazardous to waters, including requirements for solubility in water, toxicity for aquatic organisms and biodegradability. Only when all of these criteria are met can it be assumed that the substance in question cannot present a hazard to waters within the meaning of Article 19g (5) WHG.

Foods and animal feeds are also defined as non-hazardous to waters, as long as they conform to the provisions of applicable laws and are not expressly classified in a water hazard class in Annex 2. The possibility that some foods and animal feeds could be hazardous to waters cannot be ruled out.

## **No. 2.1, Annex 2 and Annex 3 (substances and substance groups hazardous to waters)**

### **No. 2.1.1 and Annex 2 (list of substances hazardous to waters)**

Annex 2 lists all substances and substance groups contained in Annex 1 of the administrative regulation of 18 April 1996, as well as those substances and substance groups that have been classified into water hazard classes by the Commission for the Evaluation of Substances Hazardous to Waters (KBwS) since the editorial deadline for this Regulation, where such substances and substance groups are not listed in Annex 1. In future, this annex shall contain only those substances and substance groups which must be classified using procedures different from those described in Annex 3 (in keeping with laws on hazardous substances), for reasons such as:

- the substances or substance groups have special water-hazard potential characteristics that are not described by the hazardous-substances-law classifications listed in Annex 3 (for example, soil mobility characteristics or chronic toxicity to aquatic organisms),
- the substances or substance groups have been classified, under laws for hazardous substances, into one or more R-phrases that are named in Annex 3 of this Administrative Regulation and whose hazard potential characteristics are not relevant, or are hardly relevant, when the substance or substance group is in water (for example, an R 45 classification (may cause cancer) for a solid substance that is not soluble in water).

On application, to be submitted to the Commission for the Evaluation of Substances Hazardous to Waters, these classifications shall be taken into account in Annex 2 of the next update of this Administrative Regulation.



Pursuant to No. 2.1.4, Annex 2 also defines the water hazard potential of individual substances that have been combined into substance groups. This approach reflects the fact that some substance groups with common functional, effective or structural characteristics often have very similar properties with regard to water hazard potential and thus may be classified within a common water hazard class. Group classifications, which are binding for all substances of a group, facilitate the enforcement of this Administrative Regulation, since group classification eliminates the need for classification of the relevant individual substances.

As in the existing procedure, mixtures are classified into water hazard classes by the relevant distributors or users themselves, via derivation from individual components or testing of the mixtures. Where this approach produces unacceptable classifications in individual cases, applications for special classification may be submitted to the Federal Ministry for the Environment, Nature Conservation and Reactor Safety (BMU). Such mixtures will then be listed by name in Annex 1 or 2.

### **No. 2.1 and Annex 3 (derivation of water hazard classes from classifications under laws for hazardous substances)**

Annex 3 defines all substances and substance groups as hazardous to waters whose characteristics fulfil the criteria for classifications under laws on hazardous substances as set forth in Annex 3 (1). The relevant hazardous-determining characteristics must also be determined, in a similar way, for those substances that are not subject to the scope of the application of the Chemicals Act, where the substances must be classified into a water hazard class.

These classifications are selected with respect to the aims of protecting human health (via water pathways), the aquatic environment and the soil. All R-phrase classifications under laws on hazardous substances that describe hazards to these protection objectives are listed in Annex 3. The descriptions take into account acute or chronic toxicity of substances to mammals following swallowing or skin contact. In addition, assessments of carcinogenic, mutagenic or teratogenic properties of substances are considered. With respect to the aim of protecting the aquatic environment, those classifications are listed that describe toxicity for aquatic organisms, the bioaccumulative behaviour of substances and substances' biodegradability. Finally, the list includes classifications that describe hazardous reactions with water (including formation of toxic substances).

The substance properties upon which these classifications are based have been taken into account in existing substance classifications, in water hazard classes, as carried out by the Commission for the Evaluation of Substances Hazardous to Waters of the BMU. The selection of classifications in Annex 3 of this Administrative Regulation is thus a direct continuation of the former procedure for specification of substances hazardous to waters.

Laws on hazardous substances do not cover all substances. Substance-evaluation procedures, under laws on hazardous substances, should be applied to all substances

that belong within a given water hazard class in order to determine the substances' hazard potential to waters.

**c) No. 2.1.2 and Annex 3 (4) (water hazard classes)**

The water-hazard potential characteristics of substances and substance groups are specified in detail in Annexes 2 and 3, with the help of three water hazard classes. These classes, which are largely similar to the previous water hazard classes, enable the Federal States to establish hazards-oriented requirements for safety designs of facilities that handle substances hazardous to waters. Class WGK 0 is being discontinued; as described, it is being replaced by a list of substances non-hazardous to waters, since classification in WGK 0 required tests that had no basis in laws on hazardous substances. Retention of WGK 0 would thus not have been reconcilable with the aim of bringing derivation of water hazard classes into general harmony with laws on hazardous substances.

Allocation of individual point totals to classifications under laws on hazardous substances was oriented, in previous procedures, to classification of substances in water hazard classes. The same or similar hazard potential characteristics are weighted in a similar way in both procedures. According to a review of the Federal Environmental Agency, the two procedures lead to the same water hazard class in about 70 % of all cases. Discrepancies of more than one WGK level occur only in cases in which the substance has hazard potential characteristics to which no classification has been assigned under laws on hazardous substances. Such substances will also be listed in Annex 2 in future.

Pursuant to Annex 3, a water hazard class is derived by determining a point total consisting of evaluation points that are assigned to the various classifications under laws on hazardous substances and of default values. Where classifications under laws on hazardous substances are available, the procedure described in Annex 3 will always produce a water hazard class classification. Since classifications under laws on hazardous substances are to be determined by the relevant manufacturers and distributors themselves, where relevant classification is not already provided in Annex 1 of the Law on Hazardous Substances, it makes sense to also permit the manufacturer, distributor or other skilled persons to derive the water hazard class. Proper application of this Administrative Regulation, along with nationally standardised enforcement, is to be assured by means of documentation and central recording of these classifications.

**d) Annex 3 (2) (classification in cases in which the data are incomplete)**

The principle of concern in Article 19g WHG represents a significant difference between laws on hazardous substances and Federal Water Management Act (WHG). According to this principle, a high hazard must be assumed in cases of lacking or inadequate information. In the Federal States regulations for facilities that handle substances hazardous to waters, this principle is implemented in such a manner that substances that have not been reliably classified are assigned to the highest WGK.

On the other hand, classifications under laws on hazardous substances are required only where it is known that a substance has particular hazard potential characteristics. If

a certain hazard potential characteristic has not yet been studied, no classification and labelling are required for relevant substances listed in the European Inventory of Existing Commercial Chemical Substances (EINECS). Specification of water hazard potential exclusively on the basis of classifications under laws on hazardous substances would thus not take adequate regard of the principle of concern under the WHG.

In the development of the classification procedure for this Administrative Regulation, it was thus assumed that determination of any substance's water hazard potential is possible only with a basic data record, containing data on acute toxicity for mammals, toxicity for aquatic organisms, biodegradability and bioaccumulation behaviour. The scope of this data record is largely in keeping with that used to date by the Commission for the Evaluation of Substances Hazardous to Waters in evaluating substances. The only addition required consists of information on bioaccumulation behaviour. This results from combination, in classifications under laws on hazardous substances, of this property with aquatic toxicity.

The basic data record must be determined for every substance that must be classified within a water hazard class. Testing is not required only in justified individual cases in which testing in light of the latest scientific findings is either unnecessary or not technically feasible. This possibility represents a closely restricted exception and not the normal case, however. The procedure in such cases should be similar to that set forth by Article 20 (4) Chemicals Act, which regulates such exceptions for registration of new substances.

Where relevant characteristics that must be tested have not been tested, either completely or in part, a high hazard is assumed in specification of the relevant water hazard, and in Annex 3 (2) a default values is assigned that corresponds to that classification, under laws on hazardous substances, that describes the highest possible hazard in this area.

This approach fulfils the principle of concern in a differentiated way and also permits specification of the relevant hazard to waters even in cases in which the data are incomplete.

## **No. 2.2 and Annex 4 (preparations and mixtures)**

All those preparations and mixtures are classified as hazardous to waters that contain substances that are hazardous to waters. The water hazard class results from a calculation rule in Annex 4 that is the same as that found in Annex 2 of the administrative regulation of 18 April 1996. Where this rule refers to substances classified in WGK 0, these substances are referred to in No. 2.2 as "substances non-hazardous to waters". Definition of preparations and mixtures as non-hazardous to waters, via maximum content of substances hazardous to waters (graded into water hazard classes), is also similar.

The new administrative regulation provides the additional possibility for classification of preparations and mixtures, into water hazard classes, on the basis of data obtained from the relevant preparations or mixtures. This arrangement reflects the fact that test data are available for many commercially available preparations whose ingredients are not known to the manufacturers and distributors. The classification rules reflect the fact

that hazard potential characteristics such as biodegradability and bioaccumulation behaviour cannot normally be reliably determined using the preparation itself. As a precaution, therefore, Annex 4 (4) assumes that these hazard potential characteristics are present in preparations. Other hazard potential characteristics of preparations are also taken into account, if they result in a classification under laws on hazardous substances. In some cases, the procedures pursuant to Annex 4 (3) and (4) may not always lead to suitable classifications of mixtures. For example, this can occur if a mixture contains added dispergators that do not have any synergistic effects. In such cases, the mixture may be specified and classified pursuant to Annex 1 or Annex 2.

### **3. (Documentation and publication)**

The classifications are documented by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, or a central agency it has authorised. To this end, the data obtained from testing must be recorded in a logical, clear way. Documentation is necessary so that substances, and the responsible manufacturers or distributors, can be clearly identified and so that any causes of water hazard potential or, for example, any use of default values, are recognisable.

The classifications are also recorded for the purpose of facilitating nationally standardised enforcement. If different WGK are reported to the central agency, then the higher WGK shall apply, in keeping with the principle of concern. This shall not apply in cases in which the higher WGK results from use of default values, i.e. in cases in which the lower WGK is based on a more complete data record.

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