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HAZARD EVALUATION OF SUBSTANCES TRANSPORTED BY SHIPS

Report of the fifty-fourth session of the GESAMP/EHS Working Group on the Evaluation of the hazards of harmful substances carried by ships

The report of the fifty-fourth session of the GESAMP/EHS Working Group on the Evaluation of the hazards of harmful substances carried by ships, held from 22 to 26 May 2017, is attached.

Any comments or questions should be addressed to:

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INTERNATIONAL MARITIME ORGANIZATION

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WORKING GROUP ON THE EVALUATION OF THE HAZARDS OF HARMFUL SUBSTANCES CARRIED BY SHIP
54th session
Agenda item 9

EHS 54/9
26 May 2017
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REPORT OF THE FIFTY-FOURTH SESSION

LIST OF ANNEXES

1 INTRODUCTION

1.1 The fifty-fourth session of the GESAMP/EHS Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships was held at IMO in London, United Kingdom from 22 to 26 May 2017, chaired by Dr. Thomas Höfer. The list of experts attending the meeting is set out in annex 1.

1.2 Having reviewed the agenda and provisional timetable, the Group adopted both, without amendment.

2 OUTCOME of other bodies

Outcome of IMO bodies

2.1 The Group noted that the following meetings of relevance had taken place since the fifty-third session of the GESAMP/EHS Working Group:

.1 the twenty second meeting of the Working Group on the Evaluation of Safety and Pollution Hazards of Chemicals (ESPH 22), which took place from 10 to 14 October 2016 (PPR 4/3);

.2 the Working Group on the Evaluation of Safety and Pollution Hazards (ESPH) also met during the fourth meeting of the PPR Sub-Committee, which took place from 16 to 20 January 2017 (PPR 4/WP.3);

.3 the thirty-first and thirty-second sessions of the Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS 31 and GHS 32), which took place from 5 to 8 July 2016 and 7 to 9 December 2016, respectively; and

.4 the forty-seventh session of the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG 47), which took place from 22 to 26 June 2015.

2.2 The Group noted the information provided and the particular items considered at ESPH 22 and PPR 4 related to the work of GESAMP/EHS, in particular the invitation by ESPH 22 to industry and relevant stakeholders to:

.1 submit information on hydrocarbon waxes, paraffin-type products and mineral oil to GESAMP/EHS 54, with a view to harmonizing the entries for these products in the IBC Code and for the purposes of reviewing the component factor for mineral oil used in the mixture calculation employed by the ESPH Working Group;

.2 submit information on drilling brines to GESAMP/EHS 54 to establish a series of hazard profiles to cover the range of drilling brines, with a view to establishing generic entries for drilling brines in chapter 17 of the IBC Code; and

.3 submit inhalation toxicity data to GESAMP/EHS 54 to assist the review of the C3 GESAMP Hazard Rating (inhalation toxicity), to facilitate the implementation of the revised draft chapter 21 of the IBC code, once adopted.

2.3 The Group also noted the discussions at PPR 4 with regard to the application of the D3 rating for methyl alcohol under the IBC Code and its expected consideration of the issue at ESPH 23, based on the submission of documents with an appropriate justification and rationale.

2.4 The Group further noted that a submission had been made for a review of methyl alcohol to this session.

Outcome of GESAMP 43

2.5 The Group noted the report by the Chair on the outcome of the forty-third session of GESAMP, that took place from 14 to 18 November 2016 in Nairobi, Kenya, hosted by the United Nations Environment Programme (UNEP).

2.6 Two main items of interest to GESAMP/EHS were highlighted, notably the GESAMP website and solicitation of ideas for commemorating GESAMP's 50th anniversary in 2019.

2.7 Having considered possible proposed modifications to the GESAMP website, notably the proposal to include names and email details of all experts of GESAMP/EHS on the portion of the website dedicated to Working Group 1, it agreed that this was not warranted and that no change to the current information was required.

2.8 In discussing possible ideas to commemorate the 50th anniversary of GESAMP in 2019, the Group agreed that a new third edition of Reports and Studies No.64 could be published to coincide with the anniversary, incorporating the new information with regard to the C3 ratings and the re-assignment of the E1 column, and any further modifications, as required. The Group agreed that the necessary changes could potentially be agreed in 2018, with a view to publication for the anniversary in 2019.

Outcome of the UN GHS Sub-Committee

2.9 The Group noted that work related to the aspiration hazard, as requested by GESAMP/EHS, was ongoing.

Outcome of the UN TDG Sub-Committee

2.10 The Group noted the information provided by the Chair with regard to the submission of the Republic of Korea to the UN Sub-Committee of Experts on the Transport of Dangerous Goods (TDG 47) that proposed the use of information contained in the GESAMP Hazard Profile for the purposes of defining the UN hazard class for three substances. This Group noted information demonstrated the use of the profile beyond the usual regulatory requirements of the IBC Code.

3 EVALUATION OF NEW SUBSTANCES

3.1 The Group recalled that when submitting new substances for evaluation by the GESAMP/EHS Working Group, a full set of data, addressing all the information requirements set out in the GESAMP/EHS Product Data Reporting Form, was required. The Group further noted that insufficient data, or a lack of adequate supporting arguments, where estimates had been used, would result in no rating being assigned for the end-point concerned or, as a worst case, no full hazard profile being issued for the chemical under review.

3.2 The Group considered the following new substances, which had been submitted for evaluation to this session:

.1	Hexahydro-1,3,5-trimethyl-1,3,5-triazine solution (45% or less)	EHS 2489
.2	1-Butylpyrrolidin-2-one	EHS 2490
.3	2-Propenoic acid, polymer with 4-(1,1-dimethylethyl)phenol, Formaldehyde, 2,5-Furandione, 2-Methyloxirane and oxirane (65% in Naphtha/Xylene)	EHS 2491
.4	Tall oil acids reaction products with triethanolamine	EHS 2492
.5	[[(2-Hydroxyethyl)imino]dimethylene]bisphosphonic acid, sodium salt	EHS 2493
.6	Quaternary ammonium compounds, benzyl-C12-14 (even-numbered)-alkyldimethyl, chlorides solution	EHS 2494
.7	2-Mercaptoethanol	EHS 2495
.8	Thioglycolic acid	EHS 2496
.9	Tall oil acids reaction products with acrylic acid and diethylenetriamine in ethylene glycol	EHS 2497
.10	Benzaldehyde	EHS 2498
.11	Fish by-products (fresh)	EHS 2499
.12	Fish protein concentrate (containing 4% or less formic acid)	EHS 2502
.13	Fish silage (containing 3% or less formic acid with antioxidant)	EHS 2500

3.3 The Group, in assessing the submitted products, made the following observations and conclusions, as set out in the ensuing paragraphs. The resultant hazard profiles assigned by the Working Group for inclusion in the GESAMP Composite List are set out in annex 2.

EHS 2489 Hexahydro-1,3,5-trimethyl-1,3,5-triazine solution (45% or less)

3.4 The Group noted that a comprehensive set of test data had been submitted for this substance and assigned a GESAMP Hazard Profile accordingly.

Rating	A1a=(2)	A1b=NI	A1=(2)	A2=R	B1=3	B2=NI
	C1=1	C2=(1)	C3=(3)	D1=3A	D2=3	D3=Ss
	E2=D	E3=3				

EHS 2490 1-Butylpyrrolidin-2-one

3.5 In considering the submission, the Group noted that a full set of data had been provided for the product and assigned a GESAMP Hazard Profile accordingly.

Rating	A1a=1	A1b=(1)	A1=1	A2=R	B1=1	B2=0
	C1=1	C2=0	C3=0	D1=1	D2=2	D3=blank
	E2 =D	E3 =2				

EHS 2491 2-Propenoic acid, polymer with 4-(1,1-dimethylethyl)phenol, formaldehyde, 2,5-furandione, 2-methyloxirane and oxirane (65% in naphtha/xylene)

3.6 The Group considered the submission and, having noted that a full set of data had been provided for the product, assigned a GESAMP Hazard Profile, as set out below.

Rating	A1a=(5)	A1b=NI	A1=(5)	A2=NR	B1=2	B2=NI
	C1=0	C2=0	C3=(0)	D1=(0)	D2=0	D3= A
	E2=Fp	E3 =3				

EHS 2492 Tall oil acids reaction products with triethanolamine

3.7 The Group considered the submission and, having noted that a full set of data had been provided for the product, assigned a GESAMP Hazard Profile as set out below.

Rating	A1a=4	A1b=NI	A1=4	A2=NR	B1=2	B2=NI
	C1=0	C2=0	C3=(1)	D1=1	D2=0	D3= blank
	E2=Fp	E3=2				

EHS 2493 [[(2-Hydroxyethyl)imino]dimethylene]bisphosphonic acid, sodium salt

3.8 Having considered the submission, and having noted that a full set of data had been provided, assigned a GESAMP hazard profile accordingly.

Rating	A1a=0	A1b=NI	A1=0	A2=NR	B1=1	B2=NI
	C1=0	C2=0	C3=(0)	D1=0	D2=1	D3= blank
	E2=D	E3=1				

EHS 2494 Quaternary ammonium compounds, benzyl-C12-14 (even-numbered)-alkyldimethyl, chlorides solution

3.9 The Group considered the submission and, taking account of the dataset provided, assigned a GESAMP Hazard Profile accordingly.

Rating	A1a=3	A1b=NI	A1=3	A2=NR	B1=4	B2=NI
	C1=1	C2=0	C3=(3)	D1=3B	D2=3	D3=blank
	E2=D	E3=3				

EHS 2495 2-Mercaptoethanol

3.10 The Group considered the data provided for the product and assigned a GESAMP Hazard Profile accordingly.

Rating	A1a=0	A1b=NI	A1=0	A2=NR	B1=1	B2=NI
	C1=2	C2=2	C3=2	D1=2	D2=3	D3=SsT
	E2=D	E3=3				

EHS 2496 Thioglycolic acid

3.11 The Group considered the submission and, having noted that a full set of data had been provided for the product, assigned a GESAMP Hazard Profile as set out below.

Rating	A1a=0	A1b=NI	A1=0	A2=R	B1=2	B2=NI
	C1=2	C2=2	C3=3	D1=3B	D2=3	D3=blank
	E2=D	E3=3				

EHS 2497 Tall oil acids reaction products with acrylic acid and diethylenetriamine in ethylene glycol

3.12 The Group considered the submission and, noting that a full set of data had been provided, assigned a GESAMP Hazard Profile accordingly.

Rating	A1a=3	A1b=NI	A1=3	A2=R	B1=2	B2=NI
	C1=0	C2=0	C3=(1)	D1=0	D2=1	D3=Ss
	E2=D	E3=2				

EHS 2498 Benzaldehyde

3.13 The Group considered the submission and, noting that a full set of data had been provided, assigned a GESAMP Hazard Profile accordingly.

Rating	A1a=1	A1b=NI	A1=1	A2=R	B1=3	B2=NI
	C1=1	C2=(1)	C3=2	D1=2	D2=2	D3=blank
	E2=FD	E3=2				

EHS 2499 Fish by-products (fresh)

3.14 In considering the submission, the Group noted that a full set of data had been provided and assigned a GESAMP Hazard Profile accordingly. The Group noted that whilst information had been provided relating to bioaccumulation (A1 rating), it had determined that it could not be used in the assignment of the rating, thus the assignment of NI. The Group, however, concluded that, by expert judgement, a zero in brackets should be assigned for the overall A1 rating, given the nature of the product.

Rating	A1a=NI	A1b=NI	A1=(0)	A2=NR	B1=1	B2=(0)
	C1=(0)	C2=(0)	C3=(0)	D1=(0)	D2=(0)	D3=blank
	E2=F	E3=1				

EHS 2502 Fish protein concentrate (containing 4% or less formic acid)

3.15 Having considered the product and noting that a full set of data had been submitted, the Group assigned a GESAMP Hazard Profile, as set out below. The Group noted that whilst information had been provided for bioaccumulation (A1 rating), it had determined that it could not be used in the assignment of the rating, thus the assignment of NI. The Group, however, concluded that, by expert judgement, a zero in brackets should be assigned for the A1 rating, given the nature of the product.

Rating	A1a=NI	A1b=NI	A1=(0)	A2=R	B1=1	B2=(0)
	C1=(0)	C2=(0)	C3=(0)	D1=(1)	D2=(1)	D3=blank
	E2=D	E3=1				

EHS 2500 Fish silage (containing 3% or less formic acid with antioxidant)

3.16 The Group considered the submission and having reviewed the data provided, assigned a GESAMP Hazard Profile for the product. The Group noted that whilst information had been provided for bioaccumulation (A1 rating), it had determined that it could not be used in the assignment of the rating, thus the assignment of NI. The Group, however, concluded that, by expert judgement, a zero in brackets should be assigned for the A1 rating, given the nature of the product.

Rating	A1a=NI	A1b=NI	A1=(0)	A2=R	B1=0	B2=(0)
	C1=(0)	C2=(0)	C3=(0)	D1=(1)	D2=(1)	D3=blank
	E2=F	E3=1				

Additional considerations

3.17 In considering certain products, the Group noted that with regard to the B1 rating (acute aquatic toxicity), test data had been provided for only one trophic level, rather than the three identified in GESAMP Reports and Studies No.64 (microalgae, crustaceans, fish). Based on differing interpretations of the information contained therein, the experts considered whether ratings assigned based on data for only one trophic level should be placed in brackets, which are normally used for an estimated value (arrived at, for example, by extrapolation or read across), or decided based on the quality of the study provided. The Group concluded that a full unbracketed rating could be assigned based on test data for a single trophic level and that this should be determined on a case by case basis, depending on the specific nature of the product and the quality of data provided. The Group further noted that since the existing text left the matter open to some interpretation, it agreed that the description of the process for assigning the B1 rating in section 4.2.1.3 of GESAMP Reports and Studies No.64 would need to be clarified when next revised.

4 CORRESPONDENCE WITH THE INDUSTRY/GOVERNMENT AND CONSIDERATION OF ISSUES RELATED TO EVALUATIONS

CORRESPONDENCE WITH INDUSTRY/GOVERNMENT

4.1 The Group recalled that, as part of its work, it routinely considered requests for the re-assessment of products, based on the submission of new data or new scientific insights into the hazards of substances that may result in a change to a hazard profile.

4.2 The Group also recalled its ongoing review and update of the existing GESAMP/EHS files for completeness and consistency and the communication of any amendments relating to such matters to the attention of the IMO (i.e. the ESPH Working Group of the PPR Sub-Committee).

4.3 Further to the requests received, the Group considered the following products:

.1	n-Alkanes (C9-C11)	EHS 2449
.2	Sodium hydroxide(30% or less)/Sodium aluminate (25% or less) solution	EHS 2486
.3	Cyclohexanone	EHS 539
.4	Alkyl (C10-C15, C12 rich) phenol poly(4-12)ethoxylate	EHS 2480
.5	Alkane (C14-C17) sulphonic acid, sodium salt	EHS 334
.6	Fish silage protein concentrate (containing 4 % or less formic acid)	EHS 2487
.7	Drilling brines	EHS 427
.8	Methanol	EHS 951
.9	Ethylene glycol	EHS 761
.10	Products submitted by industry for review of C3 ratings*:	
	.1 Methyl diethanolamine	EHS 1491
	.2 Triethanolamine	EHS 1338
	.3 Ethylenediaminetetraacetic acid, tetrasodium salt solution	EHS 759
	.4 Methyl isobutyl ketone	EHS 971
	.5 Pentanoic acid	EHS 1109
	.6 n-Pentyl propionate	EHS 1484
	.7 Propionic acid	EHS 1186
	.8 Dodecyl diphenyl ether disulphonate solution	EHS 723
	.9 Nonylphenol poly(4+)ethoxylate	EHS 1063
	.10 Vinyl acetate	EHS 1400
	.11 n-Propyl alcohol	EHS 1180
	.12 Alcohol (C12-C16) poly(1-6)ethoxylates	EHS 294
	.13 Alcohol (C12-C16) poly(20+)ethoxylates	EHS 1482
	.14 Alcohol (C9-C11) poly(2.5-9)ethoxylate	EHS 2094
	.15 Diethylene glycol	EHS 628
	.16 Dodecene (all isomers)	EHS 720
	.17 Alcohol (C12-C16) poly(7-19)ethoxylates	EHS 1481
	.18 Dialkyl (C7-C13) phthalates	EHS 566
	.19 Methylamyl alcohol	EHS 958
	.20 Nonyl alcohol (all isomers)	EHS 1059
	.21 Olefin mixtures (C5-C15)	EHS 2321
	.22 Sodium alkyl (C14-C17) sulphonates (60-65% solution)	EHS 334
	.23 Undecyl alcohol	EHS 1382
	.24 White spirit, low (15-20%) aromatic	EHS 1411

4.4 The results of the Group's discussions on the respective substances are set out below. Any agreed modifications to the respective hazard profiles for these substances are highlighted in the revised GESAMP/EHS Composite List, set out in annex 3.

EHS 2449 n-Alkanes (C9-C11)

4.5 Following a review of the data submitted, the Group agreed that it supported the proposed change in the C3 rating from (2) to (0)

Amended rating C3=(0)

* Some of the product names used are the TRNs for these products rather than the EHS names used in the Composite List. Transport reference number (TRN) terms are the names employed for shipping purposes, as utilized in the IBC Code and the MEPC.2/Circular.

EHS 2486 Sodium hydroxide (30% or less)/Sodium aluminate (25% or less) solution

4.6 The Group considered the data submitted regarding a re-evaluation of B1 rating of the product, initially assessed at EHS 53.

4.7 The Group considered the data submitted for sodium aluminate. However, having reviewed more than 30 studies for an analogous substance, the Group assigned a bracketed rating, using the geometric mean for the most sensitive species for the analogous substance, having determined that this was a better data set on which to review the rating. The Group concluded that based on these data, the B1 rating should be amended from 5 to (4).

Amended rating B1=(4)

EHS 539 Cyclohexanone

4.8 Following a review of the data submitted, the Group agreed that the data supported the proposed change in the E2 rating from FE to FED.

Amended rating E2=FED

EHS 2480 Alkyl (C10-C15, C12 rich) phenol poly(4-12)ethoxylate

4.9 Following a review of the data submitted, the Group agreed that the data supported the proposed change in the B1 rating from (0) to (2).

Amended rating B1=(2)

EHS 334 Alkane (C14-C17) sulphonic acid, sodium salt (60-65% solution)

4.10 The Group considered the name assigned to the product and agreed to add the percentage range of the solution to the name to make it more precise, as follows:

Amended name Alkane (C14-C17) sulphonic acid, sodium salt (60-65% solution)

EHS 2487 Fish silage protein concentrate (containing 4% or less formic acid)

4.11 The Group considered a request from industry for a re-evaluation of this material. Having reviewed the data submitted, the Group agreed with the proposed amendments to the E2 rating from Fp to D.

Amended rating E2=D

EHS 427 Drilling brines

4.12 The Group, having reviewed the entries in the GESAMP Composite list linked to the entries for drilling brines contained in the IBC Code further to the request of ESPH 22, determined that no modification to the Composite List entries was needed. However, the Group was of the view that a review of the IBC Code entries was required, as the products listed in the IBC Code entries were not in line with the associated Composite List entries. As a consequence, GESAMP/EHS recommended that ESPH review the IBC Code entries against the EHS entries, and consider renaming these as set out below, to better reflect the nature of the product that had been assessed by GESAMP/EHS.

- EHS 427 Calcium bromide (solutions)
- TRN 308 Drilling brines, including: calcium bromide solution, calcium chloride solution and sodium chloride solution
- Proposed TRN change Drilling brines (containing calcium bromide)

- EHS 427 Zinc chloride
- TRN 308 Drilling brines (containing zinc salts)
- Proposed TRN change Drilling brines (containing zinc chloride)

4.13 Further to its review of drilling brines, the Group also reviewed the text of the Reports and Studies No.64 related to inorganic material, as contained in section 4.1.2 of the document. The Group noted that table 3 in section 4.1.2.2 was potentially misleading and that qualifiers to the *inorganic* ratings set out in the table had never been used in the assignment of hazard profiles. As a consequence the Group noted that this section would need to be reviewed and redrafted. To this end, the Group agreed to work intersessionally on the section and prepare a revised marked up version for consideration at EHS 55.

EHS 951 Methanol

4.14 The Group considered a request from industry for a re-evaluation of this product. In particular the Group was requested to review the existing ratings related to acute toxicity under columns C1, C2, C3 and D3. In addition to the rationale and data provided to support the re-assessment, the Group considered a number of additional scientific publications, evaluations by national and international bodies, as well as the existing data on file.

4.15 Having reviewed the justification provided and the supporting data, the Group confirmed the existing ratings for acute oral and dermal toxicity in columns C1 and C2.

4.16 Concerning the lethal effects resulting from acute inhalation, the Group determined that there was insufficient evidence to justify a change to the existing C3 rating. The Group also noted that the data submitted had already been evaluated at a previous session. It further noted that the existing rating was in line with the common classification by industry and the existing legal hazard classification in Europe.

4.17 With regard to the T rating in column D3, the hazard evaluation criteria outlined in GESAMP Reports and Studies No.64 (2nd edition) specify that an assigned rating for target organ specific effects can be triggered by either oral, dermal or inhalation exposure.

4.18 The Group, nevertheless, considered a single exposure to Methanol via inhalation. Scientific studies concerning occupational intoxication, data on metabolism in primates and recent substance evaluation reports, including those addressing acute exposure guidelines, were taken into consideration. The reports, in particular those referring to cases of occupational exposure leading to long term visual impairment, confirmed the existing T rating under column D3 for inhalation exposure. The Group concluded that there was no scientific evidence to clearly demonstrate that a single high-level inhalation exposure would not cause damage to the optical nerve. It was also noted that the GHS classifications used by chemical companies in Europe were consistent with the current evaluation.

EHS 761 Ethylene glycol

4.19 The Group, having reviewed the data provided for ethylene glycol, determined that it justified the removal of the T from the D3 rating and that the E3 rating should be amended from 2 to 1. Recalling that this rating had been assigned based on data considered for ethylene glycol at EHS 53, the Group agreed that the ratings for Ethylene glycol/sodium alkyl carboxylates mixture (EHS 2475) and Ethylene glycol/sodium alkyl carboxylates/borax mixture (EHS 2477) would also need to be reviewed.

Amended rating D3=blank E3=1

EHS 2475 Ethylene glycol (>85%)/Sodium alkyl carboxylates mixture

4.20 As a result of its discussions related to Ethylene glycol, the Group reviewed the data submitted to EHS 53 for this product and agreed to remove the T from the D3 rating and amend the E3 from 2 to 1.

Amended rating D3=blank E3=1

EHS 2477 Ethylene glycol (>75%)/Sodium alkyl carboxylates/borax mixture

4.21 As a result of its discussions related to ethylene glycol, the Group reviewed the data submitted to EHS 53 for this product and agreed to remove the T from the D3 rating.

Amended rating D3=R

Products submitted by industry for review of C3 rating

4.22 A number of products were submitted by industry, as set out below, with a request to review the C3 ratings. In considering the submissions, the Group noted that, in most cases, the necessary test studies and data required to consider a change in rating had not been provided. Consequently, the Group concluded that it would not be in position to consider the products at this session and noted that further information would be needed for it to consider the products at its next session.

.1	Methyl diethanolamine	EHS **1491**
.2	Triethanolamine	EHS **1338**
.3	Ethylenediaminetetraacetic acid, tetrasodium salt solution	EHS **759**
.4	Methyl isobutyl ketone	EHS **971**
.5	Pentanoic acid	EHS **1109**
.6	n-Pentyl propionate	EHS **1484**
.7	Propionic acid	EHS **1186**
.8	Dodecyl diphenyl ether disulphonate solution	EHS **723**
.9	Nonylphenol poly(4+)ethoxylate	EHS **1063**
.10	Vinyl acetate	EHS **1400**
.11	n-Propyl alcohol	EHS **1180**
.12	Alcohol (C12-C16) poly(1-6)ethoxylates	EHS **294**
.13	Alcohol (C12-C16) poly(20+)ethoxylates	EHS **1482**
.14	Alcohol (C9-C11) poly(2.5-9)ethoxylate	EHS **2094**
.15	Diethylene glycol	EHS **628**
.16	Dodecene (all isomers)	EHS **720**
.17	Alcohol (C12-C16) poly(7-19)ethoxylates	EHS **1481**
.18	Dialkyl (C7-C13) phthalates	EHS **566**

.19	Methylamyl alcohol	EHS **958**
.20	Nonyl alcohol (all isomers)	EHS **1059**
.21	Olefin mixtures (C5-C15)	EHS **2321**
.22	Sodium alkyl (C14-C17) sulphonates (60-65% solution)	EHS **334**
.23	Undecyl alcohol	EHS **1382**
.24	White spirit, low (15-20%) aromatic	EHS **1411**

Note: Some of the names given above are the shipping TRN terms rather than the EHS names used in the Composite List. Transport reference number (TRN) terms are the names employed for shipping purposes, as set out in the IBC Code.

4.23 With regard to the information requirements, the Group agreed that the following properties and technical information would be required in order to re-evaluate the C3 rating for these products:

.1 vapour pressure;
.2 saturated vapour concentration; and
.3 specific test reports, studies or summaries submitted as separate pdf or MS Word files. The submission of web links to relevant reference information would not suffice.

4.24 Where information is provided based on read across or by analogy, a clear rationale and explanation would be needed.

4.25 Submissions should be made on an individual chemical basis, rather than as a consolidated list or table, together with by the necessary supporting evidence, to facilitate the work of the experts during the session.

4.26 The above, together with the Group's consideration of the submissions for a number of new products, led to a general discussion regarding the quality of submissions, in particular with regard to the format for submission of test studies and supporting technical data. To this end, the Group agreed that guidance was needed that clearly set out the type and format of information to be submitted for both new products and re-assessments and requested the Secretariat to develop this intersessionally for review at EHS 55.

ISSUES RELATED TO EVALUATIONS

Paraffins

4.27 Further to the work initiated at EHS 52 on the alkanes, the Group had agreed to review the entries of paraffins, as part of the family of alkanes, to ensure the same consistency in the ratings. This work was initiated at EHS 53, with a view to further progressing it at EHS 54.

4.28 Based on the information considered at EHS 53, the Group concluded that there were four possible groupings for paraffins and agreed to further refine these and develop appropriate names and profiles at EHS 54.

4.29 Taking into consideration the background documentation prepared by the Chair noting that no information had been received from industry, further to the request made by ESPH 22 and PPR 4, the Group agreed to the following revised entries for paraffins in the Composite List:

.1 **n-Alkanes (C10-C20)** (EHS 0296) containing predominantly n-alkanes but with "contamination" of up to 5% iso- and cyclo- alkanes as well as sometimes aromatics (below 2%), but no carcinogenic aromatic compounds

.2 **Paraffin wax, highly-refined** (EHS 1086) of pharmaceutical or food grade consisting of n-, iso-, and cyclo- alkanes, mineral oil up to 0.5%, but very low in polyaromatic hydrocarbons (below 0.1%)

.3 **Paraffin wax, semi-refined** (EHS 2244) of technical quality consisting of n-, iso-, and cyclo- alkanes with aromatic hydrocarbons up to 15%, mineral oil up to 5%, and polyaromatic hydrocarbons with up to 1%, in general, but carcinogens (e.g. Benzene) always below 0.1%; and

.4 **Hydrocarbon wax**, (EHS 2278) crude material from the refinery, consisting of n-, iso-, and cyclo- alkanes with aromatic hydrocarbons up to 15%, and polyaromatic hydrocarbons (above 0.1%).

4.30 Having agreed to the entries and their general compositional characteristics, the Group reviewed the associated GESAMP Hazard Profiles and modified these based on data compiled by the Group, as set out in the ensuing paragraphs.

EHS 296 n-Alkanes (C10-C20)

4.31 Based on a review of the data, the Group agreed to amend the ratings as follows: A1b from NI to (5), B2 from (0) to NI, C3 from (1) to (0), D2 from (0) to (1) and E2 from F to Fp.

Amended rating	A1b=(5)	B2=NI	C3=(0)	D2=(1)	E2=Fp

EHS 1086 Paraffin wax, highly-refined (previously Paraffin wax)

4.32 The Group agreed to rename the entry from "Paraffin wax" to "Paraffin wax, highly-refined" to better define the specific nature of the product and agreed to amended ratings as follows: A1a amended from 0 to (5), A1 from 0 to (5), A2 from R to (NR), B2 from NI to (0), C3 from (1) to (0), D1 from 1 to (0), D2 from 1 to (0).

Amended rating	A1a=(5)	A1=(5)	A2=(NR)	B2=(0)	C3=(0)
	D1=(0)	D2=(0)			

EHS 2244 Paraffin wax, semi-refined (previously Petrolatum)

4.33 The Group agreed to rename the entry from "Petrolatum" to "Paraffin wax, semi-refined" to better define the specific nature of the product and agreed to amended ratings as follows: A1a amended from 0 to (5), A1 from 0 to (5), B2 from NI to (0), C1 from 0 to (0), C2 form 0 to (0), C3 from 2 to (0), D1 from 1 to (0), D2 from 1 to (0), T added to D3, E3 from 2 to 3.

Amended rating	A1a=(5)	A1=(5)	B2=(0)	C1=(0)	C2=(0)
	C3=(0)	D1=(0)	D2=(0)	D3=T	E3=3

EHS 2278 Hydrocarbon wax (previously Hydrocarbon waxes)

4.34 The Group agreed to rename the entry from Hydrocarbon waxes to Hydrocarbon wax. Based on the data, the Group agreed to amend the ratings as follows: A1a amended from 0 to (5), A1 from 0 to (5), C1 from 0 to (0), C2 form 0 to (0), D1 from 1 to (0), D2 from 1 to (0), C and T added to D3, E3 from 2 to 3.

Amended name	Hydrocarbon wax

Amended rating	A1a=(5)	A1=(5)	C1=(0)	C2=(0)
	D1=(0)	D2=(0)	D3=CT	E3=3

4.35 The Group further noted that the outcome of this work would need to be duly communicated to the ESPH Working Group, as there would be a need to review the corresponding chapter 17 entries and chapter 19 synonyms, to ensure these were in line with the new Composite List entries, in particular given the deletion of Petrolatum wax from the Composite List.

EHS 1122 Petrolatum wax

4.36 The Group agreed to delete the entry for "Petrolatum wax (EHS 1122)", noting that this would now be adequately covered by the revised entry for "Hydrocarbon wax (EHS 2278)".

Alkylphenols

4.37 Having reviewed the two alkylphenol submissions at EHS 53 (EHS 2476 and EHS 2478), the Group noted potential inconsistencies in the ratings of structurally similar products on the GESAMP Composite List to the ratings assigned to these products and agreed to review these at a future session, with a view to ensuring a consistent approach in the assessment of all substances within the product family. Due to time constraints, the Group was unable to consider these at this meeting and agreed to defer these for consideration at EHS 55, time permitting.

5 CLASSIFICATION ISSUES

Elimination of information on tainting of seafood within the Composite List

5.1 Further to a proposal by the Chair, the Group discussed whether information on tainting of seafood, which is currently included in column E1, should be eliminated from the Composite List.

5.2 The Group noted that data on tainting in the scientific literature was scarce and little testing had been done since this criterion was first introduced. The last review of the available data on tainting of seafood had been carried out some 30 years ago. The Group further recalled that the ratings for tainting in the GESAMP Composite List were last verified in 2000 and that GESAMP/EHS had stopped assigning ratings for tainting in 2002.

5.3 The Group further noted that, more recently, tainting had been deleted from all regulations for classifying substances carried by ships in both bulk and packaged form. Additionally, the Group noted that, from a scientific standpoint, no relevant work on tainting of seafood had been published in the scientific literature in the past 20 years, nor had there any requests for information or comments on tainting in the intervening period.

5.4 Taking the above information into account, the Group agreed to delete all references to tainting in column E1 in the next revision of Reports and Studies No.64. The Group noted, however, that the existing rating information on tainting would be retained within the GISIS database for historical purposes, should there be any queries about tainting in the future.

5.5 The full rationale for the elimination of tainting and the specific amendments required to Reports and Studies No.64 are set out in annex 4.

Introduction of new column E1 on flammability

5.6 The Group recalled that at EHS 51 it had considered the use of the GESAMP Hazard Profile for chemical spill response. Initial discussions confirmed that the addition of flammability in the GESAMP Hazard Profile would be valuable information for first responders when responding to incidents involving hazardous materials.

5.7 The Group further recalled that it had revisited the topic at EHS 53 and had agreed that flashpoint information would be the most appropriate flammability property to use for developing a new rating in the GESAMP Hazard Profile.

5.8 The Group considered information prepared intersessionally providing the full background and rationale for establishing a new rating for flammability that also proposed criteria and ratings for, based on flashpoint ranges.

5.9 In this connection, the following ratings for flammability were agreed by the Group:

Ratings for flammability

Rating		Flash point range (ºC)	
Non-flammable	**0**	**>93**	
Combustible	**1**	**>60**	**≤93**
Flammable	**2**	**≥23**	**≤60**
Highly flammable	**3**		**<23**

5.10 Given that it had agreed to remove all tainting information currently included in column E1 earlier in this agenda item, the Group agreed to re-assign column E1 for the purposes of capturing the new flammability ratings.

5.11 The Group also undertook an initial review of the proposed text for revising Reports and Studies No.64, but noted it would require a more detailed review at EHS 55, with a view to final agreement at that session.

5.12 The Group also agreed to review flashpoint information for products, extracted from the GISIS database, intersessionally.

5.13 The document considered by the Group containing the rationale and proposed new criteria the assignment of a flammability rating in column E1 is as set out in annex 5.

Amendments to the column C3

5.14 The Group considered information prepared intersessionally that expanded on the initial discussions initiated at EHS 53 regarding the review of the C3 rating criteria. The information proposed a new categorization and related rating criteria for the C3 column, as well as amended text for inclusion in Reports and Studies No.64.

5.15 Having determined that more time would be needed to conduct a more thorough review of the proposed changes and to test out the new criteria on a number of substances to ensure its applicability, the Group agreed to work intersessionally and defer a more detailed review of the amendments to EHS 55.

5.16 The document considered by Group on the proposed refinement of column C3 (Acute inhalation toxicity) is as set out in annex 6.

6 CONSOLIDATION OF EXISTING DATA FILES

6.1 The Group recalled the ongoing review of the GESAMP/EHS files was a regular agenda item.

6.2 Not having had sufficient time to review these files during the session, in light of other higher priority work on its agenda, the Group agreed to defer consideration of this item to its next session.

7 COMMUNICATION AND PUBLICATION

7.1 Under this agenda item, the Group reconfirmed its intention, as had been discussed under agenda item 2, to initiate a revision of the second edition of Reports and Studies No.64 for finalization and publication in time for the 50th anniversary of GESAMP in late 2019.

7.2 Noting that the Group had discussed a number of revisions to the Reports and Studies No.64 during the session, the Group instructed the Secretariat to disseminate a Word version of the current version to all members of the Group, to facilitate the intersessional work of the sub-groups working on the revision of the respective sections.

8 ANY OTHER BUSINESS

Membership issues

8.1 The Group invited Dr. Bette Meek to formally join GESAMP/EHS as a standing member of the expert group, further to her initial participation as a first time expert at GESAMP/EHS 53, and welcomed her important contribution to the Group's work going forward.

Note of condolence

8.2 The Group noted with sadness the passing of Mr. Peter Howgate, a long-time member and contributor as a past expert of the GESAMP/EHS Working Group.

Note of thanks

8.3 Having noted that this would be the last session of Mr. Derek James, the Group expressed its deep appreciation for the long and dedicated service to the Group. The Group also recognized his immense contribution over many years, together with his good humour and quick wit, which would be sorely missed.

Redevelopment of GISIS

8.4 The Group noted the information provided by the Secretariat on the current redevelopment of the GISIS Bulk Chemicals Module to, primarily, create an online reporting capability for:

.1 GESAMP Product Data Reporting Form;
.2 PPR Product Data Reporting Form; and
.3 Tripartite agreements.

8.5 In addition, the Secretariat noted that many new efficiencies were being introduced, as well as new querying capability, to facilitate the extraction of relevant information from the database in support of the work of both the ESPH Working Group and GESAMP/EHS Working Group.

8.6 Having considered the information presented, the Group indicated its interest in having a presentation on the revised GISIS module at EHS 55.

Draft provisional agenda and date of the next session

8.7 The Group agreed to the draft provisional agenda for its next session, set out in annex 7 and that its next meeting would be held in the April/May 2018, at IMO headquarters in London, with specific dates to determined.

9 CONSIDERATION AND ADOPTION OF THE REPORT

9.1 The Group adopted its report, noting that it would be circulated, together with the updated GESAMP Composite List, as PPR.1/Circ.4.

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ANNEX 1

LIST OF MEMBERS ATTENDING THE FIFTY-FOURTH SESSION OF THE GESAMP/EHS WORKING GROUP

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ANNEX 2

GESAMP HAZARD PROFILES FOR NEW SUBSTANCES SUBMITTED FOR EVALUATION TO GESAMP/EHS 54

1 This annex sets out the GESAMP Hazard Profiles (GHP) assigned for the products submitted to the current session. The respective substances and their GHPs are summarized in the subsequent table.

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ANNEX 2 - GESAMP HAZARD PROFILES FOR NEW SUBSTANCES SUBMITTED FOR EVALUATION TO GESAMP/EHS 54

26 May 2017

EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Benzaldehyde	2498	1	NI	1	R	3	NI	1	(1)	2	2	2			FD	2
Benzaldehyde	4132								**CAS No**		100-52-7					
1-Butylpyrrolidin-2-one	2490	1	(1)	1	R	1	0	1	0	0	1	2			D	2
	4124								**CAS No**		3470-98-2					
Fish by-products (fresh)	2499	NI	NI	(0)	NR	1	(0)	(0)	(0)	(0)	(0)	(0)			F	1
Fresh grinded fish by-products	3893								**CAS No**							
Fish protein concentrate (containing 4% or less formic acid)	2502	NI	NI	(0)	R	1	(0)	(0)	(0)	(0)	(1)	(1)			D	1
	4090								**CAS No**							
Fish silage (containing 3% or less formic acid with antioxidant)	2500	NI	NI	(0)	R	0	(0)	(0)	(0)	(0)	(1)	(1)			F	1
Fish silage	3892								**CAS No**							
Hexahydro-1,3,5-trimethyl-1,3,5-triazine solution (45% or less)	2489	(2)	NI	(2)	R	3	NI	1	(1)	(3)	3A	3	Ss		D	3
	4123								**CAS No**		108-74-7					
[[(2-hydroxyethyl)imino]dimethylene]bisphosphonic acid, sodium salt	2493	0	NI	0	NR	1	NI	0	0	(0)	0	1			D	1
	4127								**CAS No**		22036-78-8					
2-Mercaptoethanol	2495	0	NI	0	NR	1	NI	2	2	2	2	3	SsT		D	3
	4129								**CAS No**		60-24-2					
2-Propenoic acid polymer with 4-(1,1-dimethylethyl)phenol, formaldehyde, 2,5-furandione, 2-methyloxirane and oxirane (65% in naphtha/xylene)	2491	(5)	NI	(5)	NR	2	NI	0	0	(0)	(0)	0	A		Fp	3
	4125								**CAS No**		178603-70-8					
Quaternary ammonium compounds, benzyl-C12-14 (even-numbered)-alkyldimethyl, chlorides solution	2494	3	NI	3	NR	4	NI	1	0	(3)	3B	3			D	3
	4128								**CAS No**		68424-85-1					
Tall oil acids reaction products with diethylenetriamine and acrylic acid in ethylene glycol	2497	3	NI	3	R	2	NI	0	0	(1)	0	1	Ss		D	2
	4131								**CAS No**		85586-18-1					
Tall oil acids reaction products with triethanolamine	2492	4	NI	4	NR	2	NI	0	0	(1)	1	0			Fp	2
	4126								**CAS No**		67784-78-5					
Thioglycolic acid	2496	0	NI	0	R	2	NI	2	2	3	3B	3			D	3
	4130								**CAS No**		68-11-1					

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ANNEX 3

UPDATED GESAMP COMPOSITE LIST

Notes:

1 In the Composite List, both EHS and TRN (shipping) names are shown for each product. The alphabetical listing of the products is based on the EHS names.

2 Any changes introduced in the table since the last issue of the Composite List are highlighted.

3 Entries with an EHS name marked with a single asterisk (*) represent cleaning additive components that have only a partial hazard profile assigned. These profiles **cannot be used** for mixture calculations in relation to bulk shipments.

4 Entries with an EHS name marked with a double asterisk (**) represent mixture components for which only a partial hazard profile has been assigned. These profiles **may be used** for mixture calculations in relation to bulk shipments.

5 Entries with an EHS name marked with a hash mark (#) reflect that for the **C3 rating**, the product, as a vapour rather than an aerosol or mist, could be considered to have a lower inhalation hazard for the purposes of risk management.

6 Entries with an EHS name marked with an exclamation mark (!) refer to a mixture that contains components with substantially different physical properties and therefore different physical behaviours when released in the marine environment. The **E2 rating** assigned reflects the most severe impact from an environmental standpoint. For example, a mixture assigned a rating of Fp may also have a major component(s) with sinker characteristics (S) or dissolver characteristics (D).

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ANNEX 3 - GESAMP/EHS COMPOSITE LIST
GESAMP Hazard Profiles

EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Acetic acid	13	0	0	0	R	1	NI	1	1	1	3C	3			D	3
Acetic acid	64								**CAS No**		64-19-7					
Acetic anhydride	12	0	0	0	R	1	NI	1	0	2	3	3	A		D	3
Acetic anhydride	65								**CAS No**		108-24-7					
Acetochlor (ISO)	2047	3	2	2	NR	4	NI	1	0	(1)	0	0			S	2
Acetochlor	66								**CAS No**		34256-82-1					
Acetone	15	0	0	0	R	0	0	0	0	0	1	2		NT	DE	2
Acetone	67								**CAS No**		67-64-1					
Acetone cyanohydrin	14	0	0	0	R	4	NI	3	4	3	(3)	(3)			D	3
Acetone cyanohydrin	68								**CAS No**		75-86-5					
Acetonitrile	16	0	0	0	R	1	NI	1	1	2	1	2			D	2
Acetonitrile	69								**CAS No**		75-05-8					
Acetonitrile (Low purity grade)	2333	0	NI	0	R	3	NI	1	1	2	1	2			D	2
Acetonitrile (Low purity grade)	2876								**CAS No**							
Acid mixtures (nitrating acid)	289	Inorg	NI	0	Inorg	(2)	NI	3	3	4	3C	3			D	3
Nitrating acid (mixture of sulphuric and nitric acids)	497								**CAS No**							
Acrylamide	23	0	0	0	R	2	0	2	2	(2)	1	2	CMNSs		D	3
Acrylamide solution (50% or less)	70								**CAS No**		79-06-1					
Acrylic acid	24	0	0	0	R	4	NI	2	2	2	3C	3			D	3
Acrylic acid	71								**CAS No**		79-10-7					
Acrylic acid / dimethyldiallylammonium chloride copolymer, partial sodium salt (MWt 1500-4000, aqueous solution)	2406	0	NI	0	R	0	0	0	0	(0)	0	0			D	0
Acrylic acid / dimethyldiallylammonium chloride copolymer, partial sodium salt (MWt 1500-4000, aqueous solution)	3682								**CAS No**							
Acrylic acid/ethenesulphonic acid copolymer with phosphonate groups, sodium salt (aqueous solution)	2417	0	NI	0	NR	0	NI	0	(0)	(0)	0	0			D	0
Acrylic acid/ethenesulphonic acid copolymer with phosphonate groups, sodium salt solution	3693								**CAS No**							
Acrylonitrile	25	0	2	2	NR	3	0	2	3	3	2	2	CMSs	NT	DE	3
Acrylonitrile	72								**CAS No**		107-13-1					
Acrylonitrile-styrene copolymer dispersion in polyether polyol (LOA)	1432	NI	0	0	NI	1	NI	0	(0)	(0)	0	(0)			S	0
Acrylonitrile-Styrene copolymer dispersion in polyether polyol	73								**CAS No**							

ANNEX 3 - GESAMP/EHS COMPOSITE LIST
GESAMP Hazard Profiles

EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Adiponitrile	26	0	0	0	R	1	NI	3	(3)	3	3	(3)			FD	3
Adiponitrile	74								**CAS No**		111-69-3					
Alachlor (ISO)	1488	3	3	3	NI	4	1	1	0	(2)	1	0	CSs		S	3
Alachlor technical (90% or more)	75								**CAS No**		15972-60-8					
Alcoholic beverages	293	0	0	0	R	0	0	0	0	0	0	1			D	1
Alcoholic beverages, n.o.s.	85								**CAS No**							
Alcoholic silicasol	2198	0	0	0	R	0	0	0	0	0	1	2			DE	2
Tetraethyl silicate monomer/oligomer (20% in ethanol)	2475								**CAS No**							
Alcohol(C12-C16) poly(20 and above)ethoxylates	1482	4	(3)	(3)	R	2	0	(0)	(0)	(2)	2	1			D	2
Alcohol (C12-C16) poly(20+)ethoxylates	78								**CAS No**							
Alcohol(C6-C17)(secondary) poly(3-6)ethoxylate	722	4	3	3	R	4	2	0	(0)	(3)	3	2			D	3
Alcohol (C6-C17) (secondary) poly(3-6)ethoxylates	81								**CAS No**							
Alcohol(C6-C17)(secondary) poly(7-12)ethoxylate	295	3	3	3	R	4	1	1	0	(3)	3	3			D	3
Alcohol (C6-C17) (secondary) poly(7-12)ethoxylates	80								**CAS No**							
Alcohol (C10-C18) poly (7) ethoxylate (#)	2488	NI	(3)	(3)	R	3	1	(1)	(0)	(2)	(2)	(2)			D	2
Alcohol (C10-C18) poly (7) ethoxylate	3979								**CAS No**		85422-93-1					
Alcohol (C8-C11) poly(2.5-9)ethoxylates	2094	3	3	3	R	3	NI	1	0	(2)	(2)	(2)			D	2
Alcohol (C9-C11) poly(2.5-9)ethoxylate	2209								**CAS No**							
Alcohol(C12-C16) poly(1-6) ethoxylates	294	5	3	3	R	4	1	0	0	(2)	2	2			FD	2
Alcohol (C12-C16) poly(1-6) ethoxylates	77								**CAS No**							
Alcohol(C12-C16) poly(7-19)ethoxylates	1481	4	3	3	R	4	1	1	0	(3)	3	3			D	3
Alcohol (C12-C16) poly(7-19)ethoxylates	79								**CAS No**							
Alcohol(C12-C14)poly(2)ethoxylate sulphate, sodium salt (*)	2419	2	NI	2	R	3	NI	NI	NI	NI	NI	NI			NI	NI
	3695								**CAS No**							
Alcohols (C8-C11)	2279	5	2	2	(R)	(3)	(1)	(0)	(0)	(2)	(2)	(2)			Fp	2
Alcohols (C8-C11), primary, linear and essentially linear	2887								**CAS No**							
Alcohols, C13 and above as individuals and mixtures	2039	5	2	2	R	4	1	0	0	0	(1)	(1)			Fp	2
Alcohols (C13+)	86								**CAS No**							
Alcohols, C10-C16 ethoxylated propoxylated (*)	2450	0	NI	0	R	3	NI	NI	NI	NI	NI	NI			NI	NI
	3868								**CAS No**							

ANNEX 3 - GESAMP/EHS COMPOSITE LIST
GESAMP Hazard Profiles

EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Alcohols (C12-C13), linear	2294	5	2	2	R	4	(1)	0	0	(1)	1	1			Fp	2
Alcohols (C12-C13), primary, linear and essentially linear	2950								**CAS No**							
Alcohols (C14-C18), linear	2293	5	2	2	R	0	1	0	0	(1)	1	1			Fp	2
Alcohols (C14-C18), primary, linear and essentially linear	2951								**CAS No**							
Alcohols, linear (C10-C14)	2365	(5)	(2)	(2)	(R)	(4)	(1)	0	0	(2)	(2)	(2)			Fp	2
Decyl/Dodecyl/Tetradecyl alcohol mixture	3128								**CAS No**							
Alkanes (C6-C9)	2202	(5)	NI	(5)	(R)	(4)	NI	(0)	(0)	(1)	(2)	(2)	N		FE	2
Alkanes (C6-C9)	88								**CAS No**							
Iso- and cyclo-alkanes (C10-C11)	2203	(5)	NI	(5)	NI	(0)	(0)	(0)	(0)	(1)	(1)	(0)			F	1
Iso- and cyclo-alkanes (C10-C11)	393								**CAS No**							
Iso-and cyclo-alkanes (C12+)	2204	(5)	NI	(5)	NI	(0)	NI	0	0	(1)	(0)	(0)	A		NI	2
Iso- and cyclo-alkanes (C12+)	394								**CAS No**							
Alkanes (C5-C7), linear and branched	2464	(5)	NI	(5)	(R)	(3)	(0)	0	0	0	2	0	NA		E	2
Alkanes (C5-C7), linear and branched	3799								**CAS No**							
Alkanes (C10-C17), linear and branched	2463	(5)	NI	(5)	R	0	1	0	0	(0)	0	0	A		F	3
Alkanes (C10-C17), linear and branched	3815								**CAS No**							
Alkanes (C10-C26), linear and branched	2392	0	NI	0	R	0	NI	0	0	(1)	1	1	A		F	3
Alkanes (C10-C26), linear and branched, (flashpoint >60°C)	3562								**CAS No**		90622-53-0					
Alkanes (C10-C26), linear and branched	2392	0	NI	0	R	0	NI	0	0	(1)	1	1	A		F	3
Alkanes (C10-C26), linear and branched (flashpoint ≤60°C)	3736								**CAS No**		90622-53-0					
n-Alkanes (C9-C11)	2449	(5)	NI	(5)	R	0	(0)	0	0	(0)	1	0	A		F	3
	3867								**CAS No**							
n-Alkanes (C10-C20)	296	(5)	(5)	(5)	(R)	(0)	NI	(0)	(0)	(0)	(1)	(1)	A		Fp	3
n-Alkanes (C10+)	471								**CAS No**							
Alkane (C14-C17) sulphonic acid, sodium salt (60-65% solution)	334	2	2	2	R	3	1	0	0	(2)	2	2			D	2
Sodium alkyl (C14-C17) sulphonates (60-65% solution)	1153								**CAS No**							
Alkaryl polyether (C9-C20) (LOA)	1974	4	NI	4	NR	3	NI	0	0	(3)	2	3			S	2
Alkaryl polyethers (C9-C20)	90								**CAS No**							
Alkenoic acid ester, borated	2376	5	(3)	(3)	R	2	NI	0	0	(2)	2	0			Fp	2
	3153								**CAS No**							

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Alkenylamide, long chain, more than C10	1858	3	NI	3	(NR)	4	NI	0	(0)	(1)	0	1			Fp	2
Alkenyl (C11+) amide	838								**CAS No**							
Alkenyl succinic anhydride	298	0	0	0	NR	1	NI	0	0	(2)	2	(2)	SsSr		FD	2
Alkenyl (C16-C20) succinic anhydride	2336								**CAS No**							
Alkyl acrylate/Vinyl pyridine copolymer in toluene	299	2	2	2	R	2	0	0	0	(2)	2	2	RNA		F/Fp	3
Alkyl acrylate/vinylpyridine copolymer in toluene	94								**CAS No**							
Alkyl/cyclo(C4-C5)alcohols	2447	(1)	(1)	(1)	(R)	(2)	(0)	(1)	(1)	(2)	(2)	(3)			FED	3
	3825								**CAS No**							
Alkyl/cyclo(C4-C5)alcohols	2447	(1)	(1)	(1)	(R)	(2)	(0)	(1)	(1)	(2)	(2)	(3)			FED	3
Alkyl/cyclo (C4-C5) alcohols	3962								**CAS No**							
Alkyl amine, alkenyl acid ester, mixture	1433	NI	NI	NI	NI	1	NI	(0)	(0)	NI	NI	NI			Fp	2
Alkyl(C8+)amine, Alkenyl (C12+) acid ester mixture	98								**CAS No**							
Alkylaryl phosphate mixtures (more than 40% Diphenyl tolyl phosphate, less than 0.02% ortho-isomers)	2267	4	4	4	R	4	4	0	0	(1)	1	0			S	1
Alkylaryl phosphate mixtures (more than 40% Diphenyl tolyl phosphate, less than 0.02% ortho-isomers)	280								**CAS No**							
Alkylated phenols (C4-C9)	2273	0	2	0	NR	1	0	1	0	(2)	1	1			Fp	2
Alkylated (C4-C9) hindered phenols	2575								**CAS No**							
Alkylbenzene distillation bottoms	300	0	2	2	NR	0	(3)	0	0	1	1	1			Fp	2
Alkylbenzene distillation bottoms	3106								**CAS No**							
Alkyl (C12-C15) benzene/indane/indene mixture	1872	0	4	4	NR	0	NI	0	0	0	0	2			FE	2
Alkylbenzene, alkylindane, alkylindene mixture (each C12-C17)	103								**CAS No**							
Alkylbenzene mixtures (containing at least 50% of toluene)	2303	(2)	(2)	(2)	(R)	(3)	(0)	0	0	(2)	2	2	ACMNR		FE	3
Alkylbenzene mixtures (containing at least 50% of toluene)	2909								**CAS No**							
Alkyl (C3-C4) benzenes	2206	(3)	NI	(3)	R	4	NI	0	0	(2)	(2)	(1)			FE	2
Alkyl (C3-C4) benzenes	91								**CAS No**							
Alkyl (C5-C8) benzenes	2207	5	4	4	(NR)	4	NI	0	0	(2)	(2)	(1)			F	2
Alkyl (C5-C8) benzenes	92								**CAS No**							
Alkyl benzenes, C9-C17 (straight or branched)	1783	0	4	4	NR	1	NI	0	(0)	(1)	(1)	(1)			F	1
Alkyl(C9+)benzenes	100								**CAS No**							
Alkylbenzenes mixture (containing less than 1% naphthalene)	2423	3	3	3	NR	4	NI	0	0	(2)	2	1	AC		F	3
Alkylbenzenes mixture (containing less than 1% naphthalene)	3600								**CAS No**							

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Alkylbenzenes mixtures (containing naphthalene)	2424	(3)	(3)	(3)	(NR)	(4)	NI	0	0	(1)	1	1	AC		F	3
Alkylbenzenes mixture (containing naphthalene)	3698								**CAS No**							
Alkylbenzenes mixtures (containing naphthalene)	2424	(3)	(3)	(3)	(NR)	(4)	NI	0	0	(1)	1	1	AC		F	3
Alkylbenzenes mixtures (containing naphthalene)	3966								**CAS No**							
Alkyl(C11-C13)benzenesulphonates, straight chain	301	3	3	3	R	3	1	1	(1)	(3)	2	3			FD	3
Alkylbenzene sulphonic acid, sodium salt solution	102								**CAS No**		42615-29-2					
Alkyl dithiocarbamate (C19-C35)	2236	0	NI	0	NI	1	NI	0	0	(0)	0	0			S	0
Alkyl dithiocarbamate (C19-C35)	2538								**CAS No**							
Alkyl dithio thiadiazole (C6-C24) (LOA)	1981	5	NI	5	NR	1	NI	0	0	(0)	0	0			S	2
Alkyl dithiothiadiazole (C6-C24)	104								**CAS No**							
Alkyl(C4-C20) ester copolymer (LOA)	1986	NI	0	0	NR	0	NI	0	0	(0)	0	0			Fp	2
Alkyl ester copolymer (C4-C20)	2202								**CAS No**							
Alkylnaphthalenes, crude (containing less than 1% naphthalene)	2425	4	4	4	R	4	NI	0	0	(1)	1	1	AC		F	3
Alkylnaphthalenes (containing less than 1% naphthalene), crude	3601								**CAS No**							
Alkylnaphthalenes, crude (containing naphthalene)	2426	(4)	(4)	(4)	(R)	(4)	NI	0	0	(1)	1	1	AC		F	3
Alkylnaphthalenes (containing naphthalenes), crude	3699								**CAS No**							
Alkyl (C7-C9) nitrates	8	4	NI	4	NR	3	NI	0	0	(3)	2	(3)			F	3
Alkyl (C7-C9) nitrates	93								**CAS No**							
Alkyl(C8-C40)phenol sulphide (LOA)	1985	0	NI	0	NR	0	NI	0	0	(1)	1	1			FD	1
Alkyl (C8-C40) phenol sulphide	2253								**CAS No**							
Alkyl(C8-C9)phenylamine, in aromatic solvent (LOA)	2096	2	NI	2	NR	3	NI	(0)	(0)	(2)	2	2			S	2
Alkyl (C8-C9) phenylamine in aromatic solvents	2200								**CAS No**							
Alkyl (C9-C15) phenyl propoxylate	2188	0	NI	0	NR	0	NI	0	0	(2)	2	2			FD	2
Alkyl (C9-C15) phenyl propoxylate	2430								**CAS No**							
Alkyl[(C8-C10)/(C12-C14)]:(<40%/>60%)polyglucoside mixture solution (max 55% active material)	2134	3	NI	3	R	3	0	0	0	(3)	2	3			D	3
Alkyl (C8-C10)/(C12-C14):(40% or less/60% or more) polyglucoside solution (55% or less)	2248								**CAS No**		141464-42-8					
Alkyl[(C8-C10)/(C12-C14)]:(>60%/<40%)polyglucoside mixture solution (max 55% active material)	2135	3	NI	3	R	2	0	0	0	(2)	2	2			D	2
Alkyl (C8-C10)/(C12-C14):(60% or more/40% or less) polyglucoside solution(55% or less)	2246								**CAS No**		141464-42-8					
Alkyl(C8-C10)polyglucoside solution (max 65% active material)	2136	1	NI	1	R	2	0	0	0	(2)	2	2			D	2
Alkyl (C8-C10) polyglucoside solution (65% or less)	2245								**CAS No**		68515-73-1					

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Alkyl (C8-C10)/(C12-C14):(50%/50%) polyglucoside solution (55% or less)	2133	3	NI	3	R	2	0	0	0	(3)	2	(3)			D	3
Alkyl (C8-C10)/(C12-C14):(50%/50%) polyglucoside solution (55% or less)	2247								**CAS No**							
Alkyl(C12-C14)polyglucoside solution (max 55% active material)	2137	3	NI	3	R	3	0	0	0	(3)	2	3			D	3
Alkyl (C12-C14) polyglucoside solution (55% or less)	2249								**CAS No**		110615-47-9					
Alkyl (C10-C15, C12 rich) phenol poly(4-12)ethoxylate (#)	2480	(5)	(4)	(4)	(NR)	(2)	NI	(0)	(0)	(2)	(2)	(1)			SD	2
Alkyl (C10-C15, C12 rich) phenol poly(4-12)ethoxylate	3953								**CAS No**							
Alkylsulphonic acid ester of phenol (MESAMOLL)	1878	5	NI	5	NR	0	NI	0	(0)	(0)	0	0			S	0
Alkyl sulphonic acid ester of phenol	1701								**CAS No**		91082-17-6					
Alkyltoluenes	2374	0	2	2	NR	0	NI	0	(0)	(1)	0	1			Fp	2
Alkyl (C18+) toluenes	3148								**CAS No**							
Alkyl(C18-C28)toluenesulphonic acid (>90% in mineral oil)	2429	0	4	4	NR	3	NI	0	0	(3)	2	3	Ss		Fp	3
Alkyl(C18-C28)toluenesulphonic acid	3658								**CAS No**							
Alkyl(C18-C28)toluenesulphonic acid, calcium salts, borated (up to 70% in mineral oil)	2404	0	4	4	NR	0	NI	(0)	(0)	(1)	(1)	(1)	Ss		S	2
Alkyl(C18-C28)toluenesulphonic acid, calcium salts, borated	3661								**CAS No**							
Alkyl(C18-C28)toluenesulphonic acid, calcium salts, high overbase (up to 70% in mineral oil)	2373	(0)	(4)	(4)	(NR)	(0)	NI	0	0	(0)	0	0	Ss		S	2
Alkyl (C18-C28) toluenesulphonic acid, calcium salts, high overbase	3149								**CAS No**							
Alkyl(C18-C28)toluenesulphonic acid, calcium salts, low overbase (up to 60% in mineral oil)	2409	0	4	4	NR	0	NI	0	0	(2)	2	0	Ss		Fp	3
Alkyl (C18-C28) toluenesulphonic acid, calcium salts, low overbase	3685								**CAS No**							
Allyl alcohol	28	0	0	0	R	4	NI	2	3	3	2	3	A		D	3
Allyl alcohol	105								**CAS No**		107-18-6					
Aluminium chloride/hydrogen chloride solution	336	Inorg	NI	2	Inorg	3	1	1	(0)	3	(3C)	3			D	3
Aluminium chloride (30% or less)/Hydrochloric acid (20% or less) solution	110								**CAS No**							
Aluminium hydroxide, sodium hydroxide, sodium carbonate solution (40% or less)	2438	Inorg	0	0	Inorg	3	NI	0	0	(3)	3B	(3)			D	3
Aluminium hydroxide, sodium hydroxide, sodium carbonate solution (40% or less)	3807								**CAS No**							
Aluminium sulphate solution	2205	Inorg	Inorg	2	Inorg	3	1	1	(0)	(3)	(2)	(3)			D	3
Aluminium sulphate solution	111								**CAS No**							
2-(2-Aminoethoxy) ethanol	75	0	0	0	NR	1	0	0	1	(3)	3	3			D	3
2-(2-Aminoethoxy) ethanol	37								**CAS No**		929-06-6					
Aminoethylethanolamine	68	0	0	0	NR	1	0	0	0	(3)	3B	2	SsSr		D	3
Aminoethyl ethanolamine	112								**CAS No**		111-41-1					

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Aminoethylethanolamine/Aminoethyldiethanolamine solution	74	Inorg	0	0	NR	1	0	(0)	(0)	(3)	(3B)	(2)	SsSr		D	3
Aminoethyldiethanolamine/Aminoethylethanolamine solution	113								**CAS No**							
N-Aminoethylpiperazine	88	0	0	0	NR	1	NI	0	2	(3)	3	3	Ss		D	3
N-Aminoethylpiperazine	472								**CAS No**		140-31-8					
2-Amino-2-(hydroxymethyl)-1,3-propanediol solution(40% or less)	89	0	NI	0	NI	1	NI	0	0	NI	NI	NI			D	NI
2-Amino-2-hydroxymethyl-1,3-propanediol solution (40% or less)	38								**CAS No**		77-86-1					
2-Amino-2-methyl-1-propanol	90	0	0	0	NR	1	NI	0	0	(3)	3	3			DE	3
2-Amino-2-methyl-1-propanol	39								**CAS No**		124-68-5					
Ammonia (anhydrous and aqueous, 28% or less)	91	0	0	0	R	3	2	1	(2)	3	3	3			DE	3
Ammonia aqueous (28% or less)	114								**CAS No**		7664-41-7					
Ammonium bisulphite solution, greater than 15%	1730	NI	NI	NI	NI	1	NI	NI	NI	NI	2	2			D	2
Ammonium bisulphite solution (70% or less)	115								**CAS No**		10192-30-0					
Ammonium chloride solution (less than 25%)	2388	0	NI	0	Inorg	1	0	0	(0)	(2)	2	2			D	2
Ammonium chloride solution (less than 25%) (*)	3411								**CAS No**		12125-02-9					
Ammonium lignosulphonate (46% solution in water)	2086	0	NI	0	NR	0	NI	0	(0)	(0)	0	0			D	0
Ammonium lignosulphonate solutions	118								**CAS No**		8061-53-0					
Ammonium nitrate solutions	1912	Inorg	0	0	Inorg	1	NI	0	0	(2)	1	2			D	2
Ammonium nitrate solution (93% or less)	119								**CAS No**							
Ammonium polyphosphate solution	1764	Inorg	0	0	Inorg	1	NI	0	0	0	1	0			D	1
Ammonium polyphosphate solution	120								**CAS No**		10-34-0					
Ammonium sulphate	99	0	0	0	Inorg	1	(0)	0	(0)	(0)	0	0			D	0
Ammonium sulphate solution	121								**CAS No**		7783-20-2					
Ammonium sulphide soln.(45% or less)	310	Inorg	0	0	Inorg	3	NI	1	0	(2)	2	2	N		D	2
Ammonium sulphide solution (45% or less)	122								**CAS No**		12124-99-1					
Ammonium thiocyanate/ Ammonium thiosulphate solution	1732	Inorg	0	0	Inorg	1	NI	1	NI	NI	NI	NI			D	NI
Ammonium thiocyanate (25% or less)/Ammonium thiosulphate (20% or less) solution	123								**CAS No**							
Ammonium thiosulphate solution (60% or less)	312	Inorg	0	0	Inorg	1	NI	0	(0)	(1)	(1)	(1)			D	1
Ammonium thiosulphate solution (60% or less)	124								**CAS No**		7783-18-8					
Amyl acetate	255	2	2	2	NR	2	NI	0	(0)	0	1	1		NT	FED	2
Amyl acetate (all isomers)	125								**CAS No**		628-63-7					

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tert-Amyl ethyl ether	2428	3	NI	3	NR	1	NI	0	(0)	0	2	2			E	2
tert-Amyl ethyl ether	3623								**CAS No**							
tert-Amyl methyl ether	2141	1	NI	1	NI	4	NI	1	0	2	0	1			ED	2
tert-Amyl methyl ether	2210								**CAS No**							
Amyl propionate	1484	2	NI	2	R	2	NI	0	0	(2)	2	1			F	2
n-Pentyl propionate	484								**CAS No**		624-54-4					
Aniline	261	0	0	0	R	3	2	2	2	3	1	3	CTSs	NT	FD	3
Aniline	127								**CAS No**		62-53-3					
Apple juice	275	0	NI	0	R	0	0	0	0	0	0	0			D	0
Apple juice	130								**CAS No**							
Aryl polyolefin (C11-C50) (LOA)	1979	NI	NI	0	NR	0	NI	0	0	0	0	0			Fp	2
Aryl polyolefins (C11-C50)	131								**CAS No**							
L-Aspartic acid, homopolymer, sodium salt (aqueous solution)	2421	0	0	0	NR	0	NI	0	(0)	0	0	0			D	0
L-Aspartic acid, homopolymer, sodium salt (aqueous solution)	3697								**CAS No**							
Aviation alkylates (C8 paraffins and iso-paraffins BPt 95-120 Celcius)	286	(5)	NI	(5)	(R)	(4)	NI	0	0	(0)	(0)	(0)			FE	2
Aviation alkylates (C8 paraffins and iso-paraffins BPT 95 - 120°C)	132								**CAS No**							
Aziridine polymer with methyloxirane (78% in diethylene glycol monoethyl ether)	2436	0	NI	0	NR	2	0	0	0	0	1	0			Fp	2
Aziridine polymer with methyloxirane (78% in diethylene glycol monoethyl ether)	3751								**CAS No**							
Barium long chain alkaryl sulphonate (C11-C50) (LOA)	1978	4	NI	4	NR	3	NI	2	0	(2)	0	0			S	2
Barium long chain (C11-C50) alkaryl sulphonate	2370								**CAS No**							
Benzaldehyde	2498	1	NI	1	R	3	NI	1	(1)	2	2	2			FD	2
Benzaldehyde	4132								**CAS No**		100-52-7					
Benzene	324	2	1	1	R	2	NI	1	0	0	2	2	CTM	NT	E	3
Benzene and mixtures having 10% benzene or more (i)	133								**CAS No**		71-43-2					
Benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl), 4-hydroxy-C7-C9 alcohols branched and linear	2378	0	3	3	NR	3	0	0	0	(0)	0	0			Fp	2
Benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl), 4-hydroxy-C7-C9 alcohols branched and linear	3405								**CAS No**							
Benzene sulphonyl chloride	320	1	1	1	R	3	NI	1	(2)	(3)	3	3	Ss		SD	3
Benzene sulphonyl chloride	134								**CAS No**		98-09-9					
1,2,4-Benzene tricarboxylic acid, trioctyl ester	1733	0	0	0	NR	0	NI	0	(0)	2	1	1			Fp	2
Benzenetricarboxylic acid, trioctyl ester	136								**CAS No**							

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Benzyl acetate	348	1	NI	1	R	3	1	1	0	2	1	1			SD	2
Benzyl acetate	138								**CAS No**		140-11-4					
Benzyl alcohol	349	1	NI	1	R	2	NI	1	1	2	2	2			SD	2
Benzyl alcohol	139								**CAS No**		100-51-6					
Benzyl chloride	352	NI	1	1	R	3	1	1	(2)	3	3	3	CSsA		S	3
Benzyl chloride	140								**CAS No**		100-44-7					
Bis(2-ethylhexyl) terephthalate	2437	0	3	3	R	0	0	0	0	(1)	1	1			Fp	2
Bis(2-ethylhexyl) terephthalate	3752								**CAS No**							
N,N-Bis(2-hydroxyethyl)oleamide (LOA)	2110	5	NI	5	NR	NI	NI	0	0	(2)	2	2			Fp	2
N,N-bis(2-hydroxyethyl) oleamide	2201								**CAS No**							
Bismuth oxide	2483	Inorg	(0)	(0)	Inorg	(0)	(0)	0	(0)	0	0	0			S	0
Bismuth oxide	4059								**CAS No**		1304-76-3					
Bis[3-(triethoxysilyl)propyl]amine	2444	1	NI	1	R	1	NI	0	0	(2)	2	2			D	2
3-(Triethoxysilyl)propylamine	3823								**CAS No**		13497-18-2					
Borax, anhydrous or hydrated, crude or refined	359	Inorg	0	0	Inorg	1	0	0	0	(1)	1	1	R		S	3
Borax	143								**CAS No**		1303-96-4					
Boric acid	360	Inorg	0	0	Inorg	1	0	0	(0)	(1)	1	1	R		S	3
Boric acid	2254								**CAS No**		10043-35-3					
Bromochloromethane	2084	1	1	1	NR	1	NI	0	0	0	1	0			SD	1
Bromochloromethane	145								**CAS No**		74-97-5					
1-Bromopropane	2229	2	NI	2	NI	NI	NI	0	(0)	0	(2)	(2)			SD	2
1-Bromopropane	2696								**CAS No**							
Butanol	381	0	(0)	0	R	0	NI	0	0	0	2	3		NT	D	3
Butyl alcohol (all isomers)	2216								**CAS No**		71-36-3					
Butanol	381	0	(0)	0	R	0	NI	0	0	0	2	3		NT	D	3
n-Butyl alcohol	474								**CAS No**		71-36-3					
sec-Butanol	383	0	(0)	0	R	0	NI	0	0	0	0	2		NT	D	2
sec-Butyl alcohol	638								**CAS No**		78-92-2					
tert-Butanol	384	0	0	0	NR	1	NI	0	0	0	1	3		NT	D	3
tert-Butyl alcohol	686								**CAS No**		75-65-0					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
2-Butanone	385	0	NI	0	R	1	0	0	0	1	2	2			DE	2
Methyl ethyl ketone	446								**CAS No**		78-93-3					
Butene oligomer	386	0	NI	0	NR	(4)	0	0	0	0	0	1			FE	2
Butene oligomer	146								**CAS No**							
Butyl acetate	387	1	NI	1	R	2	NI	0	0	0	0	1			FED	2
Butyl acetate (all isomers)	147								**CAS No**		123-86-4					
Butyl acrylate	390	2	NI	2	R	3	NI	1	1	1	2	2	SsA		FED	2
Butyl acrylate (all isomers)	148								**CAS No**		141-32-2					
Butylamine	392	0	NI	0	R	2	NI	2	2	3	3C	3			DE	3
Butylamine (all isomers)	154								**CAS No**		109-73-9					
Butyl benzene	1774	4	NI	4	NI	4	1	0	0	(2)	2	1			Fp	2
Butylbenzene (all isomers)	155								**CAS No**		104-51-8					
Butyl benzyl phthalate	398	4	4	4	R	4	2	0	0	(0)	(0)	(0)	R		S	3
Butyl benzyl phthalate	149								**CAS No**		85-68-7					
Butyl butyrate	399	2	NI	2	(R)	2	NI	0	0	(1)	1	NI			FE	2
Butyl butyrate (all isomers)	150								**CAS No**		109-21-7					
Butyl/Decyl/Cetyl/Eicosyl methacrylate mixture	2295	(5)	NI	(5)	(R)	(3)	NI	0	0	0	2	2	Ss		FE	2
Butyl/Decyl/Cetyl/Eicosyl methacrylate mixture	153								**CAS No**							
Butylene glycol(s)	402	0	NI	0	R	1	NI	1	0	0	0	0			D	1
Butylene glycol	156								**CAS No**		110-63-4					
Butylene glycol methyl ether acetate	953	1	1	1	R	3	NI	0	(0)	(1)	1	1			FED	1
3-Methoxybutyl acetate	58								**CAS No**		4435-53-4					
Butylene glycol monomethyl ether	952	0	NI	0	R	1	NI	0	0	(1)	0	1			D	1
3-Methoxy-1-butanol	57								**CAS No**		2517-43-3					
1,2-Butylene oxide	403	0	NI	0	NR	2	NI	1	1	2	2	2	C		DE	3
1,2-Butylene oxide	8								**CAS No**		106-88-7					
Butyl methacrylate	409	2	NI	2	NR	1	NI	0	0	0	2	2	Ss		FE	2
Butyl methacrylate	151								**CAS No**		97-88-1					
Butyl octyl phthalate	410	5	NI	5	(R)	0	2	0	(0)	(1)	(1)	(1)			Fp	2
Butyl octyl phthalate	2749								**CAS No**		84-78-6					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Butyl phosphate/dibutyl phosphate mixture	2434	2	NI	2	R	1	0	0	(0)	(3)	2	3			D	3
Butyl phosphate/dibutyl phosphate mixture	3749								**CAS No**							
Butyl propionate	1483	2	NI	2	R	2	NI	0	0	0	1	1			FED	2
n-Butyl propionate	476								**CAS No**		590-01-2					
1-Butylpyrrolidin-2-one	2490	1	(1)	1	R	1	0	1	0	0	1	2			D	2
	4124								**CAS No**		3470-98-2					
Butyl stearate	413	0	NI	0	(R)	0	NI	0	NI	NI	2	NI			Fp	2
Butyl stearate	152								**CAS No**		123-95-5					
Butyraldehyde	416	1	NI	1	R	2	0	0	1	0	3	3			DE	3
Butyraldehyde (all isomers)	157								**CAS No**		123-72-8					
Butyric acid	418	0	NI	0	R	2	0	0	0	0	3A	3			D	3
Butyric acid	158								**CAS No**		107-92-6					
Butyrolactone	420	0	NI	0	R	(3)	NI	1	(0)	0	0	1	C		D	3
gamma-Butyrolactone	360								**CAS No**		96-48-0					
Calcium alkyl (long chain) salicylate (overbased) in mineral oil (LOA)	70	0	NI	0	NR	2	NI	0	0	(1)	(1)	(1)	Ss		Fp	3
Calcium long-chain alkyl salicylate (C13+)	166								**CAS No**							
Calcium alkyl phenol sulphide,polyolefin phosphorosulphide mixture (LOA)	1435	NI	NI	NI	NR	4	NI	0	0	(0)	NI	NI			NI	NI
Calcium alkyl (C9) phenol sulphide/Polyolefin phosphorosulphide mixture	160								**CAS No**							
Calcium alkyl salicylate	2015	3	NI	3	NR	2	NI	0	0	(2)	2	2			Fp	2
Calcium alkyl (C10-C28) salicylate	3152								**CAS No**							
Calcium bromide (solutions)	427	Inorg	NI	0	Inorg	0	0	(0)	(0)	(2)	(1)	(2)			D	2
Drilling brines, including:calcium bromide solution, calcium chloride solution and sodium chloride solution	308								**CAS No**		7789-41-5					
Calcium carbonate slurry	2016	Inorg	0	0	Inorg	0	NI	0	(0)	(0)	0	0			S	0
Calcium carbonate slurry	161								**CAS No**		471-34-1					
Calcium hydroxide	431	Inorg	0	0	Inorg	2	NI	0	(0)	(2)	1	2			S	2
Calcium hydroxide slurry	162								**CAS No**		1305-62-0					
Calcium hypochlorite solutions containing 15% Ca(OCl)2 or more	432	Inorg	0	0	Inorg	5	NI	1	0	2	3A	3			D	3
Calcium hypochlorite solution (more than 15%)	164								**CAS No**		7778-54-3					
Calcium hypochlorite solutions containing less than 15% but more than 1.5% Ca(OCl)2	2073	Inorg	0	0	Inorg	(4)	NI	1	0	2	3A	3			D	3
Calcium hypochlorite solution (15% or less)	163								**CAS No**		7778-54-3					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Calcium lignosulphonate (52% solution in water)	2087	0	NI	0	NR	0	NI	0	(0)	(0)	0	0			D	0
Calcium lignosulphonate solutions	165								**CAS No**		8061-52-7					
Calcium long chain alkaryl sulphonate (C11-C50) (LOA)	1973	NI	0	0	NR	0	NI	0	0	(1)	1	1			FD	1
Calcium alkaryl sulphonate (C11-C50)	169								**CAS No**							
Calcium long chain alkyl (C5-C10) phenate (LOA)	2106	0	NI	0	NR	2	NI	0	0	(0)	0	0			FD	1
Calcium long-chain alkyl (C5-C10) phenate	168								**CAS No**							
Calcium long chain alkyl (C11-C40) phenate (LOA)	2097	0	NI	0	NR	0	NI	0	0	(1)	1	1			Fp	2
Calcium long-chain alkyl (C11-C40) phenate	167								**CAS No**							
Calcium long chain alkyl phenate sulphide (C8-C40) (LOA)	1756	0	NI	0	NR	1	NI	0	0	(1)	1	1			Fp	2
Calcium long-chain alkyl phenate sulphide (C8-C40)	170								**CAS No**							
Calcium long-chain alkyl phenolic amine (C8-C40)	1728	NI	NI	NI	NR	0	NI	0	0	(1)	1	(1)			Fp	2
	171								**CAS No**							
Calcium long-chain alkyl (C18-C28) salicylate	2383	0	NI	0	NR	0	NI	0	0	(1)	1	0	Ss		Fp	3
Calcium long-chain alkyl (C18-C28) salicylate	3426								**CAS No**							
Calcium nitrate	1803	Inorg	0	0	Inorg	0	NI	0	(0)	(1)	1	1			D	1
Calcium nitrate solutions (50% or less)	172								**CAS No**		10124-37-5					
Calcium nitrate/ Magnesium nitrate/Potassium chloride solution	1734	Inorg	0	0	Inorg	1	0	0	(0)	(1)	(1)	1			D	1
Calcium nitrate/Magnesium nitrate/Potassium chloride solution	173								**CAS No**							
Camelina oil	2440	(0)	NI	(0)	(R)	(0)	(0)	(0)	(0)	(1)	(0)	(1)			Fp	2
Camelina oil	3767								**CAS No**		68956-68-3					
Camphor oil, white	1897	NI	NI	NI	NI	NI	NI	2	NI	(2)	1	NI		(T)	FE	2
Camphor oil	174								**CAS No**		8008-51-3					
Caprolactam	436	0	NI	0	R	1	0	1	1	2	1	2			D	3
epsilon-Caprolactam (molten or aqueous solutions)	310								**CAS No**		105-60-2					
Carbolic oil	437	(3)	3	(3)	(NR)	(3)	(1)	2	2	3	3	3	ATNCM		FED	3
Carbolic oil	176								**CAS No**							
Carbon disulphide	439	2	1	1	NR	3	NI	2	(3)	4	3A	3	RN		SD	3
Carbon disulphide	177								**CAS No**		75-15-0					
Cashew nut shell oil (untreated)	443	0	NI	0	R	0	NI	(0)	(0)	(2)	2	(2)	Ss		Fp	3
Cashew nut shell oil (untreated)	179								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Castor oil (containing less than 10% free fatty acids)	2314	0	NI	0	R	(2)	NI	0	0	(1)	1	1			Fp	2
Castor oil	3044								**CAS No**							
Cesium Formate, drilling brines	2384	0	3	3	Inorg	2	NI	1	0	(2)	2	2			D	2
Cesium formate solution (*)	3421								**CAS No**		3495-36-1					
Cetyl/Eicosyl methacrylate (mixture)	445	0	NI	0	(NR)	(0)	NI	0	(0)	(1)	(1)	(1)			Fp	2
Cetyl/Eicosyl methacrylate mixture	180								**CAS No**							
Chlorinated paraffins (C18 and above) with any level of chlorine	2024	0	4	4	NR	0	2	0	0	(1)	(1)	(1)	C		S	3
Chlorinated paraffins (C18+) with any level of chlorine	183								**CAS No**							
Chlorinated paraffins (C10-C13) with 60% chlorine or more	2021	5	5	5	NR	5	2	0	0	(1)	1	1	C		S	3
Chlorinated paraffins (C10-C13)	181								**CAS No**							
Chlorinated paraffins (C10- C13) with less than 60% chlorine	2020	5	5	5	NR	5	3	(0)	(0)	(1)	(1)	(1)	C		S	3
Chlorinated paraffins (C10-C13) (60% chlorine or less)	2832								**CAS No**							
Chlorinated paraffins (C14-C17) with less than 1% shorter chain length	2112	5	4	4	NR	6	3	0	0	(2)	2	2	C		S	3
Chlorinated paraffins (C14-C17) (with 50% chlorine or more, and less than 1% C13 or shorter chains)	182								**CAS No**							
Chloroacetic acid	450	0	NI	0	R	2	0	2	3	(4)	3C	3	A		D	3
Chloroacetic acid (80% or less)	184								**CAS No**		79-11-8					
Chlorobenzene	456	2	2	2	NR	3	0	1	0	2	2	0			S	2
Chlorobenzene	185								**CAS No**		108-90-7					
Chlorohydrins	463	0	NI	0	R	0	NI	(2)	(2)	(3)	(3A)	3	C		D	3
Chlorohydrins (crude)	187								**CAS No**		96-24-2					
N-(3-Chloro-2-hydroxypropyl) trimethylammonium chloride solution (75% or less)	2286	0	0	0	NR	1	NI	0	0	(2)	0	(2)	C		D	3
N-(3-Chloro-2-hydroxypropyl)trimethyl ammonium chloride solution (75% or less)	2579								**CAS No**							
4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt solution	1536	2	NI	2	NI	2	NI	1	0	2	1	1			S	2
4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt solution	62								**CAS No**							
Chloronitrobenzenes	467	2	2	2	NR	3	NI	2	2	2	1	1			S	2
o-Chloronitrobenzene	533								**CAS No**		25167-93-5					
1-(4-Chlorophenyl)-4,4-dimethyl-3-pentanone	1772	3	3	3	NR	3	NI	0	0	(1)	1	0			S	1
1-(4-Chlorophenyl)-4,4- dimethyl-pentan-3-one	21								**CAS No**							
2-Chloropropionic acid	474	0	NI	0	R	1	NI	1	(3)	2	3A	3			D	3
2- or 3-Chloropropionic acid	36								**CAS No**		598-78-7					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
3-Chloropropylene	478	1	1	1	R	3	NI	1	0	2	1	3	T		E	3
Allyl chloride	106								**CAS No**		107-05-1					
Chlorosulphonic acid	479	Inorg	0	0	Inorg	2	NI	(2)	(3)	4	3C	3			D	3
Chlorosulphonic acid	188								**CAS No**		7790-94-5					
m-Chlorotoluene	481	3	NI	3	NR	2	NI	2	0	(2)	1	1			S	2
m-Chlorotoluene	426								**CAS No**		108-41-8					
o-Chlorotoluene	480	3	3	3	NR	3	1	0	0	0	1	1			S	1
o-Chlorotoluene	534								**CAS No**		95-49-8					
o-Chlorotoluene	480	3	3	3	NR	3	1	0	0	0	1	1			S	1
Chlorotoluenes (mixed isomers)	189								**CAS No**		95-49-8					
p-Chlorotoluene	482	3	3	3	NR	3	0	0	0	0	1	1			S	2
p-Chlorotoluene	551								**CAS No**		106-43-4					
Choline chloride, solutions	485	0	NI	0	R	1	NI	0	(0)	(0)	0	0			D	0
Choline chloride solutions	190								**CAS No**		67-48-1					
Cinnamaldehyde	2485	1	(2)	(2)	R	2	0	1	1	(2)	2	1	Ss		SD	2
Cinnamaldehyde	4061								**CAS No**		104-55-2					
Citric acid	493	0	NI	0	R	1	0	0	(0)	(3)	1	3			D	3
Citric acid (70% or less)	748								**CAS No**		77-92-9					
Citric juices	494	0	0	0	Inorg	0	0	0	0	0	0	0			D	0
Water	740								**CAS No**							
Clay	495	Inorg	0	0	Inorg	0	0	0	0	0	0	0			S	0
Clay slurry	191								**CAS No**							
Coal slurry	498	Inorg	0	0	Inorg	0	0	0	0	0	0	0			S	0
Coal slurry	192								**CAS No**							
Coal tar	499	(4)	4	4	NR	3	1	0	0	0	2	2	CMR	(T)	S	3
Coal tar	193								**CAS No**		8007-45-2					
Coal tar naphtha	500	3	NI	3	NR	3	NI	0	0	(1)	1	1	C	(T)	FE	3
Coal tar naphtha solvent	194								**CAS No**		8030-30-6					
Coal tar pitch (molten)	491	3	(3)	(3)	NR	(4)	(2)	0	0	(1)	1	0	CM		S	3
Coal tar pitch (molten)	195								**CAS No**		65996-93-2					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Cobalt naphthenate in solvent naphtha	501	NI	NI	NI	NR	3	NI	0	(0)	(1)	NI	1	C		FE	3
Cobalt naphthenate in solvent naphtha	196								**CAS No**							
Cocoa butter	2342	0	NI	0	R	0	NI	(0)	(0)	(1)	(0)	(1)			Fp	2
Cocoa butter	3096								**CAS No**							
Coconut acid oil	2370	0	0	0	R	3	NI	(0)	(0)	(1)	(1)	(1)			Fp	2
Coconut acid oil	3139								**CAS No**							
Coconut fatty acid distillate	2366	0	NI	0	R	(3)	NI	0	(0)	(1)	(1)	(1)			Fp	2
Coconut fatty acid distillate	3130								**CAS No**							
Coconut oil	503	0	NI	0	R	1	NI	0	(0)	(1)	0	(1)			Fp	2
Coconut oil	2772								**CAS No**		8001-31-8					
Coconut oil fatty acid	505	0	0	0	(R)	(3)	NI	0	(0)	(1)	(1)	(1)			Fp	2
Coconut oil fatty acid	197								**CAS No**		61788-47-4					
Coconut oil fatty acid methyl ester	506	5	0	0	R	0	NI	(0)	(0)	(0)	(0)	(1)			Fp	2
Coconut oil fatty acid methyl ester	198								**CAS No**		61788-59-8					
Copper salt of long chain(>C17) alkanoic acid (LOA)	2111	0	NI	0	(R)	2	NI	0	0	(0)	0	0			Fp	2
Copper salt of long chain (C17+) alkanoic acid	2214								**CAS No**							
Corn oil	521	0	NI	0	R	(2)	NI	0	(0)	(1)	1	1			Fp	2
Corn Oil	2781								**CAS No**		8001-30-7					
Cotton seed oil	523	0	NI	0	R	(2)	NI	(0)	(0)	(1)	0	1			Fp	2
Cotton seed oil	2783								**CAS No**		8001-29-4					
Creosote (coal tar)	524	(4)	(4)	(4)	NR	4	(2)	1	0	2	2	1	CM	(T)	S	3
Creosote (coal tar)	199								**CAS No**		8001-58-9					
Creosote (wood tar)	525	NI	NI	NI	NR	5	NI	1	0	2	2	1	CM	(T)	SD	3
Creosote (wood)	200								**CAS No**		8021-39-4					
Cresol/Phenol/Xylenol mixture	2471	(2)	(2)	(2)	R	(3)	(1)	1	2	3	3B	3			SD	3
Cresol/Phenol/Xylenol mixture	4021								**CAS No**							
Cresols (mixed isomers)	527	2	2	2	R	3	(1)	2	2	4	3A	3		T	SD	3
Cresols (all isomers)	201								**CAS No**		1319-77-3					
Cresylic acids, dephenolized	1875	2	2	2	R	3	0	(2)	(2)	(3)	(3A)	(3)		(T)	S	3
Cresylic acid, dephenolized	202								**CAS No**							

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Cresylic acid, sodium salt solution	1914	(2)	(2)	(2)	(R)	(3)	(0)	1	(1)	(3)	3	3	TCM	(T)	D	3
Cresylic acid, sodium salt solution	203								**CAS No**							
Crotonaldehyde	528	0	NI	0	NR	4	1	2	4	4	2	3			D	3
Crotonaldehyde	204								**CAS No**		4170-30-3					
Crude Piperazine	2331	0	NI	0	R	2	NI	(1)	(2)	(3)	3	3	SsSr		D	3
Crude Piperazine	2810								**CAS No**							
Crude Tall Oil	2357	4	NI	4	R	2	0	0	0	(0)	0	0	Ss		Fp	3
Tall oil, crude	3118								**CAS No**							
1,5,9-Cyclododecatriene	534	5	5	5	NR	4	NI	0	0	1	2	1	A		F	3
1,5,9-Cyclododecatriene	17								**CAS No**		4904-61-4					
Cycloheptane	535	4	NI	4	(NR)	4	NI	(0)	0	(1)	(0)	(1)			FE	2
Cycloheptane	205								**CAS No**		291-64-5					
Cyclohexane	536	3	3	3	NR	3	NI	0	0	1	0	1			E	2
Cyclohexane	206								**CAS No**		110-82-7					
Cyclohexane-1,2-dicarboxylic acid, diisononyl ester	2472	0	3	3	R	0	0	0	0	(1)	1	0			Fp	2
Cyclohexane-1,2-dicarboxylic acid, diisononyl ester	3915								**CAS No**		166412-78-8					
Cyclohexane oxidation products, sodium salts solution	2458	0	NI	0	Inorg	1	0	0	(0)	(0)	0	0			D	0
Cyclohexane oxidation products, sodium salts solution	3739								**CAS No**							
Cyclohexanol	537	1	NI	1	R	2	NI	0	0	0	2	2			Fp	2
Cyclohexanol	207								**CAS No**		108-93-0					
Cyclohexanone	539	0	1	1	R	1	0	1	1	1	2	2			FED	2
Cyclohexanone	208								**CAS No**		108-94-1					
Cyclohexanone/Cyclohexanol mixture	1436	1	1	1	R	2	NI	1	1	1	2	2			FED	2
Cyclohexanone, Cyclohexanol mixture	209								**CAS No**							
Cyclohexyl acetate	541	2	NI	2	(R)	(2)	NI	0	0	(2)	2	1			FED	2
Cyclohexyl acetate	210								**CAS No**		622-45-7					
Cyclohexylamine	542	1	NI	1	R	2	NI	2	2	3	3	3			D	3
Cyclohexylamine	211								**CAS No**		108-91-8					
1,3-Cyclopentadiene dimer (molten)	545	3	3	3	NR	3	NI	2	0	2	2	2			Fp	2
1,3-Cyclopentadiene dimer (molten)	11								**CAS No**		77-73-6					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Cyclopentane	546	3	NI	3	NR	3	NI	(0)	(0)	0	1	(1)			E	2
Cyclopentane	212								**CAS No**		287-92-3					
Cyclopentene	547	2	NI	2	(R)	3	NI	1	1	0	2	(0)	A		E	2
Cyclopentene	213								**CAS No**		142-29-0					
Decahydronaphthalene	551	4	4	4	NR	3	NI	0	0	2	2	1			F	1
Decahydronaphthalene	214								**CAS No**		91-17-8					
Decane	554	5	NI	5	R	0	0	0	0	0	1	0			F	1
Decane	2620								**CAS No**		124-18-5					
Decanoic acid	555	4	NI	4	R	4	1	0	0	(2)	2	2			Fp	2
Decanoic acid	215								**CAS No**		334-48-5					
1-Decene	558	5	NI	5	R	4	2	0	0	0	2	0	A		F	3
Decene	216								**CAS No**		872-05-9					
Decyl acetate	1767	4	NI	4	NI	NI	NI	0	0	(1)	(1)	(1)			F	1
Decyl acetate	217								**CAS No**		112-17-4					
Decyl acrylate	559	5	NI	5	(R)	5	NI	0	0	(2)	2	1			Fp	2
Decyl acrylate	218								**CAS No**		2156-96-9					
Decyloxytetrahydrothiophene dioxide	1859	3	NI	3	NR	4	NI	0	0	(1)	1	0			Fp	2
Decyloxytetrahydrothiophene dioxide	220								**CAS No**							
Dextrose solution	562	0	0	0	R	0	NI	0	0	0	0	(0)			D	0
Dextrose solution	221								**CAS No**		50-99-7					
Dextrose solution	562	0	0	0	R	0	NI	0	0	0	0	(0)			D	0
Glucose solution	361								**CAS No**		50-99-7					
Diacetone alcohol	563	0	NI	0	R	1	0	0	0	(2)	2	2			D	2
Diacetone alcohol	226								**CAS No**		123-42-2					
Dialkyldiphenylamines (LOA)	1852	5	NI	5	NR	1	0	0	0	(0)	0	0			FD	0
Dialkyl (C8-C9) diphenylamines	2255								**CAS No**							
Dialkyl (C9 - C10) phthalates	2359	(0)	(0)	(0)	(R)	(0)	(0)	(0)	(0)	(1)	(1)	(1)			Fp	2
Dialkyl (C9 - C10) phthalates	3121								**CAS No**							
Dialkyl phthalates C9-C13	566	(0)	(4)	(4)	(NR)	(0)	(2)	(0)	(0)	(1)	(1)	(1)	R		Fp	3
Dialkyl (C7-C13) phthalates	227								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
2,6-Diaminohexanoic acid phosphonate mixed salts solution (#)	2469	1	NI	1	NR	1	(0)	(1)	(1)	(3)	(3)	(3)			D	3
2,6-Diaminohexanoic acid phosphonate mixed salts solution	3989								**CAS No**							
Diammonium hydrogen phosphate	98	0	0	0	Inorg	1	NI	0	0	(0)	(1)	(1)			D	1
Ammonium hydrogen phosphate solution	117								**CAS No**		7783-28-0					
Dibromomethane	574	1	NI	1	NR	(2)	NI	1	0	0	(2)	(2)			SD	2
Dibromomethane	228								**CAS No**		74-95-3					
Di-n-butylamine	577	2	NI	2	R	3	NI	2	2	3	3	3			FD	3
Dibutylamine	231								**CAS No**		111-92-2					
Di-butyl ether	578	3	3	3	NR	2	NI	0	0	0	1	1			FE	2
n-Butyl ether	475								**CAS No**		142-96-1					
Dibutyl hydrogen phosphonate	1857	1	NI	1	NI	2	NI	0	0	(3)	3	3			F	3
Dibutyl hydrogen phosphonate	229								**CAS No**		1809-19-4					
2,4-Di-tert-butyl phenol	2083	5	4	4	NR	4	NI	NI	NI	NI	NI	NI			NI	NI
2,4-Di-tert-butylphenol	2339								**CAS No**		96-76-4					
2,6-Di-tert-butyl phenol	2082	4	NI	4	NR	4	NI	0	0	(1)	1	1			Fp	2
2,6-Di-tert-butylphenol	2250								**CAS No**		128-39-2					
Di-n-butyl phthalate	582	4	4	4	R	4	1	0	0	1	0	1	R		S	3
Dibutyl phthalate	230								**CAS No**		84-74-2					
Dibutyl terephthalate	2430	5	(3)	(3)	R	4	2	0	0	(0)	0	0			S	0
Dibutyl terephthalate	3596								**CAS No**							
Dichlorobenzene (all isomers)	333	3	4	4	NR	3	1	1	0	1	(2)	2	CMR	T	S	3
Dichlorobenzene (all isomers)	232								**CAS No**							
3,4-Dichlorobut-1-ene	2079	2	2	2	NR	3	NI	1	0	2	2	3			S	3
3,4-Dichloro-1-butene	56								**CAS No**		760-23-6					
1,1-Dichloroethane	590	1	NI	1	NR	1	NI	1	(1)	0	2	2			SD	2
1,1-Dichloroethane	4								**CAS No**		75-34-3					
1,2-Dichloroethane	591	1	1	1	NR	2	0	1	0	2	1	2	C		SD	3
Ethylene dichloride	330								**CAS No**		107-06-2					
1,6-Dichlorohexane	593	3	NI	3	NR	3	NI	0	(0)	(0)	0	0			S	0
1,6-Dichlorohexane	19								**CAS No**		2163-00-0					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Dichloromethane	594	1	2	2	NR	1	0	1	0	0	2	2	C		SD	3
Dichloromethane	234								**CAS No**		75-09-2					
2,4-Dichlorophenol	596	3	2	2	NR	3	2	3	2	3	3	3		T	S	3
2,4-Dichlorophenol	30								**CAS No**		120-83-2					
2,4-Dichlorophenoxyacetic acid, diethanolamine salt, solution	599	0	1	1	R	2	NI	1	0	(3)	1	3		(T)	D	3
2,4-Dichlorophenoxyacetic acid, diethanolamine salt solution	32								**CAS No**							
2,4-Dichlorophenoxyacetic acid, dimethylamine salt, 70 % or less solution	600	0	1	1	R	3	NI	1	0	(3)	1	3		(T)	D	3
2,4-Dichlorophenoxyacetic acid, dimethylamine salt solution (70% or less)	33								**CAS No**							
2,4-Dichlorophenoxyacetic acid, triisopropanolamine salt soln.	602	0	NI	0	R	2	NI	1	0	(3)	(1)	3		(T)	D	3
2,4-Dichlorophenoxyacetic acid, triisopropanolamine salt solution	34								**CAS No**							
1,1-Dichloropropane	605	2	1	1	NR	2	1	0	0	1	1	1			SD	1
1,1-Dichloropropane	5								**CAS No**		78-99-9					
1,2-Dichloropropane	606	2	1	1	NR	2	0	1	0	2	2	2			SD	2
1,2-Dichloropropane	9								**CAS No**		78-87-5					
1,3-Dichloropropane	607	2	1	1	NR	2	1	0	NI	NI	NI	NI			SD	NI
1,3-Dichloropropane	12								**CAS No**		142-28-9					
Dichloropropane and dichloropropene, mixture	608	(2)	(1)	(1)	(NR)	(4)	(1)	2	1	2	3	3	CSs		SD	3
Dichloropropene/Dichloropropane mixtures	235								**CAS No**		8003-19-8					
1,3-Dichloropropene	612	1	NI	1	NR	4	1	2	1	2	3	3	CSs		SD	3
1,3-Dichloropropene	13								**CAS No**		542-75-6					
2,2-Dichloropropionic acid	609	2	2	2	NR	2	NI	1	0	(3)	3	3			D	3
2,2-Dichloropropionic acid	28								**CAS No**		75-99-0					
Di-(2-chloro-iso-propyl) ether	615	2	2	2	NR	2	NI	2	0	2	0	2			SD	2
2,2'-Dichloroisopropyl ether	25								**CAS No**		108-60-1					
Dicyclopentadiene(80-90%)/Co-dimers(10-20%), mixtures	2389	2	3	3	NR	3	0	2	0	3	2	2	AR		FED	3
Dicyclopentadiene, Resin Grade, 81-89%	3559								**CAS No**							
Diethanolamine	620	0	NI	0	R	1	0	1	0	0	2	3	T		D	3
Diethanolamine	236								**CAS No**		111-42-2					
Diethylamine	621	0	NI	0	R	2	NI	1	2	3	3C	3			DE	3
Diethylamine	240								**CAS No**		109-89-7					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
2,6-Diethylaniline	1437	3	3	3	NR	2	NI	1	1	(2)	1	2			FD	2
2,6-Diethylaniline	35								**CAS No**		579-66-8					
Diethyl benzene (mixed isomers)	624	4	4	4	NR	3	NI	0	(0)	(2)	2	1			F	2
Diethylbenzene	242								**CAS No**		25340-17-4					
Di-(2-ethylbutyl) phthalate	625	5	NI	5	R	0	2	0	0	(1)	1	(1)	R		Fp	3
Di-(2-ethylbutyl) phthalate	2750								**CAS No**		84-75-3					
Diethylene glycol	628	0	NI	0	R	0	0	1	0	2	1	1			D	2
Diethylene glycol	243								**CAS No**		111-46-6					
Diethylene glycol di-n-butyl ether	629	2	NI	2	NI	1	NI	0	0	(1)	1	1			FD	1
Diethylene glycol dibutyl ether	244								**CAS No**		112-73-2					
Diethylene glycol diethyl ether	630	0	NI	0	NR	0	NI	1	0	(2)	(2)	2			D	2
Diethylene glycol diethyl ether	245								**CAS No**		112-36-7					
Diethylene glycol initiated polyoxypropylene diamine	2353	0	NI	0	NR	2	NI	0	0	(3)	3B	(3)			D	3
Diethylene glycol initiated polyoxypropylene diamine	3113								**CAS No**							
Diethylene glycol initiated polyoxypropylene diamine	2353	0	NI	0	NR	2	NI	0	0	(3)	3B	(3)			D	3
Polyetheramine	2946								**CAS No**							
Diethylene glycol phthalate	1438	2	NI	2	NR	1	NI	0	0	(2)	(1)	2			S	2
Diethylene glycol phthalate	247								**CAS No**							
Diethylene triamine	638	0	1	1	(R)	2	NI	1	3	3	3A	3	Ss		FD	3
Diethylenetriamine	248								**CAS No**		111-40-0					
Diethylenetriamine pentaacetic acid, pentapotassium salt solution (40%) (**)	2466	1	NI	1	NR	2	NI	NI	NI	NI	NI	NI			D	NI
	3929								**CAS No**							
Diethylenetriamine pentaacetic acid, pentasodium salt (40% solution in water)	2076	0	NI	0	NR	0	NI	0	(0)	(0)	0	0			D	0
Diethylenetriaminepentaacetic acid, pentasodium salt solution	249								**CAS No**							
Diethylenetriamine pentamethylene phosphonic acid, pentasodium salt solution (47 %) (**)	2467	0	NI	0	R	2	NI	NI	NI	NI	NI	NI			D	NI
	3930								**CAS No**							
Diethyl ethanolamine	622	0	NI	0	NR	3	NI	1	1	2	3	3			D	3
Diethylaminoethanol	241								**CAS No**		100-37-8					
Diethyl ether	640	0	1	1	NR	0	NI	1	0	0	1	1			DE	2
Diethyl ether	237								**CAS No**		60-29-7					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Di-(2-ethylhexyl) adipate	641	0	2	2	R	4	2	0	0	0	1	1	R		Fp	3
Di-(2-ethylhexyl) adipate	222								**CAS No**		103-23-1					
Di-(2-ethylhexyl) phosphoric acid	643	(2)	1	1	NR	2	NI	0	1	(2)	2	2			Fp	2
Di-(2-ethylhexyl) phosphoric acid	223								**CAS No**		298-07-7					
Di-(2-ethylhexyl) phthalate	642	0	4	4	R	0	0	0	0	1	1	1	R		Fp	3
Di-(2-ethylhexyl) phthalate	2751								**CAS No**		117-81-7					
Diethyl phthalate	648	3	3	3	R	2	0	0	0	(1)	1	1			S	1
Diethyl phthalate	238								**CAS No**		84-66-2					
Diethyl sulphate	649	1	NI	1	R	(2)	NI	1	2	3	2	3	CM		SD	3
Diethyl sulphate	239								**CAS No**		64-67-5					
Diglycidyl ether of Bisphenol A	653	3	NI	3	NR	4	NI	0	0	(2)	1	2	Ss		S	2
Diglycidyl ether of bisphenol A	250								**CAS No**		1675-54-3					
Diglycidyl ether of Bisphenol F	728	0	NI	0	NR	3	NI	0	(0)	(2)	1	(2)	SsR		S	3
Diglycidyl ether of bisphenol F	251								**CAS No**		55492-52-9					
Diheptyl phthalate	655	0	(4)	(4)	R	0	NI	0	0	(1)	1	1			Fp	3
Diheptyl phthalate	252								**CAS No**		3648-21-3					
Di-n-hexyl adipate	656	5	NI	5	(NR)	5	0	0	0	(1)	0	1			FE	1
Di-n-hexyl adipate	224								**CAS No**		110-33-8					
Di-hexyl phthalate	2125	5	NI	5	R	0	2	0	0	(1)	1	1	R		Fp	3
Dihexyl phthalate	253								**CAS No**		84-75-3					
1,4-Dihydro-9,10-dihydroxy anthracene disodium salt (soln.)	657	1	NI	1	NI	1	NI	0	NI	NI	NI	NI			D	NI
1,4-Dihydro-9,10-dihydroxyanthracene, disodium salt solution	15								**CAS No**							
Diisobutene	575	4	4	4	NR	3	NI	0	0	0	1	0			FE	2
Diisobutylene	257								**CAS No**		11071-47-9					
Diisobutylamine	576	(2)	NI	(2)	(R)	(3)	NI	2	(2)	2	(3)	(3)			FED	3
Diisobutylamine	256								**CAS No**		110-96-3					
Diisobutyl ketone	579	3	NI	3	R	2	NI	0	0	2	2	2			F	2
Diisobutyl ketone	254								**CAS No**		108-83-8					
Diisobutyl phthalate	581	4	(4)	4	R	(4)	1	0	0	1	0	0	R		S	3
Diisobutyl phthalate	255								**CAS No**		84-69-5					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Diisodecyl phthalate	619	0	0	0	(R)	0	(0)	0	0	(1)	0	1			Fp	2
Diisodecyl phthalate	3119								**CAS No**		26761-40-0					
Diisoheptyl phthalate	2391	0	(4)	(4)	R	0	0	0	0	(1)	1	1	R		Fp	3
Diisoheptyl phthalate	3561								**CAS No**							
Diisononyl adipate	690	0	NI	0	R	0	0	0	0	(1)	1	1			Fp	2
Diisononyl adipate	258								**CAS No**		33703-08-1					
Diisononyl phthalate	691	0	0	0	R	0	0	0	0	(0)	0	0			Fp	2
Diisononyl phthalate	3120								**CAS No**							
Diisooctyl phthalate	693	0	4	4	(R)	0	0	0	0	(1)	1	0			Fp	2
Diisooctyl phthalate	259								**CAS No**		27554-26-3					
Diisopropanolamine	703	0	NI	0	NR	1	NI	0	0	0	2	3			FD	3
Diisopropanolamine	260								**CAS No**		110-97-4					
Diisopropylamine	705	1	NI	1	NR	2	0	1	1	2	3	3			ED	3
Diisopropylamine	261								**CAS No**		108-18-9					
Diisopropyl benzene (mixed isomers)	2220	5	4	4	NR	4	NI	0	0	2	2	1		(T)	F	2
Diisopropylbenzene (all isomers)	262								**CAS No**							
1,3-Diisopropylbenzene	706	5	4	4	NR	4	NI	0	0	2	2	1			F	2
1,3-Diisopropyl benzene	2626								**CAS No**		25321-09-9					
Diisopropyl ether	711	1	NI	1	NR	2	NI	0	0	0	1	2			E	2
Isopropyl ether	406								**CAS No**		108-20-3					
Diisopropylnaphthalene, mixed isomers	712	5	4	4	NR	3	NI	0	0	(1)	1	1			Fp	2
Diisopropylnaphthalene	263								**CAS No**		38640-62-9					
Dimethyl acetamide	658	0	NI	0	R	1	NI	0	0	2	1	2			D	2
N,N-Dimethylacetamide solution (40% or less)	466								**CAS No**		127-19-5					
Dimethyl acetamide	658	0	NI	0	R	1	NI	0	0	2	1	2			D	2
N,N-Dimethylacetamide	2730								**CAS No**		127-19-5					
Dimethyl adipate	659	1	NI	1	(R)	4	NI	0	0	(0)	1	1			SD	2
Dimethyl adipate	264								**CAS No**		627-93-0					
Dimethylamine (40-50% aq.sol.)	661	0	NI	0	R	3	0	2	0	2	3B	3	Ss	NT	DE	3
Dimethylamine solution (greater than 45% but not greater than 55%)	271								**CAS No**		124-40-3					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Dimethylamine (40-50% aq.sol.)	661	0	NI	0	R	3	0	2	0	2	3B	3	Ss	NT	DE	3
Dimethylamine solution (greater than 55% but not greater than 65%)	272								**CAS No**		124-40-3					
Dimethylamine (40-50% aq.sol.)	661	0	NI	0	R	3	0	2	0	2	3B	3	Ss	NT	DE	3
Dimethylamine solution (45% or less)	270								**CAS No**		124-40-3					
N,N-Dimethyl cyclohexylamine	665	2	NI	2	NR	2	NI	1	2	3	3C	3			FD	3
N,N-Dimethylcyclohexylamine	467								**CAS No**		98-94-2					
Dimethyl disulphide	1616	1	NI	1	NR	3	2	2	0	2	1	1			SD	2
Dimethyl disulphide	2504								**CAS No**		624-92-0					
N,N-Dimethyldodecylamine	2126	3	NI	3	R	4	NI	1	(1)	(3)	3	3			F	3
N,N-Dimethyldodecylamine	468								**CAS No**		112-18-5					
Dimethylethanolamine	667	0	NI	0	R	2	NI	1	1	2	3	3			D	3
Dimethylethanolamine	273								**CAS No**		108-01-0					
Dimethyl formamide	676	0	0	0	R	1	0	0	1	2	1	2	R		D	3
Dimethylformamide	274								**CAS No**		68-12-2					
Dimethyl glutarate	670	0	NI	0	R	3	NI	0	0	2	3	2	A		SD	3
Dimethyl glutarate	265								**CAS No**		26717-67-9					
Dimethyl hydrogen phosphite	673	0	NI	0	NR	2	NI	1	0	0	1	1			D	1
Dimethyl hydrogen phosphite	266								**CAS No**		868-89-9					
2,2-Dimethyloctanoic acid	675	3	NI	3	R	4	1	0	0	(2)	2	2			Fp	2
Dimethyl octanoic acid	267								**CAS No**		29662-90-6					
Dimethyl phthalate	678	2	2	2	R	2	0	0	0	(1)	0	1			SD	1
Dimethyl phthalate	268								**CAS No**		131-11-3					
2,2-Dimethylpropane-1,3-diol	679	0	0	0	NR	0	0	0	0	0	2	2			FD	2
2,2-Dimethylpropane-1,3-diol (molten or solution)	29								**CAS No**		126-30-7					
Dimethyl succinate	681	0	NI	0	NI	2	NI	0	0	0	0	2			SD	2
Dimethyl succinate	269								**CAS No**		106-65-0					
Dinitrotoluene	688	2	2	2	NR	4	2	2	(2)	(2)	1	0	CMR		S	3
Dinitrotoluene (molten)	276								**CAS No**		25321-14-6					
Dinonyl phthalate	689	0	NI	0	R	0	0	0	0	(1)	1	1			Fp	2
Dinonyl phthalate	2993								**CAS No**		84-76-4					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Di-n-octyl phthalate	692	0	(4)	(4)	(R)	0	0	0	0	(1)	1	(1)			Fp	2
Dioctyl phthalate	277								**CAS No**		117-84-0					
1,4-Dioxane	682	0	0	0	NR	0	0	0	0	0	0	2	C		D	3
1,4-Dioxane	16								**CAS No**		123-91-1					
Dipentene	686	4	NI	4	NR	2	NI	0	0	(2)	2	2	Ss		F	3
Dipentene	278								**CAS No**		138-86-3					
Diphenyl	694	3	4	4	R	4	1	0	0	(1)	0	1			S	1
Diphenyl	279								**CAS No**		92-52-4					
Diphenylamine (molten)	2186	3	3	3	NR	3	1	0	0	(1)	1	1			S	1
Diphenylamine (molten)	285								**CAS No**							
Diphenylamine, reaction product with 2,4,4-trimethylpentene	1500	NI	1	1	NR	3	NI	0	0	(1)	1	1			Fp	2
Diphenylamine, reaction product with 2,2,4-Trimethylpentene	286								**CAS No**							
Diphenylamines, alkylated	1770	5	NI	5	NR	(3)	NI	0	0	(1)	(1)	(1)			F	2
Diphenylamines, alkylated	287								**CAS No**							
Diphenyl/Diphenyl ether (mixtures)	698	NI	NI	4	NR	4	1	0	0	(1)	1	1		(T)	S	1
Diphenyl/Diphenyl ether mixtures	283								**CAS No**		8004-13-5					
Diphenyl ether	699	4	4	4	NR	4	NI	0	0	0	1	1		T	S	1
Diphenyl ether	281								**CAS No**		101-84-8					
Diphenyl ether/ Biphenyl phenyl ether mixtures	702	5	NI	5	NR	4	NI	0	0	0	1	1		(T)	S	1
Diphenyl ether/Diphenyl phenyl ether mixture	282								**CAS No**							
Diphenylmethane-4,4'-diisocyanate (#)	700	5	2	2	NR	0	0	0	0	3	2	2	SsSr		S	3
Diphenylmethane diisocyanate	288								**CAS No**		101-68-8					
Diphenylol propane-epichlorohydrin resins	2237	3	NI	3	NR	4	NI	0	0	(2)	1	2			S	2
Diphenylol propane-epichlorohydrin resins	290								**CAS No**							
Di-n-propylamine	704	1	NI	1	NR	3	NI	2	2	2	3C	3			FED	3
Di-n-propylamine	225								**CAS No**		142-84-7					
Dipropylene glycol	707	0	1	1	R	0	NI	0	0	0	0	1			D	1
Dipropylene glycol	291								**CAS No**		25265-71-8					
Dipropylene glycol dibenzoate	708	3	NI	3	R	3	NI	0	0	0	0	0			S	0
Dipropylene glycol dibenzoate	2431								**CAS No**		94-51-9					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Di-n-propyl phthalate	713	3	NI	3	(R)	3	NI	(0)	(0)	(1)	(1)	(1)	R		S	3
Di-n-propyl phthalate	2752								**CAS No**		131-16-8					
Distilled Resin Oil, DRO	2299	(3)	NI	(3)	(NR)	(3)	NI	0	0	(2)	2	1	MN		FE	3
Resin oil, distilled	2958								**CAS No**							
Dithocarbamate ester (C7-C35)	2185	NI	2	2	NR	4	NI	0	0	(1)	1	1			S	1
Dithiocarbamate ester (C7-C35)	2371								**CAS No**							
Ditridecyl adipate	2351	0	NI	0	NR	0	NI	0	0	(2)	2	1			Fp	2
Ditridecyl adipate	293								**CAS No**							
Ditridecyl phthalate	714	0	(0)	0	NR	0	(0)	0	0	(1)	1	(1)			Fp	2
Ditridecyl phthalate	2994								**CAS No**		119-06-2					
Diundecyl phthalate	715	0	(0)	0	NR	0	0	0	0	(1)	1	1			Fp	2
Diundecyl phthalate	294								**CAS No**		3648-20-2					
Dodecane	718	5	NI	5	(R)	0	NI	0	0	(1)	(1)	(0)			Fp	2
Dodecane (all isomers)	295								**CAS No**		112-40-3					
tert-Dodecanethiol	2233	5	4	4	NR	0	0	0	0	(2)	2	1	Ss		F	3
tert-Dodecanethiol	2418								**CAS No**							
1-Dodecanol	719	5	2	2	R	4	1	0	0	(1)	1	(1)			Fp	2
Dodecyl alcohol	298								**CAS No**		112-53-8					
Dodecene (all isomers)	720	5	NI	5	NR	4	NI	0	0	(2)	2	1	A		F	3
Dodecene (all isomers)	296								**CAS No**							
1-Dodecene	2473	5	NI	5	R	0	NI	0	0	1	2	1	A		F	3
1-Dodecene	3990								**CAS No**		112-41-4					
2-Dodecenyl succinic acid, dipotassium salt, solution	727	4	NI	4	NR	1	NI	(0)	(0)	NI	NI	NI			D	NI
Dodecenylsuccinic acid, dipotassium salt solution	297								**CAS No**		57195-28-5					
Dodecylamine/Tetradecylamine mixture	721	3	NI	3	R	4	NI	1	0	(3)	3	3			F	3
Dodecylamine/Tetradecylamine mixture	303								**CAS No**							
Dodecyl benzene	126	0	NI	0	NR	0	3	0	0	(2)	(2)	(1)			F	2
Dodecylbenzene	304								**CAS No**		123-01-3					
Dodecyl benzene sulphonic acid (contains 1.5% Sulphuric acid)	1739	NI	NI	3	R	3	1	1	(1)	(2)	(1)	(1)			D	2
Alkyl (C11-C17) benzene sulphonic acid	101								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Dodecyl diphenyl oxide disulphonate (solns.)	723	(5)	NI	5	NR	4	1	1	0	(3)	1	3			D	3
Dodecyl diphenyl ether disulphonate solution	299								**CAS No**							
Dodecyl hydroxypropyl sulphide (LOA)	1861	5	NI	5	NI	4	NI	0	0	(0)	0	0			FD	0
Dodecyl hydroxypropyl sulphide	2252								**CAS No**							
n-Dodecyl mercaptan	2462	5	3	3	NR	5	NI	0	0	(3)	3	(3)	Ss		F	3
n-Dodecyl mercaptan	3743								**CAS No**							
Dodecyl/octadecyl methacrylate (mixtures)	2116	(5)	NI	(5)	(NR)	(0)	NI	0	0	(1)	1	(1)			Fp	2
Dodecyl/Octadecyl methacrylate mixture	1717								**CAS No**							
Dodecyl/pentadecyl methacrylate (mixture)	724	(5)	NI	(5)	(NR)	(0)	NI	0	(0)	(1)	(1)	(1)			Fp	2
Dodecyl/Pentadecyl methacrylate mixture	302								**CAS No**							
Dodecyl phenol	725	0	4	4	NI	4	NI	0	0	(3)	3	2			Fp	3
Dodecyl phenol	301								**CAS No**		27193-86-8					
Dodecyl-, Tetradecyl-, Hexadecyl-dimethylamine mixture	2248	3	NI	3	R	5	2	1	(1)	(3)	3C	3			F	3
Alkyl (C12+) dimethylamine	2485								**CAS No**							
Dodecylxylene	1763	0	NI	0	NI	0	NI	0	0	(1)	1	1			Fp	2
Dodecyl Xylene	306								**CAS No**							
Epichlorohydrin	731	0	0	0	R	2	NI	2	2	3	3A	3	CSs		D	3
Epichlorohydrin	309								**CAS No**		106-89-8					
Ethanol	732	0	NI	0	R	0	NI	0	0	0	1	2			D	2
Ethyl alcohol	315								**CAS No**		64-17-5					
Ethanolamine	733	0	NI	0	R	2	0	1	1	3	3A	3			D	3
Ethanolamine	311								**CAS No**		141-43-5					
Ethanoltriazine (aqueous solution)	2411	(0)	NI	(0)	R	3	NI	1	0	4	0	2	Ss		D	3
	4022								**CAS No**		4719-04-4					
Ethanoltriazine (aqueous solution)	2411	(0)	NI	(0)	R	3	NI	1	0	4	0	2	Ss		D	3
1,3,5-Hexahydrotriethanol-1,3,5-triazine	3687								**CAS No**		4719-04-4					
Ethoxylated long chain (>C16)alkyloxyalkanamine (LOA)	2103	5	NI	5	NR	1	NI	0	0	(3)	3	(3)			Fp	3
Ethoxylated long chain (C16+) alkyloxyalkylamine	2203								**CAS No**							
Ethoxylated tallow amine (>95%)	2313	0	NI	0	NR	4	NI	1	(1)	3	2	3	Ss		Fp	3
Ethoxylated tallow amine (> 95%)	2959								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Ethoxylated tallow amine, glycol mixture	2252	2	NI	2	NR	6	NI	1	0	3	2	3			D	3
Ethoxylated tallow amine, glycol mixture	2476								**CAS No**							
Ethyl acetate	735	0	2	2	R	1	0	0	0	1	0	1			DE	2
Ethyl acetate	312								**CAS No**		141-78-6					
Ethyl acetoacetate	736	0	0	0	R	1	NI	0	0	(1)	1	1			D	1
Ethyl acetoacetate	313								**CAS No**		141-97-9					
Ethyl acrylate	734	1	NI	1	R	3	1	1	2	2	2	2	CSs	T	ED	3
Ethyl acrylate	314								**CAS No**		140-88-5					
Ethylamine	1016	0	NI	0	R	2	NI	2	2	1	3	3			GD	3
Ethylamine	322								**CAS No**		75-04-7					
Ethylamine solutions (72% or less)	2219	NI	NI	0	R	2	NI	2	2	1	3	3			DE	3
Ethylamine solutions (72% or less)	323								**CAS No**							
Ethyl amyl ketone	1784	2	NI	2	NI	2	NI	0	0	(2)	2	NI			FD	2
Ethyl amyl ketone	316								**CAS No**		106-68-3					
Ethylbenzene	740	3	2	2	R	3	(1)	0	0	0	2	2	C		FE	3
Ethylbenzene	324								**CAS No**		100-41-4					
N-Ethyl butylamine	745	1	NI	1	NI	NI	NI	1	1	2	3	3			FED	3
N-Ethylbutylamine	477								**CAS No**		13360-63-9					
Ethyl tert-butyl ether	2085	1	NI	1	NI	2	NI	0	0	2	2	2			E	2
Ethyl tert-butyl ether	320								**CAS No**		637-92-3					
Ethyl butyrate	748	1	NI	1	NI	2	NI	0	0	(2)	2	NI			FED	2
Ethyl butyrate	317								**CAS No**		105-54-4					
Ethyl cyclohexane	751	4	4	4	NR	3	NI	(0)	(0)	(1)	(1)	(1)			FE	2
Ethylcyclohexane	325								**CAS No**		1678-91-7					
N-Ethyl cyclohexylamine	752	2	NI	2	NI	(3)	NI	1	2	2	3	3			FED	3
N-Ethylcyclohexylamine	478								**CAS No**		5459-93-8					
S-Ethyl dipropylthiocarbamate	2081	3	2	2	NI	3	NI	1	1	2	2	(2)	N		F	3
S-Ethyl dipropylthiocarbamate	2302								**CAS No**		759-94-4					
Ethylene carbonate	755	0	NI	0	R	0	NI	0	0	(2)	1	2			SD	2
Ethylene carbonate	326								**CAS No**		96-49-1					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Ethylene chlorohydrin	756	0	0	0	R	3	NI	2	3	4	2	3			D	3
Ethylene chlorohydrin	327								**CAS No**		107-07-3					
Ethylene cyanohydrin	757	0	0	0	NI	2	NI	1	0	(2)	1	2			D	2
Ethylene cyanohydrin	328								**CAS No**		109-78-4					
Ethylene diamine	758	0	1	1	R	3	1	1	2	1	3	3	SsSr		D	3
Ethylenediamine	343								**CAS No**		107-15-3					
Ethylene diamine, tetra acetic acid, di- and tetra-sodium salt	759	0	NI	0	NR	2	0	1	(1)	(2)	1	2			D	2
Ethylenediaminetetraacetic acid, tetrasodium salt solution	344								**CAS No**		64-02-8					
Ethylene dibromide	760	1	2	2	NR	3	NI	2	2	2	3	3	CRT		SD	3
Ethylene dibromide	329								**CAS No**		106-93-4					
Ethylene glycol	761	0	NI	0	R	0	NI	1	(1)	(1)	0	0			D	1
Ethylene glycol	331								**CAS No**		107-21-1					
Ethylene glycol acrylate	869	0	NI	0	R	4	NI	1	3	3	3	3	MSs		D	3
2-Hydroxyethyl acrylate	51								**CAS No**		818-61-1					
Ethylene glycol butyl ether acetate (#)	764	1	NI	1	R	2	NI	1	1	(1)	1	1			FD	1
Ethylene glycol butyl ether acetate	334								**CAS No**		112-07-2					
Ethylene glycol diacetate	765	0	NI	0	NI	2	NI	0	0	(1)	1	NI			D	1
Ethylene glycol diacetate	335								**CAS No**		111-55-7					
Ethylene glycol ethyl ether acetate	767	0	NI	0	R	2	0	1	0	1	1	1	R		D	3
2-Ethoxyethyl acetate	41								**CAS No**		111-15-9					
Ethylene glycol methyl butyl ether	772	1	NI	1	NI	1	NI	NI	NI	NI	NI	NI			D	NI
Ethylene glycol methyl butyl ether	336								**CAS No**		13343-98-1					
Ethylene glycol methyl ether acetate	773	0	NI	0	R	2	NI	0	0	(0)	(1)	1	R		D	3
Ethylene glycol methyl ether acetate	337								**CAS No**		110-49-6					
Ethylene glycol monoacetate	762	0	NI	0	R	2	NI	0	0	(3)	NI	(3)			D	3
Ethylene glycol acetate	333								**CAS No**		542-59-6					
Ethylene glycol monoalkyl ethers	2268	0	NI	0	R	2	NI	1	2	2	1	2			D	2
Ethylene glycol monoalkyl ethers	338								**CAS No**							
Ethylene glycol monoethyl ether	766	0	NI	0	R	0	0	0	0	1	2	2			D	3
2-Ethoxyethanol	40								**CAS No**		110-80-5					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Ethylene glycol phenyl ether	775	1	NI	1	R	1	0	1	0	0	1	2			SD	2
Ethylene glycol phenyl ether	339								**CAS No**		122-99-6					
Ethylene glycol phenyl ether/Diethylene glycol phenyl ether, mixture	1740	NI	NI	1	R	1	NI	1	0	(2)	(2)	(2)			SD	2
Ethylene glycol phenyl ether/Diethylene glycol phenyl ether mixture	340								**CAS No**							
Ethylene glycol (>75%)/Sodium alkyl carboxylates/borax mixture (#)	2477	NI	(1)	(1)	R	1	NI	1	(1)	(2)	(1)	(1)	R		D	3
Ethylene glycol (>75%)/Sodium alkyl carboxylates/borax mixture	4006								**CAS No**							
Ethylene glycol (>85%)/Sodium alkyl carboxylates mixture (#)	2475	NI	(1)	(1)	R	1	NI	1	(1)	(1)	0	0			D	1
Ethylene glycol (>85%)/Sodium alkyl carboxylates mixture	4005								**CAS No**							
Ethylene oxide	77	NI	NI	NI	NI	NI	NI	1	(1)	3	3	3	CMR		GD	3
Ethylene oxide	2744								**CAS No**		75-21-8					
Ethylene-propylene copolymer	1508	NI	NI	NI	NI	NI	NI	(0)	(0)	(0)	(0)	(0)			NI	0
Propylene-Butylene copolymer	633								**CAS No**							
Ethylene vinyl acetate copolymer (emulsion)	779	0	1	1	NR	0	0	0	(0)	(2)	2	0			S	2
Ethylene-vinyl acetate copolymer (emulsion)	342								**CAS No**							
Ethyl 3-ethoxypropionate	1439	1	NI	1	NR	2	NI	0	0	0	1	1			FD	1
Ethyl-3-ethoxypropionate	321								**CAS No**		763-69-9					
2-Ethylhexanoic acid	776	2	NI	2	R	2	NI	0	0	(2)	2	2			FD	3
2-Ethylhexanoic acid	45								**CAS No**		149-57-5					
2-Ethylhexyl acrylate	782	3	NI	3	R	2	NI	0	0	(2)	2	2	Ss		F	3
2-Ethylhexyl acrylate	46								**CAS No**		103-11-7					
2-Ethylhexyl esters of fatty acids	2221	0	NI	0	R	1	NI	0	(0)	(0)	1	0			F	1
	2578								**CAS No**							
2-Ethyl-2-(hydroxymethyl)propane-1,3-diol C8-C10 ester (LOA)	2054	0	NI	0	R	0	NI	0	(0)	(0)	0	(0)			Fp	2
2-Ethyl-2-(hydroxymethyl) propane-1,3-diol (C8-C10) ester	42								**CAS No**							
5-Ethylidene-2-norbornene	783	3	3	3	NR	3	0	0	0	2	1	2			FE	2
Ethylidene norbornene	345								**CAS No**		16219-75-3					
Ethyl isoamyl ketone	737	NI	NI	NI	NI	NI	NI	0	0	(1)	1	(2)			FD	2
Ethyl isoamyl ketone	2618								**CAS No**		541-85-5					
Ethyl methacrylate	785	1	NI	1	R	2	0	0	0	0	(2)	(2)	Ss		FE	2
Ethyl methacrylate	318								**CAS No**		97-63-2					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
N-Ethyl-2-methallylamine	2228	0	NI	0	NR	2	NI	3	2	2	3A	3			D	3
N-Ethylmethylallylamine	2417								**CAS No**							
o-Ethyl phenol	788	2	NI	2	NI	(2)	NI	1	NI	NI	NI	NI			S	NI
o-Ethylphenol	535								**CAS No**		90-00-6					
Ethyl propionate	790	1	NI	1	NI	2	0	0	(1)	(2)	2	2			ED	2
Ethyl propionate	319								**CAS No**		105-37-3					
2-Ethyl-3-propylacrolein	791	2	NI	2	R	3	NI	0	0	1	3	3			F	3
2-Ethyl-3-propylacrolein	43								**CAS No**		645-62-5					
Ethyl toluene (all isomers)	2297	3	NI	3	NI	(3)	NI	0	0	0	2	2			F	2
Ethyl toluene	346								**CAS No**							
Fatty acid methyl esters	2362	0	NI	0	R	2	NI	0	(0)	(2)	2	2			Fp	2
Fatty acid methyl esters (m)	3125								**CAS No**							
Fatty acids, essentially linear, C6-C18, 2-ethylhexyl ester	2253	0	NI	0	R	1	NI	0	0	(1)	1	0			Fp	2
Fatty acid (C8-C16) ethyl hexyl esters	2759								**CAS No**							
Fatty acids, essentially linear, C6-C18, 2-ethylhexyl ester	2253	0	NI	0	R	1	NI	0	0	(1)	1	0			Fp	2
Fatty acids, essentially linear (C6-C18) 2-ethylhexyl ester	1914								**CAS No**							
Fatty acids, linear, C8-C18 saturated with C18 unsaturated	2260	(4)	NI	(4)	R	(4)	(1)	(0)	(0)	(1)	(1)	(1)			Fp	2
Fatty acids, (C8-C18)	2779								**CAS No**							
Fatty acids, linear C12+ saturated with C12+ unsaturated	2261	5	0	0	(R)	0	NI	(0)	(0)	(1)	(1)	(1)			Fp	2
Fatty acids, (C12+)	2780								**CAS No**							
Fatty acids saturated, C8-C10	2324	0	NI	0	R	4	NI	0	0	(3)	3C	3			Fp	3
Fatty acids, (C8-C10)	3079								**CAS No**							
Fatty acids, unsaturated, linear, C16+	2259	0	0	0	R	(0)	NI	0	0	(0)	0	0			Fp	2
Fatty acids, (C16+)	2778								**CAS No**							
Fatty alcohols, linear, (C12+)	2326	(5)	(2)	(2)	(R)	(4)	(1)	0	0	(1)	1	1			Fp	2
Alcohols (C12+), primary, linear	3081								**CAS No**							
Fatty alcohols, linear, (C16+)	2327	(5)	(2)	(2)	(R)	(0)	(1)	0	0	(1)	1	1			Fp	2
Alcohols, linear (C16+)	3082								**CAS No**							
Ferric chloride	339	Inorg	5	5	Inorg	2	0	1	(0)	(3)	2	3			D	3
Ferric chloride solutions	348								**CAS No**		7705-08-0					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Ferric hydroxyethyl ethylene diamine triacetic acid, tri- sodium salt, solution	796	NI	NI	NI	NI	NI	NI	0	0	(1)	(0)	1			D	1
Ferric hydroxyethylethylenediaminetriacetic acid, trisodium salt solution	349								**CAS No**							
Ferric nitrate/nitric acid solution	337	Inorg	(5)	(5)	Inorg	(2)	(0)	0	(0)	(3)	3	3			D	3
Ferric nitrate/Nitric acid solution	350								**CAS No**							
Fish by-products (fresh)	2499	NI	NI	(0)	NR	1	(0)	(0)	(0)	(0)	(0)	(0)			F	1
Fresh grinded fish by-products	3893								**CAS No**							
Fish oil (containing less than 10% free fatty acids)	2316	0	NI	0	R	2	NI	(0)	(0)	(1)	(0)	(1)			Fp	2
Fish oil	3046								**CAS No**							
Fish protein concentrate (containing 4% or less formic acid)	2502	NI	NI	(0)	R	1	(0)	(0)	(0)	(0)	(1)	(1)			D	1
	4090								**CAS No**							
Fish silage (containing 3% or less formic acid with antioxidant)	2500	NI	NI	(0)	R	0	(0)	(0)	(0)	(0)	(1)	(1)			F	1
Fish silage	3892								**CAS No**							
Fish silage protein concentrate (containing 4% or less formic acid)	2487	NI	0	0	R	2	NI	(0)	(0)	(0)	(1)	(1)			D	2
Fish silage protein concentrate (containing 4% or less formic acid)	4062								**CAS No**							
Fish solubles	1509	NI	NI	NI	NI	NI	NI	(0)	(0)	(0)	(0)	(0)			NI	NI
Fish solubles (water-based fish meal extract)	351								**CAS No**							
Fluorosilicic acid	806	Inorg	0	0	Inorg	2	NI	2	(2)	4	3	3			D	3
Fluorosilicic acid	2716								**CAS No**		16961-83-4					
Fluorosilicic acid solution (20-30%)	2240	Inorg	2	2	Inorg	2	0	(1)	(1)	(3)	3B	3	T		D	3
Fluorosilicic acid solution (20-30%)	353								**CAS No**							
Formaldehyde (37%-50% solution)	807	0	NI	0	R	2	NI	2	2	3	3	3	CMSs	NT	D	3
Formaldehyde solutions (45% or less)	354								**CAS No**		50-00-0					
Formaldehyde, polymer with isobutylenated phenol	2377	NI	NI	NI	NR	NI	NI	NI	NI	NI	NI	NI			Fp	NI
Formaldehyde, polymer with isobutylenated phenol	1203								**CAS No**							
Formamide	808	0	NI	0	NR	1	NI	0	0	1	1	2	R		D	3
Formamide	355								**CAS No**		75-12-7					
Formic acid	809	0	NI	0	R	2	NI	1	(1)	2	3C	3			D	3
Formic acid (85% or less acid)	356								**CAS No**		64-18-6					
Formic acid mixture (containing up to 18% propionic acid and up to 25% sodium formate)	2408	0	NI	0	R	1	NI	(0)	(0)	(2)	(2)	(3)			D	3
Formic acid mixture (containing up to 18% propionic acid and up to 25% sodium formate)	3684								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Fumaric adduct of rosin (water dispersion)	810	3	NI	3	NR	3	NI	0	(0)	(3)	0	3	Ss		D	3
Fumaric adduct of rosin, water dispersion	357								**CAS No**		65997-04-8					
Furfural	812	0	NI	0	R	2	1	2	(2)	3	2	2	C		D	3
Furfural	358								**CAS No**		98-01-1					
Furfuryl alcohol	813	0	NI	0	R	1	NI	2	2	3	2	2			D	2
Furfuryl alcohol	359								**CAS No**		98-00-0					
Glucitol/glycerol blend propoxylated (containing 10% or more amines)	2441	2	NI	2	NR	1	1	1	0	(2)	(1)	(1)			D	2
Glucitol/glycerol blend propoxylated (containing 10% or more amines)	3919								**CAS No**							
Glucitol/glycerol blend, propoxylated (containing less than 10% amines)	2368	0	NI	0	NR	1	NI	1	0	(2)	(1)	(1)			SD	2
Glucitol/glycerol blend propoxylated (containing less than 10% amines)	3074								**CAS No**							
Glycerine	814	0	NI	0	R	0	0	0	0	(1)	0	1			D	1
Glycerine	363								**CAS No**		56-81-5					
Glycerine (83%)/ Dioxane-dimethanol (17%) mixture	1743	NI	NI	NI	R	1	NI	0	(0)	(1)	(0)	1			D	1
Glycerine (83%), Dioxanedimethanol (17%) mixture	364								**CAS No**							
Glycerol ethoxylated	2360	0	NI	0	R	0	NI	0	0	(0)	0	0			D	0
Glycerol ethoxylated	3123								**CAS No**							
Glycerol monooleate	1898	0	0	0	R	0	NI	0	(0)	(1)	1	1			Fp	2
Glycerol monooleate	365								**CAS No**		25496-72-4					
Glycerol propoxylated	2346	0	NI	0	NR	1	NI	1	0	(2)	1	0			D	2
Glycerol propoxylated	3110								**CAS No**							
Glycerol, propoxylated and ethoxylated	2276	0	NI	0	NR	1	0	0	0	0	0	0			SD	2
Glycerol, propoxylated and ethoxylated	2872								**CAS No**							
Glycerol/sorbitol blend, propoxylated and ethoxylated	2372	0	NI	0	NR	2	NI	NI	NI	NI	NI	NI			NI	NI
Glycerol/sorbitol blend, propoxylated and ethoxylated	3136								**CAS No**							
Glycerol/sucrose blend, propoxylated and ethoxylated	2361	0	NI	0	NR	1	NI	0	0	0	0	0			SD	0
Glycerol/sucrose blend propoxylated and ethoxylated	3124								**CAS No**							
Glyceryl triacetate	816	0	NI	0	R	1	0	1	0	0	0	1			D	1
Glyceryl triacetate	367								**CAS No**		102-76-1					
Glycidyl ester of C10 trialkyl acetic acid	441	3	NI	3	NR	3	NI	0	0	(2)	2	1			F	2
Glycidyl ester of C10 trialkylacetic acid	368								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Glycine, Sodium salt, solution	817	0	NI	0	NI	0	NI	0	(0)	(1)	(0)	(1)			D	1
Glycine, sodium salt solution	369								**CAS No**		56-40-6					
Glycolic acid	2218	0	0	0	R	1	NI	1	(1)	2	3C	3			D	3
Glycolic acid solution (70% or less)	2539								**CAS No**							
Glyoxal solutions (40% or less)	84	0	NI	0	R	1	NI	0	0	2	2	3	MSsSr		D	3
Glyoxal solution (40% or less)	370								**CAS No**		107-22-2					
Glyoxylic acid	1535	0	NI	0	R	2	0	0	0	(3)	0	3	Ss		D	3
Glyoxylic acid solution (50 % or less)	371								**CAS No**		298-12-4					
Glyphosate solution, without surfactant	1765	0	0	0	NR	3	0	0	0	(3)	0	3			D	3
Glyphosate solution (not containing surfactant)	2204								**CAS No**		1071-83-6					
Grape Seed Oil	2442	(0)	NI	(0)	(R)	(0)	(0)	(0)	(0)	(1)	(0)	(1)			Fp	2
Grape Seed Oil	3643								**CAS No**		8024-22-4					
Groundnut oil	820	0	NI	0	R	(2)	NI	(0)	(0)	(0)	(0)	0			Fp	2
Groundnut oil	2769								**CAS No**		8002-03-7					
Heptane	827	4	NI	4	R	4	NI	0	0	0	(1)	1	A		E	2
Heptane (all isomers)	372								**CAS No**		142-82-5					
Heptanoic acid	831	2	NI	2	R	1	NI	0	0	1	3B	(3)			FD	3
n-Heptanoic acid	479								**CAS No**		111-14-8					
Heptanol (all isomers)	2223	2	NI	2	R	(2)	NI	0	0	(2)	(1)	(2)			FD	2
Heptanol (all isomers) (d)	373								**CAS No**							
1-Heptanol	828	2	NI	2	R	2	0	1	0	2	(2)	(2)			FD	2
1-Heptanol	2688								**CAS No**		111-70-6					
Heptene (all isomers)	2225	3	NI	3	NI	2	NI	(0)	(0)	(0)	(2)	(1)			E	2
Heptene (all isomers)	374								**CAS No**							
1-Heptene	832	3	NI	3	NI	2	NI	(0)	(0)	(0)	(2)	(1)			E	2
1-Heptene	2685								**CAS No**							
Heptyl acetate	833	3	NI	3	(R)	(3)	NI	0	0	(2)	1	2			F	2
Heptyl acetate	375								**CAS No**		112-06-1					
Hexadecyl naphthalene/dihexadecyl naphthalene mixture	2159	0	NI	0	NR	0	NI	0	0	(1)	1	1			Fp	2
1-Hexadecylnaphthalene / 1,4-bis(hexadecyl)naphthalene mixture	2373								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Hexahydro-1,3,5-trimethyl-1,3,5-triazine solution (45% or less)	2489	(2)	NI	(2)	R	3	NI	1	(1)	(3)	3A	3	Ss		D	3
	4123								**CAS No**		108-74-7					
Hexamethylene diamine	845	0	NI	0	R	2	NI	1	1	(3)	3A	3	R		D	3
Hexamethylenediamine (molten)	378								**CAS No**		124-09-4					
Hexamethylene diamine	845	0	NI	0	R	2	NI	1	1	(3)	3A	3	R		D	3
Hexamethylenediamine solution	380								**CAS No**		124-09-4					
Hexamethylene diamine	845	0	NI	0	R	2	NI	1	1	(3)	3A	3	R		D	3
Hexamethylenediamine	377								**CAS No**		124-09-4					
Hexamethylene diamine adipate, 50% in water	846	0	NI	0	R	1	NI	0	(0)	(0)	0	0			D	0
Hexamethylenediamine adipate (50% in water)	379								**CAS No**		3323-53-3					
Hexamethylene diisocyanate	2142	3	0	0	NR	2	NI	1	2	4	3	3	SsSr		S	3
Hexamethylene diisocyanate	18								**CAS No**		822-06-0					
Hexamethylene glycol	847	0	NI	0	R	1	NI	0	0	(1)	0	1			D	1
Hexamethylene glycol	376								**CAS No**		629-11-8					
Hexamethyleneimine	848	1	NI	1	NI	2	NI	3	1	2	2	2			FED	2
Hexamethyleneimine	381								**CAS No**		111-49-9					
Hexamethylene tetramine (40% solution)	849	0	NI	0	R	0	NI	0	0	(1)	0	1	Ss		D	2
Hexamethylenetetramine solutions	382								**CAS No**		100-97-0					
Hexane	850	3	NI	3	R	4	NI	0	0	0	2	2	NA		E	2
Hexane	2683								**CAS No**		100-54-3					
Hexane	850	3	NI	3	R	4	NI	0	0	0	2	2	NA		E	2
Hexane (all isomers)	383								**CAS No**		100-54-3					
1,6-Hexanediol, distillation overheads	2143	4	NI	4	NR	2	NI	0	0	2	1	2			FED	2
1,6-Hexanediol, distillation overheads	2641								**CAS No**							
Hexanoic acid	853	2	NI	2	R	2	NI	0	0	(3)	(3)	3			FD	3
Hexanoic acid	384								**CAS No**		142-62-1					
1-Hexanol	854	1	0	0	(R)	2	NI	1	0	(3)	1	3			FD	3
Hexanol	385								**CAS No**		111-27-3					
Hexene (all isomers)	2224	3	NI	3	R	3	NI	(0)	(0)	(1)	(1)	(1)			E	2
Hexene (all isomers)	386								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
1-Hexene	855	3	NI	3	R	3	NI	0	0	0	1	1			E	2
1-Hexene	2681								**CAS No**		592-41-6					
2-Hexene (mixed isomers)	856	3	NI	3	R	3	NI	(0)	(0)	0	(1)	(1)			E	2
2-Hexene (mixed isomers)	2682								**CAS No**							
Hexyl acetate	857	2	NI	2	NI	3	NI	0	0	(1)	1	1			FE	2
Hexyl acetate	387								**CAS No**		142-92-7					
sec-Hexyl acetate	858	2	NI	2	NI	3	NI	0	0	0	1	(2)			FED	2
Methylamyl acetate	456								**CAS No**		108-84-9					
Hexylene glycol	859	0	NI	0	R	0	0	0	0	(3)	2	3			D	2
Hexylene glycol	388								**CAS No**		107-41-5					
Hydrocarbon wax	2278	(5)	NI	(5)	NR	0	0	(0)	(0)	(0)	(0)	(0)	CT		Fp	3
Hydrocarbon waxes	2886								**CAS No**							
Hydrochloric acid	864	Inorg	0	0	Inorg	1	NI	1	1	3	3C	3			DE	3
Hydrochloric acid	389								**CAS No**		7647-01-0					
Hydrogenated Starch Hydrolysate	2347	0	NI	0	R	0	NI	0	0	(0)	0	0			D	0
Hydrogenated starch hydrolysate	3077								**CAS No**							
Hydrogen peroxide, more than 60%	867	Inorg	0	0	Inorg	3	NI	1	0	2	3	3			D	3
Hydrogen peroxide, more than 60%	2689								**CAS No**		7722-84-1					
Hydrogen peroxide, more than 60%	867	Inorg	0	0	Inorg	3	NI	1	0	2	3	3			D	3
Hydrogen peroxide solutions (over 60% but not over 70% by mass)	390								**CAS No**		7722-84-1					
Hydrogen peroxide, more than 8% but not more than 60%	2231	Inorg	0	0	Inorg	3	NI	1	0	(2)	3	3			D	3
Hydrogen peroxide solutions (over 8% but not over 60% by mass)	391								**CAS No**							
Hydrogen peroxide, more than 8% but not more than 60%	2231	Inorg	0	0	Inorg	3	NI	1	0	(2)	3	3			D	3
Hydrogen peroxide, more than 8% but not more than 60%	2690								**CAS No**							
N-(2-Hydroxyethyl) ethylene diamine triacetic acid, trisodium salt (solution)	870	0	NI	0	NI	1	NI	0	0	(1)	1	1	R		D	3
N-(Hydroxyethyl)ethylenediaminetriacetic acid, trisodium salt solution	470								**CAS No**		150-30-0					
[[(2-hydroxyethyl)imino]dimethylene]bisphosphonic acid, sodium salt	2493	0	NI	0	NR	1	NI	0	0	(0)	0	1			D	1
	4127								**CAS No**		22036-78-8					
2-Hydroxy-4-(methylthio) butanoic acid	871	1	NI	1	R	1	NI	0	0	(3)	1	3			D	3
2-Hydroxy-4-(methylthio)butanoic acid	49								**CAS No**		583-91-5					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Icosa(oxypropane-2,3-diyl)s	2092	NI	NI	NI	NI	NI	NI	0	(0)	(2)	2	(2)			Fp	2
Icosa(oxypropane-2,3-diyl)s	392								**CAS No**							
Icosa(oxypropane-2,3-diyl)s	2092	NI	NI	NI	NI	NI	NI	0	(0)	(2)	2	(2)			Fp	2
Icosa(oxypropane-2,3-diyl)s	2691								**CAS No**							
Illipe oil (containing less than 10% free fatty acids)	2304	(0)	NI	(0)	(R)	(0)	NI	(0)	(0)	(0)	(0)	(0)			Fp	2
Illipe oil	3034								**CAS No**							
Interesterified Mixed Vegetable Oils	2355	0	NI	0	R	(0)	NI	(0)	(0)	(1)	(1)	(1)			Fp	2
Interesterified vegetable oils	3115								**CAS No**							
Isobutanol	382	0	NI	0	R	1	0	0	0	1	2	3			D	3
Isobutyl alcohol	397								**CAS No**		78-83-1					
Isobutyl formate	405	1	NI	1	NI	1	NI	0	(0)	0	(1)	(2)			E	2
Isobutyl formate	398								**CAS No**		542-55-2					
Isobutyl methacrylate	408	2	NI	2	NR	1	NI	0	0	0	2	2	Ss		FED	2
Isobutyl methacrylate	2673								**CAS No**		97-86-9					
Isobutyric acid	419	0	NI	0	R	2	NI	2	2	(3)	3	3			E	NI
Isobutyric acid	2459								**CAS No**		79-31-2					
Isodecanol	557	3	2	2	R	3	NI	0	0	0	2	1			Fp	2
Decyl alcohol (all isomers)	219								**CAS No**		25339-17-7					
Isononanol	1059	3	NI	3	NR	3	1	0	0	(2)	2	2			Fp	2
Nonyl alcohol (all isomers)	510								**CAS No**		2430-22-0					
Isononylaldehyde	2300	3	NI	3	NR	(3)	NI	0	0	(2)	2	1			F	2
Isononylaldehyde	2754								**CAS No**							
Isooctaldehyde	1071	2	NI	2	NI	3	NI	0	0	(1)	1	1			F	1
Octyl aldehydes	542								**CAS No**		63885-09-6					
Isooctanol	1076	3	NI	3	R	2	0	1	0	(2)	2	(2)			F	2
iso-Octanol	2675								**CAS No**		26952-21-6					
Isooctylamine	1081	2	NI	2	NI	3	NI	1	1	3	3	3			FD	3
2-Ethylhexylamine	48								**CAS No**		104-75-6					
Isopentene	1113	2	NI	2	NI	2	NI	(0)	(0)	(0)	(0)	(1)			E	2
iso-Pentene	2677								**CAS No**		563-45-1					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Isophorone	879	1	1	1	R	2	0	1	1	(2)	1	2			FD	2
Isophorone	399								**CAS No**		78-59-1					
Isophorone diamine	880	0	0	0	NR	2	0	1	(1)	(3)	3	3	Ss		D	3
Isophoronediamine	401								**CAS No**		2855-13-2					
Isophorone diisocyanate	881	1	NI	1	NR	3	NI	0	0	3	3	3	SsSr		S	3
Isophorone diisocyanate	400								**CAS No**		4098-71-9					
Isoprene	882	2	2	2	NR	3	1	0	0	0	1	2	CM		E	3
Isoprene	402								**CAS No**		78-79-5					
Isopropanol	1181	0	NI	0	R	0	0	0	0	0	1	2			D	2
Isopropyl alcohol	405								**CAS No**		67-63-0					
Isopropanolamine	1182	0	NI	0	R	2	NI	0	1	0	3	3			D	3
Isopropanolamine	403								**CAS No**		78-96-6					
Isopropyl acetate	1192	1	NI	1	R	1	NI	0	0	0	1	2			ED	2
Isopropyl acetate	404								**CAS No**		108-21-4					
Isopropylamine	1195	0	NI	0	R	2	NI	2	2	1	3	3			DE	3
Isopropylamine	407								**CAS No**		75-31-0					
Isopropylamine (70%)	2350	0	NI	0	R	2	NI	2	2	1	3	3			DE	3
Isopropylamine (70% or less) solution	395								**CAS No**							
Isopropyl benzene	1197	3	2	2	R	3	NI	0	0	0	2	1			FE	2
Isopropylbenzene	2687								**CAS No**		98-82-8					
Isopropyl benzene	1197	3	2	2	R	3	NI	0	0	0	2	1			FE	2
Propylbenzene (all isomers)	623								**CAS No**		98-82-8					
Isopropyl cyclohexane	1199	4	NI	4	(NR)	(3)	NI	(0)	(0)	(1)	(0)	(1)			FE	2
Isopropylcyclohexane	408								**CAS No**		696-29-7					
Isopropyltoluenes	549	4	4	4	(NR)	3	NI	0	(0)	1	2	(1)			FE	2
p-Cymene	552								**CAS No**		99-87-6					
Isovaleraldehyde	1390	1	NI	1	R	3	NI	0	0	0	2	2			D	2
Valeraldehyde (all isomers)	731								**CAS No**		590-86-3					
Jatropha oil	2402	0	NI	(0)	(R)	(2)	NI	(0)	(0)	(0)	(0)	(0)			Fp	2
Jatropha oil	3637								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Kaolin slurry	883	Inorg	NI	0	Inorg	0	NI	0	0	0	0	0			S	0
Kaolin slurry	409								**CAS No**		1332-58-7					
Lactic acid	886	0	NI	0	R	1	NI	0	0	(3)	2	3			D	3
Lactic acid	410								**CAS No**		50-21-5					
Lactonitrile solution (80% or less)	887	0	NI	0	R	4	NI	3	4	(4)	NI	NI			D	3
Lactonitrile solution (80% or less)	411								**CAS No**		78-97-7					
Lard (containing less than 10% free fatty acids)	2317	0	NI	0	R	0	NI	0	(0)	(1)	0	1			Fp	2
Lard	3047								**CAS No**							
Latex, ammonia inhibited	889	0	NI	0	NI	(2)	NI	0	0	(1)	0	1			D	1
Latex, ammonia (1% or less)- inhibited	413								**CAS No**							
Lauric acid	891	4	NI	4	R	4	1	0	(0)	(2)	1	2			Fp	2
Lauric acid	415								**CAS No**		143-07-7					
Lauroamidopropyl betaine solution (#)	2479	(4)	(2)	(2)	R	(4)	(1)	(0)	(0)	(3)	(1)	(3)			D	3
	4055								**CAS No**		4292-10-8					
Lauryl methacrylate	893	0	2	2	R	0	0	0	(0)	(1)	1	1			F	1
Dodecyl methacrylate	300								**CAS No**		142-90-5					
Lecithin (soybeans)	2146	0	NI	0	R	0	NI	0	0	(0)	0	(0)			SD	0
Lecithin	417								**CAS No**							
Lignin sulphonic acid, salt solution	34	0	NI	0	(NR)	(0)	NI	0	(0)	(0)	(0)	(0)			D	0
Ligninsulphonic acid, sodium salt solution	419								**CAS No**							
Linear alkyl (C12-16) propoxyamine ethoxylate	2380	3	0	3	NR	4	NI	1	(1)	(3)	3	(3)			D	3
Alkyl(C12-C16) propoxyamine ethoxylate	3423								**CAS No**							
Linseed oil (containing less than 4% free fatty acids)	2318	0	NI	0	R	(2)	NI	0	(0)	(1)	0	(1)			Fp	2
Linseed oil	3048								**CAS No**							
Long chain alkaryl polyether (C11-C20) (LOA)	1982	(4)	NI	(4)	NR	3	(1)	0	0	(2)	0	2			Fp	2
Long-chain alkaryl polyether (C11-C20)	421								**CAS No**							
Long chain alkaryl sulphonic acid (C16-C60) (LOA)	1966	0	NI	0	(NR)	0	NI	0	0	(2)	(1)	2			Fp	2
Long-chain alkaryl sulphonic acid (C16-C60)	424								**CAS No**							
Long-chain alkylphenate/Phenol sulphide mixture	1754	(0)	NI	(0)	(NR)	0	NI	0	0	(2)	2	2			Fp	2
Long-chain alkylphenate/Phenol sulphide mixture	425								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Long chain alkylphenol (C14-C18) (#)	2478	(0)	NI	(0)	NR	(0)	(0)	(0)	(0)	(2)	(2)	(0)			Fp	2
Long-chain alkylphenol (C14-C18)	4029								**CAS No**							
Long chain alkylphenol (C18-C30) (#)	2476	(0)	NI	(0)	(NR)	(1)	(0)	(0)	(0)	(2)	(2)	(0)			Fp	2
Long-chain alkylphenol (C18-C30)	4040								**CAS No**							
Long-chain polyetheramine in alkyl(C2-C4)benzenes	1457	NI	NI	NI	NR	2	NI	0	0	(2)	2	2			Fp	2
	422								**CAS No**							
Lubrizol polyolefin anhydride	1865	0	NI	0	NR	1	NI	0	0	(2)	1	(2)			Fp	2
Polyolefin anhydride	605								**CAS No**							
L-Lysine solution (50% or less)	2199	0	0	0	R	1	0	0	0	0	1	NI			D	1
L-Lysine solution (60% or less)	2306								**CAS No**							
Magnesium alkyl (long chain) salicylate (overbased) in mineral oil (LOA)	71	(0)	NI	(0)	NR	(2)	NI	0	0	(1)	(1)	(1)	Ss		S	2
Magnesium long-chain alkyl salicylate (C11+)	429								**CAS No**							
Magnesium chloride	915	Inorg	0	0	Inorg	1	0	0	0	(0)	0	0			D	0
Magnesium chloride solution	427								**CAS No**		7786-30-3					
Magnesium hydroxide slurry	916	Inorg	0	0	Inorg	0	NI	0	0	(1)	(0)	1			S	1
Magnesium hydroxide slurry	428								**CAS No**		1309-42-8					
Magnesium lignosulphonate solutions	2356	(0)	NI	(0)	(NR)	(0)	NI	0	0	(0)	(0)	(0)			D	0
Ligninsulphonic acid, magnesium salt solution	3116								**CAS No**							
Magnesium long chain alkaryl sulphonate (C11-C50) (LOA)	1967	0	NI	0	NR	0	NI	0	0	(2)	1	2			Fp	2
Magnesium long-chain alkaryl sulphonate (C11-C50)	430								**CAS No**							
Maleic acid/allyl sulphonic acid copolymer with phosphonate groups, partial sodium salt (aqueous solution)	2412	0	NI	0	NR	0	NI	(0)	(0)	(0)	(0)	(0)			D	0
Maleic acid/allyl sulphonic acid copolymer with phosphonate groups, partial sodium salt (aqueous solution)	3688								**CAS No**							
Maleic anhydride	921	1	NI	1	R	2	0	1	2	(3)	3	3	SsSr		D	3
Maleic anhydride	431								**CAS No**		108-31-6					
Maleic anhydride - sodium allylsulphonate copolymer (aqueous solution)	2410	0	NI	0	NR	1	NI	0	0	(0)	(0)	0			D	0
Maleic anhydride-sodium allylsulphonate copolymer solution	3686								**CAS No**							
Maltitol Syrup	2348	0	NI	0	R	0	NI	0	0	(0)	0	0			D	0
Maltitol solution	3078								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Mango kernel oil (containing less than 10% free fatty acids)	2305	(0)	NI	(0)	(R)	(0)	NI	(0)	(0)	(0)	(0)	(0)			Fp	2
Mango kernel oil	3035								**CAS No**							
2-Mercaptobenzothiazol	925	2	1	1	NR	4	2	0	0	(0)	0	0	Ss		S	2
Mercaptobenzothiazol, sodium salt solution	432								**CAS No**		149-30-4					
2-Mercaptoethanol	2495	0	NI	0	NR	1	NI	2	2	2	2	3	SsT		D	3
	4129								**CAS No**		60-24-2					
Mesityl oxide	946	1	NI	1	R	(1)	NI	1	0	2	2	2			D	2
Mesityl oxide	433								**CAS No**		141-79-7					
Metam-sodium (ISO)	202	0	NI	0	NR	4	NI	1	2	(2)	2	1	Ss		D	2
Metam sodium solution	434								**CAS No**		137-42-8					
Methacrylic acid-alkoxypoly (alkylene oxide) methacrylate co-polymer sodium salt (45% or less solution)	2288	NI	0	0	NR	1	NI	0	(0)	(1)	1	0			D	1
Methacrylic acid - alkoxypoly (alkylene oxide) methacrylate copolymer, sodium salt aqueous solution (45% or less)	2819								**CAS No**							
Methacrylic acid, inhibited	948	0	NI	0	R	2	0	1	2	2	3	3			D	3
Methacrylic acid	435								**CAS No**		79-41-4					
Methacrylic resin in 1,2 Dichloroethane soln.	2046	1	1	1	NR	2	0	(1)	(0)	(2)	(1)	(2)	C		SD	3
Methacrylic resin in ethylene dichloride	436								**CAS No**							
Methacrylonitrile	949	0	NI	0	R	2	0	2	2	3	1	1	Ss	NT	ED	3
Methacrylonitrile	437								**CAS No**		126-98-7					
Methanol	951	0	NI	0	R	0	0	(2)	(2)	(2)	2	2	T		DE	3
Methyl alcohol	441								**CAS No**		67-56-1					
(2-Methoxymethylethoxy)propanols	2452	0	NI	0	R	0	(0)	0	0	(0)	0	0			D	0
	3870								**CAS No**							
Methyl acetate	954	0	NI	0	R	1	NI	0	0	0	1	2			DE	2
Methyl acetate	438								**CAS No**		79-20-9					
Methyl acetoacetate	335	0	NI	0	R	1	NI	0	0	(2)	1	2			D	2
Methyl acetoacetate	439								**CAS No**		105-45-3					
Methyl acrylate	955	0	NI	0	R	3	NI	1	1	2	2	3	MSs		D	3
Methyl acrylate	440								**CAS No**		96-33-3					
Methylamine solution 42% or less	957	0	NI	0	R	2	NI	2	(2)	3	3	3	M	NT	DE	3
Methylamine solutions (42% or less)	455								**CAS No**		74-89-5					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Methyl amyl alcohol	958	1	NI	1	R	1	NI	1	0	2	1	3			FED	3
Methylamyl alcohol	457								**CAS No**		108-11-2					
Methyl amyl ketone	959	1	NI	1	NI	1	NI	1	0	0	1	1			FED	2
Methyl amyl ketone	442								**CAS No**		110-43-0					
N-Methyl aniline	961	1	NI	1	(NR)	3	1	1	1	(2)	(1)	1			FD	2
N-Methylaniline	3107								**CAS No**		100-61-8					
alpha-Methylbenzyl alcohol with acetophenone (15% or less)	2399	1	NI	1	(R)	(1)	NI	(1)	(0)	(3)	(2)	(3)	R		Fp	3
alpha-Methylbenzyl alcohol with acetophenone (15% or less)	3634								**CAS No**		98-85-1					
2-Methyl-2-butanol	964	1	1	1	(R)	(1)	0	1	1	1	3	2			D	3
tert-Amyl alcohol	685								**CAS No**		75-85-4					
3-Methyl-1-butanol	965	1	1	1	(R)	1	0	1	0	(2)	2	2			FED	2
Isoamyl alcohol	396								**CAS No**		123-51-3					
3-Methyl-1-butanol	965	1	1	1	(R)	1	0	1	0	(2)	2	2			FED	2
Amyl alcohol, primary	126								**CAS No**		123-51-3					
Methyl butenol	967	0	NI	0	R	2	NI	1	0	(2)	2	2			D	2
Methylbutenol	458								**CAS No**		556-82-1					
Methyl tert-butyl ether	969	1	NI	1	NR	1	0	0	0	0	2	1		T	ED	2
Methyl tert-butyl ether	454								**CAS No**		1634-04-4					
Methyl butyl ketone	970	1	NI	1	(R)	1	(0)	0	0	0	1	1	RN		FED	3
Methyl butyl ketone	443								**CAS No**		591-78-6					
Methylbutynol	968	0	NI	0	NR	1	NI	1	1	0	0	2			D	2
Methylbutynol	459								**CAS No**		115-19-5					
Methylbutynol	968	0	NI	0	NR	1	NI	1	1	0	0	2			D	2
2-Methyl-2-hydroxy-3-butyne	52								**CAS No**		115-19-5					
Methyl butyrate	973	1	NI	1	NI	(2)	NI	0	0	2	2	(2)			ED	2
Methyl butyrate	444								**CAS No**		623-42-7					
Methyl cyclohexane	976	3	3	3	NR	3	1	0	0	1	1	1	A		E	2
Methylcyclohexane	460								**CAS No**		108-87-2					
Methyl cyclopentadiene, dimer	977	4	NI	4	(NR)	(3)	NI	0	(0)	(2)	(2)	(2)			F	2
Methylcyclopentadiene dimer	461								**CAS No**		26472-00-4					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Methyl cyclopentadienyl manganese tricarbonyl (60-70%) in mineral oil	2213	3	NI	3	NR	4	NI	2	3	4	1	1			S	3
Methylcyclopentadienyl manganese tricarbonyl	2692								**CAS No**							
N-Methyldiethanolamine	1491	0	NI	0	R	2	NI	1	0	(2)	1	2			D	2
Methyl diethanolamine	445								**CAS No**		105-59-9					
Methylene dithiocyanate	2235	2	NI	2	NR	5	NI	2	0	4	3	3	Ss		NI	3
Methylene bisthiocyanate	2693								**CAS No**		6317-18-6					
2-Methyl-6-ethylaniline	984	2	NI	2	NR	2	NI	1	1	(2)	0	2			FD	2
2-Methyl-6-ethyl aniline	54								**CAS No**		24549-06-2					
2-Methyl-5-ethylpyridine	986	2	NI	2	R	2	0	1	2	(3)	3	3			FD	3
2-Methyl-5-ethyl pyridine	53								**CAS No**		104-90-5					
Methyl formate	987	0	NI	0	R	1	NI	1	0	2	0	2			DE	2
Methyl formate	447								**CAS No**		107-31-3					
N-Methylglucamine, 60% aqueous solution	2048	0	NI	0	R	0	NI	1	0	(3)	0	3			D	3
N-Methylglucamine solution (70% or less)	482								**CAS No**		6284-40-8					
2-Methylglutaronitrile with 2-Ethylsuccinonitrile (12% or less)	2397	0	NI	0	R	0	NI	2	2	3	0	1			FD	2
2-Methylglutaronitrile with 2-Ethylsuccinonitrile (12% or less)	3632								**CAS No**		4553-62-2					
Methyl heptyl ketone	988	3	NI	3	R	3	NI	0	0	NI	NI	NI			FED	NI
Methyl heptyl ketone	448								**CAS No**		821-55-6					
Methyl isobutyl ketone	971	1	NI	1	R	1	0	1	0	2	2	3			FED	3
Methyl isobutyl ketone	449								**CAS No**		108-10-1					
Methyl methacrylate	995	1	NI	1	R	2	NI	0	0	0	2	2	Ss		ED	2
Methyl methacrylate	450								**CAS No**		80-62-6					
3-Methyl-3-methoxy butanol	996	1	NI	1	NR	0	NI	0	(0)	(2)	1	(2)			FD	2
3-Methyl-3-methoxybutanol	59								**CAS No**							
3-Methyl-3-methoxybutyl acetate	997	1	NI	1	NR	0	NI	0	(0)	NI	NI	NI			F	NI
3-Methyl-3-methoxybutyl acetate	60								**CAS No**							
Methyl naphthalenes	1999	4	NI	4	(NR)	(4)	NI	1	0	(2)	1	1		T	F	2
Methyl naphthalene (molten)	451								**CAS No**							
2-Methyl pentane	1000	3	NI	3	NI	4	NI	(0)	(0)	(2)	(2)	(2)			E	2
2-Methylpentane	2684								**CAS No**		107-83-5					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
2-Methyl-1,3-propanediol	2200	0	0	0	NR	0	0	0	0	(0)	0	0			D	0
2-Methyl-1,3-propanediol	2213								**CAS No**							
Methyl propyl ketone	1003	0	NI	0	(R)	0	NI	1	0	(2)	1	2			FED	2
Methyl propyl ketone	452								**CAS No**		107-87-9					
2-Methyl pyridine	1005	1	NI	1	R	1	NI	1	2	1	3A	3			D	3
2-Methylpyridine	55								**CAS No**		109-06-8					
3-Methylpyridine	1006	1	NI	1	R	1	NI	1	2	2	3	3			D	3
3-Methylpyridine	61								**CAS No**		108-99-6					
4-Methylpyridine	1007	1	NI	1	(R)	1	NI	1	2	2	3	3			D	3
4-Methylpyridine	63								**CAS No**		108-89-4					
N-Methylpyrrolidone	1008	0	NI	0	R	1	NI	0	0	2	1	2	R		D	3
N-Methyl-2-pyrrolidone	481								**CAS No**		872-50-4					
Methyl salicylate	86	2	NI	2	R	2	NI	1	1	(2)	2	1	R		SD	3
Methyl salicylate	453								**CAS No**		119-36-8					
alpha-Methylstyrene	1010	3	3	3	NR	3	NI	0	0	1	2	1	M	(T)	FE	3
alpha-Methylstyrene	107								**CAS No**		98-83-9					
3-(Methylthio) propionaldehyde	993	0	NI	0	R	3	1	1	1	2	2	3	NSs	T	D	3
3-(methylthio)propionaldehyde	2368								**CAS No**		3268-49-3					
Metolachlor (ISO)	113	2	2	2	NR	5	1	1	0	(2)	1	0	Ss		S	2
N-(2-Methoxy-1-methyl ethyl)-2-ethyl-6-methyl chloroacetanilide	469								**CAS No**		51218-45-2					
Mixed acid oil	2306	(0)	NI	(0)	(R)	(0)	NI	0	(0)	(1)	(1)	1			Fp	2
Acid oil mixture from soyabean, corn (maize) and sunflower oil refining	3036								**CAS No**							
Mixture of dithiophosphate salts in water	2381	1	0	1	NR	2	NI	0	0	(2)	2	2			D	2
Dialkyl thiophosphates sodium salts solution	3424								**CAS No**							
Molasses	1013	0	NI	0	R	0	NI	0	0	0	0	0			D	0
Molasses	462								**CAS No**							
Molybdenum polysulphide long chain alkyl dithiocarbamide complex	2344	4	2	2	NR	2	0	0	0	(2)	2	2			Fp	2
Molybdenum polysulphide long chain alkyl dithiocarbamide complex	3108								**CAS No**							
Mononitrobenzene	1017	1	1	1	R	3	(4)	(2)	2	2	1	1	CRT		SD	3
Nitrobenzene	501								**CAS No**		98-95-3					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Morpholine	1018	0	0	0	R	2	NI	1	2	2	3	3			D	3
Morpholine	463								**CAS No**		110-91-8					
Myrcene	1019	4	NI	4	R	4	1	0	0	(2)	2	NI			F	2
Myrcene	465								**CAS No**		123-35-3					
Naphthalene (molten)	1	3	3	3	NR	4	1	1	(0)	(1)	0	0	T	T	S	2
Naphthalene (molten)	493								**CAS No**		91-20-3					
Naphthalene, crude (molten) (#)(!)	2459	NI	(3)	(3)	NR	3	0	0	(0)	(2)	2	2	CMT		Fp	3
Naphthalene crude (molten)	3858								**CAS No**		85117-10-8					
Naphthalene sulphonic acid condensed with formaldehyde, sodium salt, solution	1020	0	1	1	(NR)	1	NI	0	(0)	(1)	0	1			D	1
Naphthalenesulphonic acid-Formaldehyde copolymer, sodium salt solution	494								**CAS No**		9084-06-4					
Neodecanoic acid	1025	4	NI	4	NR	2	NI	0	0	(2)	0	2			Fp	2
Neodecanoic acid	496								**CAS No**		26896-20-8					
Nitric acid (90% or less)	1029	Inorg	NI	0	Inorg	2	NI	(3)	(1)	3	3C	3			D	3
Nitric acid (less than 70%)	499								**CAS No**		7697-37-2					
Nitric acid (90% or less)	1029	Inorg	NI	0	Inorg	2	NI	(3)	(1)	3	3C	3			D	3
Nitric acid (70% and over)	498								**CAS No**		7697-37-2					
Nitrilotriacetic acid,trisodium salt	1030	0	NI	0	R	1	0	1	(0)	0	1	1	CMR		D	3
Nitrilotriacetic acid, trisodium salt solution	500								**CAS No**		5094-31-3					
Nitroethane	1037	0	NI	0	NR	2	NI	1	0	(2)	(0)	(1)			SD	2
Nitroethane	502								**CAS No**		79-24-3					
Nitroethane (80%)/Nitropropane (20%)	2245	0	1	1	NR	2	NI	1	1	2	0	1			E	2
Nitroethane(80%)/ Nitropropane(20%)	503								**CAS No**							
Nitroethane, 1-Nitropropane (each 15% or more) mixture	2270	(0)	(1)	(1)	(NR)	(2)	NI	1	1	2	0	1			FED	2
Nitroethane, 1-Nitropropane (each 15% or more) mixture	2212								**CAS No**							
2-Nitrophenol	1041	1	2	2	R	3	(2)	0	0	(1)	1	1			S	1
o-Nitrophenol (molten)	536								**CAS No**		88-75-5					
1-Nitropropane	1044	0	1	1	NR	1	NI	1	0	2	0	1			FED	2
1-Nitropropane	2747								**CAS No**		108-03-2					
1- or 2- Nitropropane	2242	0	1	1	NR	1	NI	2	0	2	0	1	C		FED	3
1- or 2-Nitropropane	20								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
2-Nitropropane	1045	0	1	1	NR	2	NI	2	0	2	0	0	C		FED	3
2-Nitropropane	2748								**CAS No**		79-46-9					
Nitropropane (60%) Nitroethane (40%) (mixture)	1046	0	1	1	NR	2	NI	1	0	2	0	1	C		FED	3
Nitropropane (60%)/Nitroethane (40%) mixture	504								**CAS No**							
o-Nitrotoluene	1049	2	2	2	NR	2	(1)	1	0	(2)	0	1	CMR		S	3
o-Nitrotoluene	2745								**CAS No**		88-72-2					
p-Nitrotoluene	1051	2	1	1	NR	3	0	1	0	(2)	0	1	R		S	3
p-Nitrotoluene	2746								**CAS No**		99-99-0					
o- or p-Nitrotoluenes	2241	2	2	2	NR	3	(1)	1	0	(2)	0	1	CMR		S	3
o- or p-Nitrotoluenes	532								**CAS No**							
Nonane	1054	4	NI	4	R	4	NI	0	0	1	1	1	A		FE	2
Nonane (all isomers)	506								**CAS No**		111-84-2					
Nonanoic acid	1055	3	NI	3	R	2	NI	0	0	(3)	2	3			F	3
Nonanoic acid (all isomers)	507								**CAS No**		112-05-0					
Nonene (all isomers)	2222	4	NI	4	NI	3	NI	0	0	0	1	1	A		FE	2
Nonene (all isomers)	508								**CAS No**							
1-Nonene	1060	4	NI	4	NI	3	NI	0	0	0	1	1	A		FE	2
1-Nonene	2680								**CAS No**		27215-95-8					
Nonyl acetate	1766	4	NI	4	NI	NI	NI	0	0	NI	NI	NI			F	NI
Nonyl acetate	509								**CAS No**		143-13-5					
Nonyl methacrylate monomer	1061	5	NI	5	R	3	NI	(0)	(0)	(1)	(1)	(1)			F	1
Nonyl methacrylate monomer	511								**CAS No**		2696-43-7					
Nonyl phenol	1062	5	4	4	NR	5	3	1	0	(3)	3	3			Fp	3
Nonylphenol	512								**CAS No**		25154-52-3					
Nonyl(C6-C12)phenol poly(4-12)ethoxylate	1063	4	NI	4	NR	3	1	0	0	(2)	2	1			D	2
Nonylphenol poly(4+)ethoxylate	513								**CAS No**							
Nonyl(C6-C12)phenol poly(4-12)ethoxylate	1063	4	NI	4	NR	3	1	0	0	(2)	2	1			D	2
Alkyl(C7-C11)phenol poly(4-12) ethoxylate	97								**CAS No**							
Octamethylcyclotetrasiloxane	2398	5	5	5	NR	0	3	0	0	0	0	0			F	1
Octamethylcyclotetrasiloxane	3633								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Octane	1072	5	NI	5	(R)	4	NI	(0)	(0)	0	0	0	A		FE	2
Octane (all isomers)	538								**CAS No**		111-65-9					
Octanoic acid (Caprylic acid)	1074	3	NI	3	R	1	NI	0	0	(3)	3	3			F	3
Octanoic acid (all isomers)	539								**CAS No**		124-07-2					
1-Octanol	1075	3	NI	3	R	2	0	1	0	(2)	2	2			Fp	2
1-Octanol	2676								**CAS No**		111-87-5					
1-Octanol	1075	3	NI	3	R	2	0	1	0	(2)	2	2			Fp	2
Octanol (all isomers)	540								**CAS No**		111-87-5					
Octene (all isomers)	1079	4	NI	4	NR	3	NI	0	0	0	2	1	A		FE	2
Octene (all isomers)	541								**CAS No**							
Octyl acetate	1080	3	NI	3	R	2	NI	0	0	(1)	1	NI			FD	1
n-Octyl acetate	483								**CAS No**		112-14-1					
Octyl decyl adipate	1082	0	NI	0	(R)	(0)	(0)	(0)	(0)	(1)	(1)	(1)			Fp	2
Octyl decyl adipate	543								**CAS No**		110-29-2					
n-Octyl mercaptan	2461	4	3	3	NR	5	NI	1	0	(1)	1	0	Ss		F	3
n-Octyl mercaptan	3742								**CAS No**							
Olefin/Alkyl ester copolymer (molecular weight 2000+) (LOA)	1965	NI	NI	0	NR	0	NI	0	0	(0)	0	0			Fp	2
Olefin-Alkyl ester copolymer (molecular weight 2000+)	546								**CAS No**							
Olefin mixture (C7-C9)	2385	5	4	4	NR	4	NI	(0)	0	0	2	1	A		E	2
Olefin mixture (C7-C9) C8 rich, stabilized	3548								**CAS No**		97593-00-5					
Olefin mixtures (C5-C7)	2243	3	NI	3	R	3	NI	(0)	(0)	(1)	(2)	(1)			E	2
Olefin mixtures (C5-C7)	545								**CAS No**							
Olefin mixtures (C5-C15)	2321	(5)	NI	(5)	NR	(4)	NI	(0)	(0)	(2)	(2)	(1)	A		FE	2
Olefin mixtures (C5-C15)	544								**CAS No**							
Olefins C13 and above, all isomers	2028	5	NI	5	NR	0	NI	0	0	(0)	0	0			Fp	2
Olefins (C13+, all isomers)	547								**CAS No**							
alpha-Olefins (C6-C18),mixture	2030	(5)	NI	(5)	NR	(4)	NI	(0)	(0)	(2)	(2)	(1)	A		FE	2
alpha-Olefins (C6-C18) mixtures	108								**CAS No**							
Oleic acid	1089	0	NI	0	R	0	NI	0	1	(2)	1	1			Fp	2
Oleic acid	548								**CAS No**		112-80-1					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Oleylamine	1862	0	NI	0	NR	4	NI	1	(1)	(3)	3B	3			Fp	3
Oleylamine	550								**CAS No**							
Olive oil	1090	0	NI	0	R	(2)	NI	(0)	(0)	(1)	1	1			Fp	2
Olive oil	2771								**CAS No**		8001-25-0					
Orange juice	2375	0	0	0	R	0	0	0	0	(0)	0	0			D	0
Orange juice	3151								**CAS No**							
Orange juice (not concentrated)	2382	0	0	0	R	0	0	0	0	(0)	0	0			D	0
Orange juice (not concentrated)	3425								**CAS No**							
Oxatetra-azahydroxyalkanoic acid, substituted with acetic acid / acetoxyethanolamine	2413	1	NI	1	R	1	NI	0	0	0	0	0			D	0
Oxatetra-azahydroxyalkanoic acid, substituted with acetic acid / acetoxyethanolamine	3689								**CAS No**							
Oxygenated aliphatic hydrocarbon mixture	2266	5	2	(2)	NR	1	NI	0	0	(1)	1	1			FE	2
Oxygenated aliphatic hydrocarbon mixture	2825								**CAS No**							
Palm acid oil	2307	(0)	NI	(0)	(R)	(0)	NI	0	(0)	(1)	0	1			Fp	2
Palm acid oil	3037								**CAS No**							
Palm fatty acid distillate	2310	NI	NI	(0)	(R)	(0)	NI	0	(0)	(1)	0	1			Fp	2
Palm fatty acid distillate	3040								**CAS No**							
Palm kernel fatty acid distillate	2335	(0)	0	0	R	(3)	NI	0	(0)	(2)	1	2			Fp	2
Palm kernel fatty acid distillate	3111								**CAS No**							
Palm kernel olein (containing less than 5 % free fatty acids)	2308	(0)	NI	(0)	(R)	1	NI	(0)	(0)	(0)	(0)	(0)			Fp	2
Palm kernel olein	3038								**CAS No**							
Palm kernel stearin (containing less than 5% free fatty acids)	2309	0	(0)	(0)	(R)	0	NI	(0)	(0)	(0)	(0)	(0)			Fp	2
Palm kernel stearin	3039								**CAS No**							
Palm Mid Fraction	2363	(0)	NI	(0)	(R)	(0)	NI	0	0	(0)	(0)	(0)			Fp	2
Palm mid-fraction	3126								**CAS No**							
Palm nut oil	1094	0	NI	0	R	1	NI	(0)	(0)	(1)	(0)	(1)			Fp	2
Palm kernel oil	2766								**CAS No**							
Palm nut oil fatty acid	1095	0	NI	0	R	(3)	NI	0	0	(2)	1	2			Fp	2
Palm kernel acid oil	553								**CAS No**							
Palm oil (containing less than 15% free fatty acids)	2249	0	NI	0	R	0	NI	0	(0)	(0)	0	0			Fp	2
Palm oil	2764								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Palm oil (containing more than 15% and less than 30% free fatty acids)	2364	0	NI	0	R	0	NI	0	0	(2)	(2)	(2)			Fp	2
Non-edible industrial grade palm oil	3127								**CAS No**							
Palm oil fatty acid methyl ester	1097	0	NI	0	R	0	NI	0	0	0	0	1			Fp	2
Palm oil fatty acid methyl ester	554								**CAS No**							
Palm olein	2250	0	NI	0	R	0	NI	0	(0)	(0)	0	0			Fp	2
Palm olein	2765								**CAS No**							
Palm stearin	2251	0	NI	0	R	0	NI	0	(0)	(0)	0	0			Fp	2
Palm stearin	555								**CAS No**							
Paraffin wax, highly-refined	1086	(5)	NI	(5)	(NR)	0	(0)	(0)	(0)	(0)	(0)	(0)			Fp	2
Paraffin wax	556								**CAS No**		8002-74-2					
Paraffin wax, semi-refined	2244	(5)	NI	(5)	NR	0	(0)	(0)	(0)	(0)	(0)	(0)	T		Fp	3
Petrolatum	565								**CAS No**							
Paraldehyde	1098	0	0	0	NR	0	NI	1	0	0	1	3			D	3
Paraldehyde	557								**CAS No**		123-63-7					
Pentachloroethane	1099	3	2	2	NI	3	1	1	(1)	1	(1)	(1)	CT		S	3
Pentachloroethane	558								**CAS No**		76-01-7					
1,3-Pentadiene	1102	2	NI	2	NR	2	NI	0	0	0	1	(2)			E	2
1,3-Pentadiene	14								**CAS No**		504-60-9					
1,3-Pentadiene (greater than 50%), cyclopentene and isomers, mixtures.	2390	NI	NI	(3)	(NR)	(3)	NI	(2)	(1)	(3)	(2)	(2)	CMR		E	3
1,3-Pentadiene (greater than 50%), cyclopentene and isomers, mixtures	3560								**CAS No**							
Pentaethylene hexamine	1103	0	NI	0	NI	4	NI	1	(2)	(3)	3	(3)	Ss		D	3
Pentaethylenehexamine	560								**CAS No**		4067-16-7					
Pentane	1105	3	NI	3	R	3	NI	0	0	0	1	1			E	2
Pentane (all isomers)	561								**CAS No**		109-66-0					
1,5-Pentanedial solution, (5-50%) (#)	1107	0	NI	0	R	3	0	1	0	3	3	3	SsSr		D	3
Glutaraldehyde solutions (50% or less)	362								**CAS No**		111-30-8					
Pentanoic acid	1109	1	NI	1	NI	2	NI	1	2	(3)	3	3			FD	3
Pentanoic acid	562								**CAS No**		109-52-4					
Pentanoic acid (64%)/2-methyl butyric acid (36%) mixture	2144	(1)	NI	(1)	NI	(2)	NI	(1)	(2)	(3)	3	(3)			FD	3
n-Pentanoic acid (64%)/2-Methyl butyric acid (36%) mixture	2211								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
1-Pentanol	1110	1	1	1	(R)	1	0	1	0	(3)	2	3			FED	3
n-Amyl alcohol	473								**CAS No**		71-41-0					
2-Pentanol	1111	1	1	1	R	1	0	0	(0)	(2)	2	2			D	2
sec-Amyl alcohol	637								**CAS No**		6032-29-7					
Pentasodium triphosphate (*)	2418	Inorg	0	0	Inorg	1	NI	NI	NI	NI	NI	NI			NI	NI
	3694								**CAS No**							
Pentene (all isomers)	1992	2	NI	2	NI	(2)	NI	(0)	(0)	(0)	(0)	(1)			E	2
Pentene (all isomers)	563								**CAS No**							
1-Pentene	1114	2	NI	2	NI	(2)	NI	(0)	(0)	0	(0)	(1)			E	2
1-Pentene	2679								**CAS No**		109-67-1					
2-Pentene	1115	2	NI	2	NI	2	NI	(0)	(0)	(0)	(0)	(1)			E	2
2-Pentene	2678								**CAS No**		109-68-2					
Phenol	1124	1	2	2	R	3	0	2	2	(3)	3	3		NT	S	3
Phenol	566								**CAS No**		108-95-2					
Phenylxylylethane	1135	5	4	4	NR	(2)	NI	1	0	(1)	(0)	0			F	1
1-Phenyl-1-xylyl ethane	23								**CAS No**		40766-31-2					
Phosphate esters, alkyl(C12-C14)amine (LOA)	1854	2	NI	2	NR	3	NI	0	(0)	(2)	1	2			FD	2
Phosphate esters, alkyl (C12-C14) amine	1345								**CAS No**							
Phosphoric acid	1138	0	NI	0	Inorg	1	NI	1	1	3	3	3			D	3
Phosphoric acid	567								**CAS No**		7664-38-2					
Phosphorus (elemental yellow)	1139	Inorg	(3)	(3)	Inorg	6	4	0	0	0	2	1			S	2
Phosphorus, yellow or white	568								**CAS No**		7732-14-0					
Phthalic anhydride (molten)	1146	1	NI	1	R	2	0	1	0	(3)	1	3	SsSr		S	3
Phthalic anhydride (molten)	569								**CAS No**		85-44-9					
alpha-Pinene	40	4	NI	4	R	4	NI	0	0	0	1	(1)	Ss	T	F	3
alpha-Pinene	109								**CAS No**		80-56-8					
beta-Pinene	41	4	NI	4	(R)	4	NI	0	0	0	1	(1)	Ss	NT	F	3
beta-Pinene	141								**CAS No**		1330-16-1					
Pine oil	1148	4	NI	4	NR	4	NI	0	0	(1)	(1)	(1)	Ss	(T)	Fp	3
Pine oil	570								**CAS No**		8002-09-3					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Piperazine, 68% Aqueous	2433	0	NI	0	NR	2	NI	0	0	2	3A	3	SsSrN		SD	3
Piperazine, 68% solution	3748								**CAS No**		110-85-0					
Pol (2-8) alkylene (C2-C3) glycols/ Polyalkylene (C2-C10) glycols monoalkyl ethers and their borate esters	2358	(1)	NI	(1)	(R)	(1)	(0)	0	0	0	2	2			D	2
Brake fluid base mix: Poly(2-8)alkylene (C2-C3) glycols/Polyalkylene (C2-C10) glycols monoalkyl (C1-C4) ethers and their borate esters	144								**CAS No**							
Polyacrylic acid (40% solution)	2302	(2)	NI	(2)	NR	1	NI	0	0	(1)	1	1			D	1
Polyacrylic acid solution (40% or less)	2709								**CAS No**							
Polyalkene sulphonic acid (C20-C28), sodium salt (#)	2481	(5)	(4)	(4)	(NR)	1	0	(1)	(0)	(2)	(2)	(2)			Fp	2
Polyalkene sulphonic acid (C20-C28), sodium salt	4057								**CAS No**							
Poly(C18-C22)alkyl acrylate in xylene	1151	(3)	NI	(3)	NR	2	NI	0	0	(2)	2	1			Fp	2
Polyalkyl (C18-C22) acrylate in xylene	580								**CAS No**							
Polyalkylalkenaminesuccinimide, molybdenum oxysulphide	2379	NI	0	0	NR	0	NI	0	0	(0)	0	0			Fp	2
Polyalkylalkenaminesuccinimide, molybdenum oxysulphide	3422								**CAS No**							
Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	1152	1	NI	1	R	1	0	0	0	0	2	2			D	2
Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	576								**CAS No**							
Poly(2-8)alkylene glycol monoalkyl (C1-C6) ether acetate	2254	1	NI	1	NR	2	1	0	0	0	2	2			D	2
Poly(2-8)alkylene glycol monoalkyl (C1-C6) ether acetate	575								**CAS No**							
Poly N-alkylmethacrylamide ammonium acrylate copolymer (20 % in DEGME) (**)	2468	0	NI	0	NR	2	NI	NI	NI	NI	NI	NI			D	NI
	3931								**CAS No**							
Poly alkyl methacrylate (C1-C20) (LOA)	1984	(5)	NI	(5)	NR	0	NI	0	0	0	0	0			Fp	2
Polyalkyl (C10-C20) methacrylate	2189								**CAS No**							
Poly alkyl(C10-C18) methacrylate/ethylene-propylene copolymeer mixture	2201	0	0	0	NR	0	0	0	0	(1)	1	1	A		Fp	3
Polyalkyl (C10-C18) methacrylate/ethylene-propylene copolymer mixture	2188								**CAS No**							
Polyaluminium chloride (sol.)	1136	Inorg	0	0	Inorg	0	NI	(0)	(0)	(1)	(0)	(1)			D	1
Polyaluminium chloride solution	584								**CAS No**		1327-41-9					
Polybutene	1154	0	NI	0	(NR)	(0)	(0)	(0)	(0)	(0)	(0)	(0)			Fp	2
Polybutene	585								**CAS No**		9003-29-6					
Polybutenylsuccinimide in oil	2055	5	NI	5	NR	0	NI	(0)	(0)	(0)	0	(0)			Fp	2
Polybutenyl succinimide	586								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Poly(2+)cyclic aromatics	2246	4	4	4	NR	(4)	NI	(1)	(1)	(2)	(1)	(1)	CM		S	3
Poly(2+)cyclic aromatics	574								**CAS No**							
Polyether, borated	1863	0	NI	0	NR	3	1	0	(0)	(1)	1	0			D	1
Polyether, borated	572								**CAS No**							
Polyether (molecular weight 2000+) (LOA)	1975	0	NI	0	NR	1	NI	0	(0)	(0)	0	0			Fp	2
Polyether (molecular weight 1350+)	587								**CAS No**							
Polyethylene amines / paraffin mixtures	1991	(5)	NI	(5)	NR	3	0	0	(1)	(3)	(2)	(3)	Ss		Fp	3
Polyethylene polyamines (more than 50% C5 -C20 paraffin oil)	591								**CAS No**							
Polyethylene glycol	1157	0	NI	0	NR	0	NI	0	0	0	1	1			D	1
Polyethylene glycol	589								**CAS No**		25322-68-3					
Polyethylene glycol dimethyl ether	1158	0	NI	0	NR	0	NI	0	0	(1)	1	(1)			D	1
Polyethylene glycol dimethyl ether	590								**CAS No**		24991-55-7					
Poly(ethylene glycol) methylbutenyl ether (MW >1000)	2395	NI	0	0	R	1	NI	0	0	(0)	0	0			D	0
Poly(ethylene glycol) methylbutenyl ether (MW>1000)	3501								**CAS No**							
Polyethylene polyamines	2367	0	NI	0	NR	3	0	1	0	(3)	2	(3)	Ss		D	3
Polyethylene polyamines	3131								**CAS No**							
Polyferric sulphate solution	338	Inorg	0	0	Inorg	(2)	NI	1	(1)	(3)	3	(3)			D	3
Polyferric sulphate solution	592								**CAS No**							
Polyglycerine, sodium salt, solution	1874	0	NI	0	R	0	NI	0	0	(3)	(2)	3			D	3
Polyglycerin, sodium salt solution (containing less than 3% sodium hydroxide)	593								**CAS No**							
Polyglycerol	1511	NI	NI	NI	NI	NI	NI	0	(0)	(0)	(0)	(0)			D	0
Polyglycerol	594								**CAS No**							
Poly (iminoethylene)-graft-N-poly (ethyleneoxy) solution (90% or less)	2287	0	0	0	NR	0	NI	0	0	(1)	0	1			D	1
Poly(iminoethylene)-graft-N-poly(ethyleneoxy) solution (90% or less)	2537								**CAS No**							
Polyisobutenamine in aliphatic (C10-C14) solvent	2192	0	0	0	NR	2	NI	0	(0)	(2)	2	1			FED	2
Polyisobutenamine in aliphatic (C10-C14) solvent	2374								**CAS No**							
(Polyisobutene) amino products in aliphatic hydrocarbons	2455	0	NI	(5)	NR	2	NI	0	0	(1)	1	0	A		Fp	3
(Polyisobutene) amino products in aliphatic hydrocarbons	3811								**CAS No**							
Polyisobutenyl anhydride adduct	2127	0	NI	0	NR	0	NI	0	0	(1)	0	1			FD	1
Polyisobutenyl anhydride adduct	2256								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Poly(4+)isobutylene	2264	0	NI	0	NR	0	NI	(0)	(0)	(0)	(0)	(0)			Fp	2
Polyisobutylene (MW≤224)	578								**CAS No**							
Polymethylene polyphenyl isocyanate	1153	NI	(2)	(2)	NR	0	0	0	0	(2)	2	2	SsSr		S	2
Polymethylene polyphenyl isocyanate	595								**CAS No**		9016-87-9					
Polyolefin acid, potassium salt	1895	NI	NI	NI	NR	0	NI	0	0	(0)	0	0			NI	0
Potassium salt of polyolefin acid	2199								**CAS No**							
Polyolefinamide alkene(C16+)amine (LOA)	2104	5	NI	5	NR	0	NI	0	0	(1)	1	(1)			Fp	2
Polyolefin amide alkeneamine (C17+)	597								**CAS No**							
Polyolefin amide alkeneamine (C28+) (LOA)	1971	0	NI	0	NR	0	NI	0	0	(0)	1	(1)			NI	1
Polyolefin amide alkeneamine (C28+)	598								**CAS No**							
Polyolefin amide alkeneamine borate (C28-C250) (LOA)	1970	0	NI	0	NR	0	NI	0	0	(0)	0	(0)			Fp	2
Polyolefin amide alkeneamine borate (C28-C250)	600								**CAS No**							
Polyolefin amide alkeneamine/molybden oxysulphide mi	2256	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI			NI	NI
Polyolefin amide alkeneamine/molybdenum oxysulphide mixture	603								**CAS No**							
Polyolefin amide alkylene amine polyol	1989	0	2	2	NR	0	NI	0	0	(0)	0	0			Fp	3
Polyolefin amide alkeneamine polyol	602								**CAS No**							
Poly (17+) olefin amine	2049	0	NI	0	NR	2	NI	0	(0)	(1)	(1)	(1)			Fp	2
Poly (17+) olefin amine	571								**CAS No**		98761-78-5					
Polyolefinamine (C28-C250) (LOA)	2107	0	NI	0	NR	2	NI	0	(0)	(2)	2	(1)			Fp	2
Polyolefinamine in aromatic solvent	611								**CAS No**							
Polyolefinamine (C28-C250) (LOA)	2107	0	NI	0	NR	2	NI	0	(0)	(2)	2	(1)			Fp	2
Polyolefinamine in alkyl (C2-C4) benzenes	610								**CAS No**							
Polyolefinamine (C28-C250) (LOA)	2107	0	NI	0	NR	2	NI	0	(0)	(2)	2	(1)			Fp	2
Polyolefinamine (C28-C250)	609								**CAS No**							
Polyolefin aminoester salt	2095	0	NI	0	NR	1	NI	0	0	(1)	1	(1)			Fp	2
Polyolefin aminoester salts (molecular weight 2000+)	604								**CAS No**							
Polyolefin ester (C28-C250) (LOA)	1969	0	NI	0	NR	0	NI	0	0	(0)	0	0			Fp	2
Polyolefin ester (C28-C250)	606								**CAS No**							
Polyolefin (molecular weight 300+) (LOA)	1968	0	NI	0	NR	0	NI	0	0	0	0	0			Fp	2
Polyolefin (molecular weight 300+)	596								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Polyolefin phenolic amine (C28-C250) (LOA)	1980	0	NI	0	NI	0	NI	0	0	(1)	(1)	(1)			Fp	2
Polyolefin phenolic amine (C28-C250)	607								**CAS No**							
Polyolefin phosphoro sulphide - barium derivative (C28-C250) (LOA)	1976	0	NI	0	NI	2	NI	0	(0)	(0)	(0)	(0)			S	0
Polyolefin phosphorosulphide, barium derivative (C28-C250)	608								**CAS No**							
Polyoxyethylene sorbitan monooleate	1442	3	(2)	3	R	2	0	0	(0)	(0)	0	0			D	0
Poly(20)oxyethylene sorbitan monooleate	577								**CAS No**		9005-65-6					
Polyoxypropylene diamine	2352	1	NI	1	NR	1	NI	0	0	(3)	3	3			D	3
	3112								**CAS No**							
Polypropylene	1512	0	NI	0	NR	(0)	NI	(0)	(0)	(0)	(0)	(0)			F	1
Poly(5+)propylene	579								**CAS No**		9003-07-0					
Polypropylene glycol	1159	0	NI	0	(NR)	1	NI	1	0	(1)	1	1			D	1
Polypropylene glycol	612								**CAS No**		25322-69-4					
Polysiloxane	1161	NI	4	4	NI	2	NI	0	(0)	(0)	0	0			F	1
Dimethylpolysiloxane	275								**CAS No**							
Polysiloxane	1161	NI	4	4	NI	2	NI	0	(0)	(0)	0	0			F	1
Polysiloxane	613								**CAS No**							
Poly (tetramethylene) ether glycol (mw 600-3000)	2147	2	NI	2	NR	3	NI	0	0	(0)	0	(0)			FD	0
Poly(tetramethylene ether) glycol (mw 600-3000)	2540								**CAS No**							
Potassium carbonate solution	2465	Inorg	0	0	Inorg	2	NI	0	0	(0)	2	2			D	2
Potassium carbonate solution	3928								**CAS No**							
Potassium chloride brine (less than 26%)	2345	0	0	0	Inorg	0	0	0	(0)	(0)	0	0			D	0
Potassium chloride solution (less than 26%)	3109								**CAS No**							
Potassium chloride solution	1513	0	0	0	Inorg	1	0	0	(0)	(0)	0	0			D	0
Potassium chloride solution	614								**CAS No**		7447-40-7					
Potassium formate solution (75% or more)	2121	0	NI	0	R	0	NI	(0)	(0)	(2)	2	2			D	2
Potassium formate solutions	615								**CAS No**		590-29-4					
Potassium hydroxide (sol.)	1171	Inorg	0	0	Inorg	2	NI	2	(2)	(3)	3C	3			D	3
Potassium hydroxide solution	616								**CAS No**		1310-58-3					
Potassium iodide	2484	Inorg	(0)	(0)	Inorg	1	0	0	0	(0)	0	0	T		D	2
Potassium iodide	4060								**CAS No**		7681-11-0					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Potassium oleate	1497	3	NI	3	R	4	NI	(0)	(0)	(1)	1	1			FD	1
Potassium oleate	617								**CAS No**		143-18-0					
Potassium thiosulphate solution (50% or less)	2152	Inorg	0	0	Inorg	2	NI	0	0	(2)	2	(2)			D	2
Potassium thiosulphate (50% or less)	2335								**CAS No**							
Propanol	1180	0	NI	0	R	0	NI	1	0	0	1	2	R		D	3
n-Propyl alcohol	488								**CAS No**		71-23-8					
Propanolamine	1183	0	NI	0	R	2	NI	0	1	(3)	3	3			D	3
n-Propanolamine	485								**CAS No**		156-87-6					
2-Propene-1-aminium, N,N-dimethyl-N-2-propenyl-, chloride, homopolymer (aqueous solution)	2420	0	NI	0	R	2	0	0	(0)	(0)	0	(0)			D	0
2-Propene-1-aminium, N,N-dimethyl-N-2-propenyl-, chloride, homopolymer	3696								**CAS No**							
2-Propenoic acid polymer with 4-(1,1-dimethylethyl)phenol, formaldehyde, 2,5-furandione, 2-methyloxirane and oxirane (65% in naphtha/xylene)	2491	(5)	NI	(5)	NR	2	NI	0	0	(0)	(0)	0	A		Fp	3
	4125								**CAS No**		178603-70-8					
2-Propenoic acid polymer with furandione (65% in 2-butoxyethanol)	2435	0	NI	0	NR	2	0	1	0	0	2	2			Fp	2
2-Propenoic acid polymer with furandione (65% in 2-butoxyethanol)	3750								**CAS No**							
beta-Propiolactone	1184	0	NI	0	R	(2)	NI	2	(2)	4	3B	3	CM		D	3
beta-Propiolactone	142								**CAS No**		57-57-8					
Propionaldehyde	1185	0	NI	0	R	2	NI	1	0	1	2	2			DE	2
Propionaldehyde	619								**CAS No**		123-38-6					
Propionic acid	1186	0	NI	0	R	2	NI	0	0	(3)	3B	3			D	3
Propionic acid	620								**CAS No**		79-09-4					
Propionic anhydride	1187	0	NI	0	R	2	NI	0	0	(3)	2	3			FD	3
Propionic anhydride	621								**CAS No**		123-62-6					
Propionitrile	1188	0	NI	0	NI	0	NI	3	3	4	1	2	R		D	3
Propionitrile	622								**CAS No**		107-12-0					
Propyl acetate	1191	1	NI	1	R	2	NI	0	0	0	1	1			ED	1
n-Propyl acetate	487								**CAS No**		109-60-4					
Propylamine	1194	0	NI	0	NI	1	NI	2	2	3	3	3			DE	3
n-Propylamine	490								**CAS No**		107-10-8					
Propyl benzene	1196	NI	NI	NI	NI	3	NI	NI	NI	NI	NI	NI		(T)	FE	NI
Propylbenzene	2686								**CAS No**		103-65-1					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Propyl chloride	1198	2	NI	2	NI	1	NI	0	NI	NI	NI	NI			FED	2
n-Propyl chloride	489								**CAS No**		540-54-5					
Propylene carbonate	2056	0	NI	0	R	0	NI	0	0	(3)	2	3			D	3
Propylene carbonate	624								**CAS No**		108-32-7					
Propylene dimer	1201	3	NI	3	R	3	NI	NI	NI	NI	NI	NI			E	2
Propylene dimer	625								**CAS No**							
1,2-Propylene glycol	1202	0	NI	0	R	0	0	0	0	0	0	0			D	0
Propylene glycol	626								**CAS No**		57-55-6					
Propylene glycol methyl ether acetate	1759	0	NI	0	NR	1	NI	0	0	0	0	1			D	1
Propylene glycol methyl ether acetate	627								**CAS No**		108-65-6					
Propylene glycol monoalkyl ether	1958	0	NI	0	NR	0	NI	0	1	0	2	3			D	3
Propylene glycol monoalkyl ether	628								**CAS No**							
Propylene glycol phenyl ether	2057	1	NI	1	NI	1	NI	0	0	(1)	(1)	(1)			SD	1
Propylene glycol phenyl ether	629								**CAS No**		4169-04-4					
Propylene oxide	76	0	NI	0	R	2	NI	1	2	2	2	3	CM		DE	3
Propylene oxide	630								**CAS No**		75-56-9					
Propylene oxide/Ethylene oxide mixture	78	0	NI	0	R	1	NI	1	1	3	3	3	CMR		DE	3
Ethylene oxide/Propylene oxide mixture with an ethylene oxide content of not more than 30% by mass	341								**CAS No**							
Propylene tetramer	2255	NI	4	4	NR	(4)	NI	(0)	(0)	(1)	(1)	(1)			F	1
Propylene tetramer	631								**CAS No**		6842-15-5					
Propylene trimer	1207	5	4	4	NR	3	2	(0)	(0)	(1)	(1)	(1)			FE	2
Propylene trimer	632								**CAS No**		13987-01-4					
Pyridine	1213	0	NI	0	R	3	0	1	1	2	1	3		NT	D	3
Pyridine	634								**CAS No**		110-86-1					
Pyridine bases	2131	1	NI	1	R	2	NI	2	1	(3)	3B	3			FED	3
Paraldehyde-ammonia reaction product	1989								**CAS No**							
Pyrolysis gasoline	2271	(4)	(3)	(3)	(R)	(3)	(1)	1	0	(2)	2	2	TCM		FE	3
Pyrolysis gasoline (containing benzene)	1990								**CAS No**							
Quaternary ammonium compounds, benzyl-C12-14 (even-numbered)-alkyldimethyl, chlorides solution	2494	3	NI	3	NR	4	NI	1	0	(3)	3B	3			D	3
	4128								**CAS No**		68424-85-1					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Rapeseed oil (high erucic acid; containing less than 4% free fatty acids)	2315	0	NI	0	R	(2)	NI	(0)	(0)	(0)	(1)	(1)			Fp	2
Rapeseed oil	3045								**CAS No**							
Rapeseed oil (Low erucic acid containing less than 4% free fatty acids)	2296	0	NI	0	R	(2)	NI	0	0	0	(1)	(1)			Fp	2
Rapeseed oil (low erucic acid containing less than 4% free fatty acids)	2956								**CAS No**							
Rape seed oil fatty acid, methyl ester	2209	0	0	0	R	0	NI	0	(0)	(1)	1	1			Fp	2
Rape seed oil fatty acid methyl esters	2576								**CAS No**							
Rice bran oil (containing less than 15% of free fatty acids)	2312	(0)	NI	(0)	(R)	(0)	NI	0	(0)	(1)	0	1			Fp	2
Rice bran oil	3043								**CAS No**							
Rosin	1219	3	NI	3	NR	3	NI	0	0	2	(1)	1	Ss		S	2
Rosin	635								**CAS No**		8050-09-7					
Rosin soap (disproportionated solution)	1220	3	NI	3	NR	3	NI	0	NI	NI	NI	NI			S	NI
Rosin soap (disproportionated) solution	636								**CAS No**							
Safflower oil (containing less than 5% free fatty acids)	1222	(0)	NI	(0)	(R)	(0)	NI	(0)	(0)	(1)	1	1			Fp	2
Safflower oil	3041								**CAS No**		8001-23-8					
Saturated and unsaturated alkyl (C10-C20) phosphite (LOA)	2108	0	NI	0	R	1	NI	0	0	(0)	0	0			Fp	2
Alkyl (C10-C20, saturated and unsaturated) phosphite	96								**CAS No**							
Shea butter (containing less than 15% free fatty acids)	2311	(0)	NI	(0)	NR	(0)	NI	(0)	(0)	(1)	(0)	(1)			Fp	2
Shea butter	3042								**CAS No**							
Silica slurry	1514	Inorg	0	0	Inorg	0	0	(0)	(0)	0	(0)	(0)			S	0
Microsilica slurry	2507								**CAS No**		7631-86-9					
Sodium acetate	1498	0	NI	0	R	0	NI	0	0	0	1	1			D	1
Sodium acetate solutions	639								**CAS No**		127-09-3					
Sodium aluminate (solution)	1234	Inorg	0	0	Inorg	NI	NI	(0)	(0)	(3)	(3)	(3)			D	3
Sodium aluminate solution	641								**CAS No**		11138-49-1					
Sodium aluminosilicate slurry	1235	Inorg	0	0	Inorg	1	0	0	0	0	1	1			S	1
Sodium aluminosilicate slurry	643								**CAS No**		1344-00-9					
Sodium benzoate	1475	0	NI	0	R	1	NI	0	(0)	(1)	0	1			D	1
Sodium benzoate	644								**CAS No**		532-32-1					
Sodium bicarbonate solution (less than 10%)	2386	0	NI	0	Inorg	0	0	0	0	(0)	0	0			D	0
Sodium bicarbonate solution (less than 10%)	3558								**CAS No**		144-55-8					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Sodium borohydride/sodium hydroxide mixture (soln.)	1239	Inorg	0	0	Inorg	2	NI	(2)	(1)	(3)	(3)	(3)			D	3
Sodium borohydride (15% or less)/Sodium hydroxide solution	645								**CAS No**							
Sodium bromide solution (less than 50%)	2387	0	NI	0	Inorg	0	0	0	0	(1)	0	1	R		D	3
Sodium bromide solution (less than 50%) (*)	3410								**CAS No**		7647-15-6					
Sodium carbonate	1243	Inorg	0	0	Inorg	1	NI	0	0	2	1	2			SD	2
Sodium carbonate solution	646								**CAS No**		497-19-8					
Sodium chlorate solid and solutions (50% or less)	1244	Inorg	0	0	Inorg	1	NI	1	0	(2)	1	1			D	2
Sodium chlorate solution (50% or less)	647								**CAS No**		7775-09-9					
Sodium dichromate solution	487	Inorg	0	0	Inorg	4	1	2	2	4	2	3	CMSsSr		D	3
Sodium dichromate solution (70% or less)	649								**CAS No**		10588-01-9					
Sodium dodecyl sulphate (*)	2451	0	NI	0	R	3	1	NI	NI	NI	NI	NI			NI	NI
	3869								**CAS No**							
Sodium hydrogen sulphide/Ammonium sulphide(mixture)	1253	Inorg	0	0	Inorg	3	NI	1	1	0	2	2			D	2
Sodium hydrosulphide/Ammonium sulphide solution	653								**CAS No**							
Sodium hydrogen sulphide (6% or less)/sodium carbonate (3% or less)	2262	0	NI	0	Inorg	1	NI	(0)	(0)	(1)	(1)	(1)			D	1
Sodium hydrogen sulphide (6% or less)/Sodium carbonate (3% or less) solution	650								**CAS No**							
Sodium hydrogen sulphide,solutions	1252	Inorg	0	0	Inorg	1	NI	1	1	1	2	2			D	2
Sodium hydrosulphide solution (45% or less)	652								**CAS No**		16721-80-5					
Sodium hydrogen sulphite,solutions	1251	Inorg	0	0	Inorg	1	NI	0	(0)	(0)	0	0			D	0
Sodium hydrogen sulphite solution (45% or less)	651								**CAS No**		7631-90-5					
Sodium hydroxide (30% or less)/Sodium aluminate (25% or less) solution (#)	2486	Inorg	(0)	(0)	Inorg	(4)	0	0	(0)	(3)	3	(3)			D	3
	3914								**CAS No**							
Sodium hydroxide solution (#)	1254	Inorg	0	0	Inorg	2	NI	1	1	3	3C	3			D	3
Sodium hydroxide solution	654								**CAS No**		1310-73-2					
Sodium hypochlorite solutions containing 20% and less but more than 2% NaOCl	1256	Inorg	0	0	Inorg	(4)	(1)	0	0	1	3	3			D	3
Sodium hypochlorite solution (15% or less)	2785								**CAS No**		7681-52-9					
Sodium hypochlorite solutions containing more than 20% Na0Cl	1255	Inorg	0	0	Inorg	5	2	0	0	1	3	3			D	3
Sodium hypochlorite solution (Full strength solution)	655								**CAS No**		7681-52-9					
Sodium methylate (**)	2443	NI	NI	(0)	(R)	(2)	NI	NI	NI	NI	NI	NI	T		DE	NI
Sodium methylate	3822								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Sodium Methylate (21-30% in Methanol)	2427	0	NI	0	R	1	NI	2	(2)	(3)	3	3	T		D	3
Sodium methylate 21-30% in methanol	3608								**CAS No**							
Sodium nitrate	1259	Inorg	0	0	Inorg	0	NI	(0)	(0)	(0)	(1)	(1)			SD	1
Sodium nitrate	656								**CAS No**		7631-99-4					
Sodium nitrite	340	Inorg	0	0	Inorg	3	0	2	(2)	2	0	1			SD	2
Sodium nitrite solution	658								**CAS No**		7632-00-0					
Sodium perborate monohydrate	2284	Inorg	NI	NI	Inorg	3	NI	1	0	(3)	2	3			NI	3
Sodium perborate monohydrate	2948								**CAS No**							
Sodium petroleum sulphonate	1860	0	NI	0	(NR)	2	NI	0	(0)	(2)	1	2			S	2
Sodium petroleum sulphonate	660								**CAS No**							
Sodium polyacrylate solution	1487	0	NI	0	NR	1	0	0	(0)	(1)	1	1			D	1
Sodium poly(4+)acrylate solutions	826								**CAS No**							
Sodium silicate (solution)	1262	Inorg	0	0	Inorg	2	NI	1	0	(3)	3	3			D	3
Sodium silicate solution	661								**CAS No**		1344-09-8					
Sodium sulphate (solution)	1499	Inorg	0	0	Inorg	0	0	0	(0)	(1)	1	1			SD	1
Sodium sulphate solutions	662								**CAS No**		7757-82-6					
Sodium sulphide (solution)	1263	Inorg	0	0	Inorg	3	NI	1	1	(3)	3A	3			D	3
Sodium sulphide solution (15% or less)	663								**CAS No**		1313-82-2					
Sodium sulphite (solution)	9	Inorg	0	0	Inorg	2	NI	0	(0)	(1)	0	1			D	1
Sodium sulphite solution (25% or less)	664								**CAS No**		7757-83-7					
Sodium tartrate succinate/Sodium tartrate disuccinate mixtures	1771	NI	1	1	NI	1	NI	0	NI	NI	NI	NI			D	NI
Sodium tartrates/Sodium succinates solution	665								**CAS No**							
Sodium thiocyanate	1264	Inorg	0	0	Inorg	2	NI	1	(0)	(1)	0	0			D	1
Sodium thiocyanate solution (56% or less)	667								**CAS No**		540-72-7					
Sorbitan monooleate	2215	(5)	NI	(5)	R	3	NI	0	NI	NI	0	0			Fp	2
Sorbitan monooleate	2408								**CAS No**							
Sorbitol	1265	0	NI	0	R	0	NI	0	(0)	(0)	(0)	(0)			D	0
Sorbitol solution	668								**CAS No**		50-70-4					
Soyabean oil (containing less than 4% free fatty acids)	2320	0	NI	0	R	0	NI	0	(0)	(1)	(0)	1			Fp	2
Soyabean oil	3050								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Soybean oil fatty acids, methyl esters	2431	0	NI	0	R	2	NI	0	0	0	0	0			Fp	2
Soybean Oil Fatty Acid Methyl Ester	3737								**CAS No**							
Styrene (monomer)	1273	3	(2)	3	R	3	NI	1	0	2	2	2	CM		FE	3
Styrene monomer	669								**CAS No**		100-42-5					
Styrene butadiene rubber latex	1274	0	NI	0	NR	0	NI	0	0	(1)	0	1			D	1
Latex: Carboxylated styrene-Butadiene copolymer; Styrene-Butadiene rubber	414								**CAS No**							
Sulpho hydrocarbon (C3-C88) (LOA)	1972	4	NI	4	NR	2	NI	0	0	0	0	0			Fp	2
Sulphohydrocarbon (C3-C88)	672								**CAS No**							
Sulpholane	1277	0	1	1	NR	2	0	1	0	0	1	2			SD	2
Sulpholane	673								**CAS No**		126-33-0					
Sulphonated polyacrylate solution	1760	NI	0	0	NI	0	NI	(0)	(0)	(0)	(0)	(0)			D	0
Sulphonated polyacrylate solution	674								**CAS No**							
Sulphur	906	Inorg	0	0	Inorg	0	NI	0	0	(1)	1	1			S	1
Sulphur (molten)	675								**CAS No**		7704-34-9					
Sulphuric acid	1280	0	NI	0	Inorg	2	NI	0	(0)	3	3C	3	C		D	3
Oleum	549								**CAS No**		7664-93-9					
Sulphuric acid	1280	0	NI	0	Inorg	2	NI	0	(0)	3	3C	3	C		D	3
Sulphuric acid, spent	677								**CAS No**		7664-93-9					
Sulphuric acid	1280	0	NI	0	Inorg	2	NI	0	(0)	3	3C	3	C		D	3
Sulphuric acid	676								**CAS No**		7664-93-9					
Sulphurized fat(C14-C20) (LOA)	1853	0	NI	0	NR	1	NI	0	(0)	(1)	0	(1)			FD	1
Sulphurized fat (C14-C20)	2257								**CAS No**							
Sulphurized polyolefinamide alkene(C28-C250)amine (LOA)	1855	0	NI	0	NR	0	NI	0	0	(0)	0	0			FD	0
Sulphurized polyolefinamide alkene (C28-C250) amine	2258								**CAS No**							
Sunflower oil	1283	0	NI	0	R	0	NI	(0)	(0)	(1)	(0)	(1)			Fp	2
Sunflower seed oil	2782								**CAS No**		8001-21-6					
sym-Dichlorodiethyl ether	588	1	1	1	NR	1	0	2	3	4	1	3		T	SD	3
Dichloroethyl ether	233								**CAS No**		111-44-4					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Tall oil acids/linoleic acid dimer/polyalkylenepolyamines/dodecylbenzenesulphonic acid complexes in naphtha/isopropanol	2448	0	NI	0	NR	1	NI	0	0	(0)	0	0	CM		Fp	3
Tall oil acids/linoleic acid dimer/polyalkylenepolyamines/dodecylbenzenesulphonic acid complexes in naphtha/isopropanol	3866								**CAS No**							
Tall oil acids reaction products with diethylenetriamine and acrylic acid in ethylene glycol	2497	3	NI	3	R	2	NI	0	0	(1)	0	1	Ss		D	2
	4131								**CAS No**		85586-18-1					
Tall oil acids reaction products with triethanolamine	2492	4	NI	4	NR	2	NI	0	0	(1)	1	0			Fp	2
	4126								**CAS No**		67784-78-5					
Tall oil, crude and distilled	1285	(4)	NI	(4)	(R)	(2)	NI	0	0	(0)	0	0	Ss		Fp	2
Tall oil (crude and distilled)	678								**CAS No**		68187-71-3					
Tall oil, distilled	2283	0	NI	0	R	0	NI	0	(0)	(0)	0	(0)			Fp	2
Tall oil, distilled	2890								**CAS No**							
Tall oil fatty acid (resin acids less than 20%)	1287	0	0	0	R	0	0	0	0	(1)	1	0			Fp	2
Tall oil fatty acid (resin acids less than 20%)	679								**CAS No**		61790-12-3					
Tall oil fatty acid, barium salt	1864	NI	NI	NI	NI	NI	NI	(1)	(0)	(2)	1	2			S	2
Tall oil fatty acid, barium salt	680								**CAS No**							
Tall oil pitch	2323	3	NI	3	NR	0	0	0	0	(0)	0	(0)			Fp	2
Tall oil pitch	3051								**CAS No**							
Tall oil soap (disproportionated solution)	1286	NI	NI	NI	NI	NI	NI	(1)	(0)	(2)	1	2			D	2
Tall oil soap (disproportionated) solution	681								**CAS No**							
Tall oil soap, crude	2432	0	NI	0	R	2	0	(0)	(0)	(3)	(3)	(3)	Ss		Fp	3
Tall oil soap, crude	3735								**CAS No**							
Tallow	1288	0	NI	0	R	0	NI	0	0	(0)	(0)	(0)			Fp	2
Tallow	682								**CAS No**		61789-21-6					
Tallowamidopropylamine Oxide in propylene glycol (70% or less) (#)	2482	NI	(2)	(2)	(R)	(4)	(2)	(1)	(1)	(3)	(3)	(3)			D	3
	4058								**CAS No**							
Tallow fatty acid	1289	0	NI	0	R	0	NI	0	(0)	(0)	(0)	(0)			Fp	2
Tallow fatty acid	684								**CAS No**							
1,1,2,2-Tetrachloroethane	53	2	2	2	NR	3	0	2	0	2	2	2			SD	2
Tetrachloroethane	687								**CAS No**		79-34-5					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
1,1,2,2-Tetrachloroethylene	1295	3	2	2	NR	(3)	2	0	0	0	2	1	C		S	3
Perchloroethylene	564								**CAS No**		127-18-4					
Tetrachloromethane	1296	2	2	2	NR	3	0	0	0	0	1	1	CT		S	3
Carbon tetrachloride	178								**CAS No**		56-23-5					
Tetradecanoic acid (Myristic acid)	1298	5	NI	0	R	0	NI	0	(0)	(1)	(1)	(1)			Fp	2
n-Tetradecanoic acid	491								**CAS No**		544-63-8					
Tetradecanoic acid (Myristic acid)	1298	5	NI	0	R	0	NI	0	(0)	(1)	(1)	(1)			Fp	2
Fatty acid (saturated C13+)	347								**CAS No**		544-63-8					
Tetraethylene glycol	1301	0	NI	0	NR	0	NI	0	0	0	1	1			D	1
Tetraethylene glycol	688								**CAS No**		112-60-7					
Tetraethylene pentamine	1302	0	NI	0	NR	3	NI	0	2	(3)	3	3	Ss		D	3
Tetraethylene pentamine	689								**CAS No**		112-57-2					
Tetraethyl lead	1303	4	5	5	NR	5	NI	3	2	4	2	2	NR		S	3
Motor fuel anti-knock compound (containing lead alkyls)	464								**CAS No**		78-00-2					
Tetrahydrofuran	1304	0	NI	0	R	0	NI	0	(0)	0	1	2			DE	2
Tetrahydrofuran	690								**CAS No**		109-99-9					
Tetrahydronaphthalene	1305	3	3	3	NR	3	NI	0	0	(2)	2	0			F	2
Tetrahydronaphthalene	691								**CAS No**		119-64-2					
1,2,3,4-Tetramethylbenzene	1307	4	NI	4	NI	4	NI	0	(0)	(1)	1	(1)			F	1
Tetramethylbenzene (all isomers)	692								**CAS No**		488-23-3					
Tetrapotassium pyrophosphate	2400	Inorg	0	0	Inorg	1	NI	0	NI	NI	NI	NI			D	NI
Tetrapotassium pyrophosphate	3635								**CAS No**		7320-34-5					
Thioglycolic acid	2496	0	NI	0	R	2	NI	2	2	3	3B	3			D	3
	4130								**CAS No**		68-11-1					
Thixatrol plus	2210	5	NI	5	R	3	NI	0	0	0	1	1			S	1
Thixatrol Plus	2699								**CAS No**							
Titanium dioxide slurry	2080	Inorg	1	1	Inorg	1	NI	0	0	0	1	1			S	1
Titanium dioxide slurry	2259								**CAS No**		13463-67-7					
Toluene	330	2	2	2	R	3	0	0	0	0	2	2	ANR	NT	E	3
Toluene	693								**CAS No**		108-88-3					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Toluene diisocyanate	1315	(3)	1	1	NR	2	NI	0	(0)	4	3	3	CSsSr		S	3
Toluene diisocyanate	694								**CAS No**		584-84-9					
Toluidines	1316	1	1	1	R	4	2	1	0	(2)	2	2	CM		FD	3
o-Toluidine	537								**CAS No**							
2,4-Tolylenediamine	1317	0	2	2	NR	3	0	2	2	4	2	3	CMSs		Fp	3
Toluenediamine	695								**CAS No**		95-80-7					
Tolyl triazole	2292	1	NI	1	NR	2	0	1	0	(2)	(1)	2			S	2
Tolyl triazole	696								**CAS No**							
Tributyl phosphate	1319	4	2	2	R	3	0	1	0	2	2	2			F	2
Tributyl phosphate	697								**CAS No**		126-73-8					
1,2,3-Trichlorobenzene	2191	4	4	4	NR	4	2	1	0	(2)	2	2			S	2
1,2,3-Trichlorobenzene (molten)	2288								**CAS No**							
1,2,4-Trichlorobenzene	1323	4	5	5	NR	4	1	1	0	(2)	2	2	M		S	3
1,2,4-Trichlorobenzene	7								**CAS No**		120-82-1					
1,1,1-Trichloroethane	1326	2	NI	2	NR	2	NI	0	0	0	2	2			SD	2
1,1,1-Trichloroethane	1								**CAS No**		71-55-6					
1,1,2-Trichloroethane	1327	2	1	1	NR	2	0	1	0	1	2	1			SD	2
1,1,2-Trichloroethane	3								**CAS No**		79-00-5					
1,1,2-Trichloro-ethylene	329	2	2	2	NR	3	NI	0	0	0	2	2	MC		SD	3
Trichloroethylene	698								**CAS No**		79-01-6					
Trichloromethane	1328	1	1	1	NR	2	0	2	0	2	1	1	CT		SD	3
Chloroform	186								**CAS No**		67-66-3					
1,2,3-Trichloropropane	1329	2	2	2	NR	2	0	2	2	2	2	2	C		SD	3
1,2,3-Trichloropropane	6								**CAS No**		96-18-4					
1,1,2-Trichloro-1,2,2-trifluoroethane	1330	3	2	2	NR	3	0	0	0	0	1	1			S	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	2								**CAS No**		76-13-1					
Tricresyl phosphate (less than 1% ortho-isomers)	1331	5	(3)	(3)	(R)	(4)	(4)	0	1	0	1	1	N		S	2
Tricresyl phosphate (containing less than 1% ortho-isomer)	700								**CAS No**		1330-78-5					
Tricresyl phosphate (more than 1% ortho-isomers)	1332	5	3	3	R	4	4	0	1	0	1	1	N		S	2
Tricresyl phosphate (containing 1% or more ortho-isomer)	699								**CAS No**		1330-78-5					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Tridecane	1333	0	NI	0	NI	0	NI	0	0	(1)	1	0			Fp	2
Tridecane	701								**CAS No**		629-50-5					
Tridecanoic acid	1334	5	NI	5	(R)	3	NI	(0)	(0)	(1)	(1)	(1)			Fp	2
Tridecanoic acid	702								**CAS No**		638-53-9					
Tridecyl acetate	1768	5	NI	5	NI	0	NI	0	(0)	(2)	2	2			F	2
Tridecyl acetate	703								**CAS No**		1072-33-9					
Triethanolamine	1338	0	0	0	R	1	NI	0	0	(2)	1	2			D	2
Triethanolamine	704								**CAS No**		102-71-6					
3-(Triethoxsilyl)propylamine	2445	1	1	1	R	1	NI	1	0	(3)	3B	3	Ss		D	3
	3824								**CAS No**		919-30-2					
Triethylamine	1339	1	0	0	R	3	0	1	2	2	2	3			D	3
Triethylamine	706								**CAS No**		121-44-8					
1,3,5-Triethylbenzene	1340	5	NI	5	NI	4	NI	0	(0)	(2)	(2)	(1)			F	2
Triethylbenzene	707								**CAS No**		25340-18-5					
Triethylene glycol	1341	0	NI	0	R	0	0	0	0	0	0	0			D	0
Triethylene glycol	708								**CAS No**		112-27-6					
Triethylenetetramine	1346	0	NI	0	NR	3	NI	0	2	(3)	3	3	Ss		D	3
Triethylenetetramine	709								**CAS No**		112-24-3					
Triethylenetetramine/2-piperazine-1-ylethylamine mixtures (#)	2456	0	NI	0	NR	2	NI	0	2	(3)	3	3	Ss		D	3
	3872								**CAS No**							
Triethyl phosphate	1348	0	0	0	NR	1	0	1	0	0	(2)	(2)			D	2
Triethyl phosphate	705								**CAS No**		78-40-0					
Triethyl phosphite	1349	0	NI	0	R	1	NI	1	0	2	1	2	Ss		FE	2
Triethyl phosphite	710								**CAS No**		122-52-1					
Triglycerides, C16-C18 and C18 unsaturated, reclaimed (UCO)	2470	(5)	NI	(5)	R	(0)	(0)	(0)	(0)	(1)	(1)	(1)			Fp	2
Used cooking oil (Triglycerides, C16-C18 and C18 unsaturated)* (m)	4023								**CAS No**		68990-65-8					
Triglycerides, C16-C18 and C18 unsaturated, reclaimed (UCO)	2470	(5)	NI	(5)	R	(0)	(0)	(0)	(0)	(1)	(1)	(1)			Fp	2
Used cooking oil (m)	3974								**CAS No**		68990-65-8					
Triisopropanolamine	1370	0	0	0	NR	1	0	1	0	0	(2)	3			FD	3
Triisopropanolamine	711								**CAS No**		122-20-3					

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Triisopropylated phenyl phosphates	1375	5	5	5	R	4	NI	0	0	0	0	0			S	0
Triisopropylated phenyl phosphates	712								**CAS No**		68937-41-7					
Trimethylacetic acid	1350	1	1	1	R	2	NI	1	1	(2)	2	2			Fp	2
Trimethylacetic acid	714								**CAS No**		75-98-9					
Trimethylamine	1353	0	NI	0	R	1	NI	1	0	2	3	3			DE	3
Trimethylamine solution (30% or less)	715								**CAS No**		75-50-3					
1,2,3-Trimethyl benzene	1354	3	3	3	NR	4	0	0	0	1	2	1			FE	2
Trimethylbenzene (all isomers)	716								**CAS No**		526-73-8					
2,4,4-Trimethyl hexamethylene diamine	1359	1	NI	1	NI	NI	NI	1	0	(3)	2	3	Ss		D	3
Trimethylhexamethylenediamine (2,2,4- and 2,4,4-isomers)	718								**CAS No**		25620-58-0					
Trimethyl hexamethylene diisocyanate	1360	0	NI	0	NI	3	NI	0	NI	NI	NI	NI	SsSr		NI	2
Trimethylhexamethylene diisocyanate (2,2,4- and 2,4,4-isomers)	717								**CAS No**		28679-16-5					
Trimethylol propane polyethoxylate	1362	NI	NI	NI	NR	1	NI	0	0	NI	NI	NI			NI	NI
Trimethylolpropane polyethoxylate	719								**CAS No**							
Trimethylol propane, propoxylated	2274	0	NI	0	(NR)	1	0	0	0	(1)	0	1			SD	1
Trimethylol propane propoxylated	2870								**CAS No**							
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	1845	4	NI	4	NR	0	NI	0	0	(1)	1	0			F	1
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	26								**CAS No**							
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	1364	3	NI	3	NI	2	NI	0	0	(1)	1	1			Fp	2
2,2,4-Trimethyl-1,3-pentanediol-1-isobutyrate	27								**CAS No**		25264-77-4					
Trimethyl phosphite	1365	0	NI	0	R	NI	NI	NI	NI	NI	NI	NI			S	NI
Trimethyl phosphite	713								**CAS No**		121-45-9					
1,3,5-Trioxane	1844	0	NI	0	NI	0	NI	0	0	0	0	1	R		SD	3
1,3,5-Trioxane	10								**CAS No**		110-88-3					
Tripropylene glycol	1372	0	0	0	R	0	0	0	0	(0)	0	0			D	0
Tripropylene glycol	720								**CAS No**		24800-44-0					
Trixylenyl phosphate	1377	5	4	4	NR	4	1	(0)	(1)	(0)	(1)	(1)	R		S	3
Trixylyl phosphate	721								**CAS No**		25155-23-1					
Tung oil	1378	0	NI	0	R	(2)	NI	(0)	(0)	(1)	(0)	(1)			Fp	2
Tung oil	2784								**CAS No**							

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EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Turpentine (wood)	1379	4	NI	4	NI	4	NI	0	(0)	1	(2)	2	SsA	(T)	D	2
Turpentine	722								**CAS No**		8006-64-2					
Undecanoic acid	1381	4	NI	4	(R)	3	NI	(0)	(0)	(2)	1	(2)			Fp	2
Undecanoic acid	723								**CAS No**		112-37-8					
1-Undecanol	1382	4	NI	4	R	4	NI	0	0	(2)	2	(1)			Fp	2
Undecyl alcohol	724								**CAS No**		112-42-5					
1-Undecene	1383	5	NI	5	NR	4	NI	(0)	(0)	(1)	(2)	(1)	A		F	3
1-Undecene	24								**CAS No**		821-95-4					
Urea	1384	0	0	0	R	1	NI	0	0	(1)	1	(1)			D	1
Urea solution	726								**CAS No**		57-13-6					
Urea	1384	0	0	0	R	1	NI	0	0	(1)	1	(1)			D	1
Urea	2627								**CAS No**		57-13-6					
Urea/Ammonium mono and dihydrogen phosphate/ Potassium chloride solution	1386	0	0	0	R	3	2	NI	NI	NI	NI	NI			NI	NI
Urea/Ammonium mono- and di-hydrogen phosphate/Potassium chloride solution	727								**CAS No**							
Urea/Ammonium nitrate solution (containing < 1% aq. ammonia)	1387	0	NI	0	R	(2)	(0)	0	0	(1)	(1)	(1)			D	1
Urea/Ammonium nitrate solution	729								**CAS No**							
Urea-ammonium phosphate solutions	2179	0	0	0	R	3	2	(0)	(0)	(2)	(2)	(2)			D	2
Urea/Ammonium phosphate solution	730								**CAS No**							
Urea-formaldehyde resin solution	1388	NI	NI	NI	NI	1	NI	1	1	NI	NI	NI	Ss		NI	2
Urea formaldehyde resin solution	725								**CAS No**							
Vegetable acid oils	2371	0	NI	0	R	0	NI	(0)	(0)	(1)	(1)	(1)			Fp	2
Vegetable acid oils (m)	3138								**CAS No**							
Vegetable oils fatty acid distillates	2369	0	NI	0	R	0	NI	(0)	(0)	(0)	(0)	(0)			Fp	2
Vegetable fatty acid distillates (m)	3137								**CAS No**							
Vegetable protein solution,hydrolyzed	1398	0	NI	0	R	0	NI	(0)	(0)	(0)	(0)	(0)			D	0
Vegetable protein solution (hydrolysed)	734								**CAS No**							
Vinyl acetate	1400	0	NI	0	R	2	NI	1	0	2	1	1	C		ED	3
Vinyl acetate	735								**CAS No**		108-05-4					
Vinyl ethyl ether	1405	1	NI	1	NR	1	NI	0	0	0	1	1			E	2
Vinyl ethyl ether	736								**CAS No**		109-92-2					

ANNEX 3 - GESAMP/EHS COMPOSITE LIST
GESAMP Hazard Profiles

EHS Name TRN Name	EHS TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Vinylidene chloride	1406	2	1	1	NR	2	NI	2	0	(2)	2	2	M		SD	3
Vinylidene chloride	738								**CAS No**		75-35-4					
Vinyl neodecanoate	1404	5	NI	5	NR	3	NI	0	0	(3)	3	3			F	3
Vinyl neodecanoate	737								**CAS No**		45115-34-2					
Vinyl toluenes	1409	3	3	3	NR	3	NI	0	0	2	2	1	NM	(T)	F	3
Vinyltoluene	739								**CAS No**		25013-15-4					
White spirit, low (15-20%)aromatic	1411	(4)	NI	(4)	(R)	3	NI	(0)	(0)	(2)	(1)	(2)	A		F	3
White spirit, low (15-20%) aromatic	742								**CAS No**							
Wood lignin with sodium acetate/oxalate	2403	NI	NI	(0)	NR	(0)	NI	0	(0)	(1)	(1)	(1)			D	1
Wood lignin with sodium acetate/oxalate	3638								**CAS No**							
Xylene (mixed isomers)	1408	3	NI	3	NR	3	0	0	0	0	2	2		(T)	FE	2
Xylenes	743								**CAS No**		133-20-7					
Xylenes/Ethyl benzene (10% or more) mixture	2269	3	2	2	NR	3	1	(0)	(0)	(2)	(2)	(2)		(T)	FE	2
Xylenes/ethylbenzene (10% or more) mixture	2337								**CAS No**							
Xylenols (mixtures)	1422	2	NI	2	R	3	NI	1	2	(3)	3	3		(T)	Fp	3
Xylenol	744								**CAS No**		1300-71-6					
Yeast Extract Solution with Propylene Glycol (25% or less)	2396	NI	0	0	R	0	NI	0	0	(1)	0	1			D	1
Stabilized Yeast Extract Solution	3631								**CAS No**		8013-01-2					
Zinc alkaryl dithiophosphate (C7-C16) (LOA)	1977	0	NI	0	NR	3	NI	0	0	(0)	(0)	(0)			Fp	2
Zinc alkaryl dithiophosphate (C7-C16)	745								**CAS No**							
Zinc alkenylcarboxamide (LOA)	2053	NI	0	0	NR	0	NI	0	0	(1)	1	(1)			Fp	2
Zinc alkenyl carboxamide	746								**CAS No**							
Zinc alkyl dithiophosphate	1428	5	NI	5	NR	3	NI	0	0	0	2	2			S	2
Zinc alkyl dithiophosphate (C3-C14)	747								**CAS No**							
Zinc bromide solutions	2227	Inorg	4	4	Inorg	3	NI	1	(2)	(3)	3B	3	Ss		D	3
Zinc bromide solutions	2617								**CAS No**							
Zinc chloride	1425	Inorg	4	4	Inorg	4	1	(1)	(1)	(3)	(3)	(3)			D	3
Zinc chloride	2869								**CAS No**		7646-85-7					
Zinc chloride	1425	Inorg	4	4	Inorg	4	1	(1)	(1)	(3)	(3)	(3)			D	3
Drilling brines (containing zinc salts)	307								**CAS No**		7646-85-7					

ANNEX 4

THE DELETION OF "TAINTING OF SEAFOOD" FROM COLUMN E1

Introduction

1 Tainting is the process whereby seafood acquires an off flavour following exposure of the food organism to chemicals. In 1982, GESAMP defined taint as "a foreign flavour or odour in the organisms induced by conditions in the water to which the organisms are exposed".

2 Many cases of tainting have been observed as a result of heavy oil pollution following accidental releases of oil from oil tankers or as a result of continuous sources of oil pollution in harbour or river areas.

3 In the late 1980s, GESAMP and the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC) developed separate test guidelines for measuring tainting. The ECETOC method was tested in a collaborative study, which despite standardization, demonstrated its imprecision at the desired threshold levels.

4 Published data on tainting substances is scarce in the scientific literature and little testing has been done since GESAMP first introduced this criterion. The last review of the available data on tainting of seafood was published by Höfer some 30 years ago (Water Research 32(12): 3505-3512. 1998). The tainting ratings within the GESAMP Composite List were last checked in 2000 to ensure that all ratings were supported by sufficient evidence and the tainting ratings, where assigned, have continued to be listed in the Composite List under column E1 of the GESAMP Hazard Profile. The assignment or ratings for tainting in the E1 column ceased following publication of the Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships in 2002.

5 More recently, tainting has been deleted from all regulations for classifying substances carried by ships, either in bulk or in packaged form. Additionally, from a scientific standpoint, no relevant work on tainting of seafood by chemicals has been published in the scientific literature within the last 20 years, nor were there any requests for information or comments on tainting in the intervening period.

Deletion of "Tainting of Seafood" from column E1

6 Taking into account the above, that deletion of the rating on tainting under column E1 would be justified, as there are no current maritime regulations referencing this property. Furthermore, there has been no testing for taint in the last decade nor has there been any related discussion on this property in the scientific literature on marine environmental protection, in respect of chemical pollution.

7 As a consequence, the Group agreed to delete the ratings for tainting in the GESAMP Hazard Profiles, and consequently within the GESAMP Composite List, but to retain the column for other use. The information on tainting would, however, by retained in GISIS for historical purposes, should there be a need to consult such information in the future.

8 In addition, the Group agreed to the following amendments to the current edition of GESAMP Reports and Studies No.64, 2nd edition (2014):

.1 delete all references to column E1 and to tainting in section 2.2 (including in table 1);

.2 delete section 4.5.1 and renumber the remaining sections under chapter 4 accordingly;

.3 delete all related references to tainting given in the bibliography;

.4 delete the definition for tainting set out in the glossary and

.5 delete the reference to tainting in column E1 in the table on the back cover, as well as the associated footnote.

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ANNEX 5

ASSIGNMENT OF A NEW HAZARD PROPERTY IN COLUMN E1 (FLAMMABILITY)

Background

1 At EHS 53, the Group recalled that at EHS 51, it had considered the use of the GESAMP Hazard Profile for the purpose of chemical spill response. Initial discussions confirmed that the addition of flammability and other properties, such as water reactivity, in the GESAMP Hazard Profile would be valuable information for first responders when responding to incidents involving hazardous materials.

2 The Group noted that it had considered the product flash point as part of its assessments, notably in the assignment of the E3 rating, but that flammability as a separate property was not captured in the GESAMP Hazard Profile.

3 The Group further noted that certain flammability properties were used by the ESPH WG in the assignment of carriage requirements under chapter 21 of the IBC Code (see paragraphs 8 and 9 below).

4 Taking the above into account, the Group considered the possibility of adding a column to the GESAMP Hazard Profile to capture information on flammability. In discussing a possible way forward, the Group noted that there were a number of properties associated with flammability, such as flash point, auto-ignition temperature and explosivity/flammability range. Having decided that further discussion was needed to determine the most appropriate way to reflect flammability information in the hazard profile, the Group agreed to consider the matter in more detail intersessionally, via correspondence, and to revisit this topic at GESAMP/EHS 54.

5 This issue was also brought forward by the Chair of the GESAMP/EHS Working Group to ESPH WG in October 2016. During the discussion, it was agreed that flash point information would be the most appropriate flammability parameter to include in the GHP for the purpose of assigning carriage requirements.

6 This was in line with the proposal from GESAMP/EHS, which had identified that flash point was the information required in case of accidental spillages.

The use of cut-off values in regulation

7 Under maritime safety regulations, the *International Convention for the Safety of Life at Sea* (SOLAS) refers to a flash point of 60°C in respect of specific safety requirements in ships, in particular for cargo related aspects of equipment in holds and the requirement for firefighting systems. This is *inter alia* relevant for oil tankers.

8 For the carriage of bulk liquids in chemical tankers according to the *International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk* (IBC Code), flash point information with cut-off values of 23ºC and 60ºC is relevant for assigning carriage requirements. According to paragraph 21.7.11 of the IBC Code, products with a flash point <23ºC are classified as "highly flammable", whilst products with a flash point ≥ 23ºC and <60ºC are classified as "flammable".

9 The ESPH Working Group considers flashpoint values when defining safety requirements for the carriage of products, in accordance with chapter 21 of the IBC Code, as follows:

.1 under paragraph 21.3.1, as a minimum carriage requirement in connection with an explosive/flammability range (expressed as a percentage by volume in air) of ≥23ºC;

.2 under paragraph 21.4.5.2 for the assignment of ship type, together with the explosive/flammability range;

.3 under paragraph 21.4.6.1 for the assignment of tank type, together with the explosive/flammability range;

.4 under paragraph 21.5.11 for the specification of overflow control, together with the explosive/flammability range;

.5 under paragraph 21.4.7.1 for the assignment of the tank vents using a cut-off o ≤60ºC;

.6 under paragraph 21.4.9.1 for the specification of electrical equipment using the cut-off ≤60ºC (in practice, liquids with a flashpoint of >93ºC are classified as non-flammable (NF);

.7 under paragraph 21.4.10.1 for the specification of gauging using the cut-off ≤60ºC; and

.8 under paragraph 21.4.11 for the specification of vapour detection using the cut-off ≤60ºC.

10 Based on decisions set-out in chapter 19 of Agenda 21, adopted at the *United Nations Conference on Environment and Development* (UNCED, 1992), a harmonized system for hazard classification had been developed. When drafted, all regulations worldwide had been analyzed and a global compromise was developed. This United Nations' *Globally Harmonized System of Classification and Labelling of Chemicals* (GHS) sets regulatory standards for the flammability hazard by the cut-off values of 23ºC, 60ºC and 93ºC. Gas oils, diesel and light heating oils in the flash point range of 55ºC to 75ºC are regarded as a special group. Some liquids in the flash point range of 35ºC to 60ºC may be regarded as non-flammable. The basic classification is shown in table 1.

Table 1: Categorization ranges under the UN GHS Chapter 2.6

Category		**Criteria**	**Label**
extremely flammable	1	Flash point <23ºC and initial boiling point ≤35ºC	Flame (Danger)
highly flammable	2	Flash point <23ºC and initial boiling point >35ºC	Flame (Danger)
flammable	3	Flash point ≥23ºC and ≤60ºC	Flame (Warning)
combustible	4	Flash point >60ºC and ≤93ºC	No flame (Warning)

11 As early as the 1950s, the United Nations developed recommendations for the transport of dangerous goods. Today, these *Model Regulations on the Transport of Dangerous Goods* cover flammable liquids. Flammable liquids are liquids or liquids containing solids which give off flammable vapour of temperatures of not more than 60ºC (closed-cup test) or not more than 65.6ºC (open-cup test). When assigning package groups, liquids with a flash point of less

than 23ºC are regulated more strictly (not for viscous substances) and there is a specific regulation for liquids which do not sustain combustion using the flash point cut-off >35ºC. Gas oils, diesel and light heating oils in the flash point range of 55ºC to 75ºC are regarded as a special group. Some liquids in the flash point range of 35ºC to 60ºC may be regarded as non-flammable.

12 The maritime regulations for packaged dangerous goods covered by the *International Maritime Dangerous Goods Code* (IMDG Code) is based on the UN Model Regulations with regard to the hazard classification of cargoes, with flashpoint cut-off values of 23ºC and 60ºC, respectively.

Criteria for the proposed GESAMP Hazard Classification for Flammability

13 The approach used was to prioritize the systems that are globally harmonized within the United Nations and those used in maritime regulations, making particular reference to the assignment of carriage requirements for bulk noxious liquids under the IBC Code.

14 Taking the above into account, the following definition for flashpoint is proposed;

> *Flash point is the lowest temperature (corrected to a standard pressure of 101.3 kPa) in degrees Celsius at which the application of an ignition source causes the vapour to ignite under specific test conditions (determined by an approved flash point apparatus: closed-cup test).*

15 With regard to the assignment of ratings, general approach set out in the GESAMP Hazard Evaluation Procedure and the Hazard Profiles is proposed, i.e. the assignment of a numerical rating representing a range, with flashpoint cut-off values serving as the threshold between ratings. Therefore, a numerical rating using flash point cut-offs should be converted to a ratio as has been done for the other hazards, starting with the lowest hazard of "0" and with successive escalating ratings representing an increasing flammability hazard.

16 After analyzing existing classification systems for flammability, it is suggested that the best way forward would be a four category rating system with cut-off values at 23ºC, 60ºC, and 93ºC.

17 Such a rating system would show hazard ratings based on temperature ranges corresponding to most internationally agreed classification systems and would provide a practical rating system to be used by emergency response personnel.

18 It must be acknowledged that for the purposes of emergency response, flashpoint information should not be considered in isolation for some products, but rather together with boiling point information, providing an indication of the vapour generation at a specific temperature, thus requiring a more sophisticated evaluation of the spill hazards and possible need for evacuation.

19 A similar case could be made for the inclusion of other flammability properties in the rating system, such as auto-ignition temperature and explosive/flammable limits. However, for spill responders, the most critical piece of information is the flash point – i.e. whether and how easily a substance's vapours will ignite. The proposed GESAMP/EHS rating system is shown in the table below.

Table 3: Proposed GESAMP/EHS rating system for flammability

Rating		**Temperature range (ºC)**	
Non-flammable	**0**	**>93**	
Combustible	**1**	**>60 - ≤93**	
Flammable	**2**	**≥23 - ≤60**	
Highly flammable	**3**	**<23**	

20 The system developed for the GESAMP Hazard Evaluation would correspond to the GHS categories as shown in table 4.

Table 4: GESAMP hazard ratings and GHS categories for the flammability hazard

GESAMP ratings		**GHS categories**	
0	Non-flammable	-	(none)
1	Combustible	3	Combustible
2	Flammable	2	Flammable
3	Highly flammable	1 or 2	Extremely or highly flammable

21 It is proposed that this new rating be included under column E, which covers the hazards to other uses and users of the sea from operational discharges and accidental releases of substances. Further to the proposal to delete the rating associated with "*Tainting of Seafood"* under column E1, the new flammability rating could be introduced in column E1.

***

ANNEX 6

REFINEMENT OF COLUMN C3 (ACUTE INHALATION TOXICITY)

Understanding the existing rating approach

1 From the 1970s through to the 1990s, GESAMP/EHS evaluated the acute oral toxicity under column C and rated the acute inhalation toxicity together with skin/eye irritation (see GESAMP Report & Studies No.64, page 10, table 1):

> *C* *Hazards to human health: ingestion of water containing the chemical (Hazard: Acute oral toxicity to humans; measured in appropriate tests with laboratory animals).*
>
> *D* *Risk to human health by skin and eye contact or inhalation (Hazard: Irritation or injury to the skin, mucous membranes, or eyes and inhalation hazard; measured in appropriate tests with laboratory animals, or from human experience).*

2 The decision to include acute inhalation toxicity in column D was based on risk assessment orientated thinking. Column C (covering acute oral toxicity) was used for assigning carriage requirements at that time and took into consideration potential swallowing of cargo following accidental damage of tanks and spillage into the sea. Column D covered potential exposure to aerosols and mists of water and spilled cargo.

3 The terms of reference of GESAMP/EHS were, at that time, limited to hazard assessment of the environmental hazards of transporting chemicals (not mineral oils) in tank ships, with respect to cargo discharge and accidental spillage into the sea. Aspects of occupational health considerations were not included in the terms of reference of the Group at that time.

4 In the 1990s, work started on the development of a globally harmonized system for classification and labelling of industrial chemicals, as agreed at the Rio Conference as Agenda 21 in 1992. At the same time, discussion started at IMO on the revision of MARPOL Annex II, which regulates the transport of bulk noxious liquids in ships. The GESAMP/EHS experts saw a need for a revision of the hazard evaluation process developed in the 1970s and the existing calculation approach was also criticized by NGOs at the Marine Environmental Protection Committee (MEPC). All of these developments focused mainly on the hazards to aquatic organisms. However, with the drafting of the GHS at OECD and the IBC Code at IMO (based on the revised MARPOL Annex II), a need for significant amendment of the rating system for the evaluation of acute toxicity hazards to humans was identified.

5 At IMO, the 1995 expert panel on procedures for the evaluation of the hazards of harmful substances carried by ships recommended to shift the acute inhalation toxicity into a sub-column under column C, together with oral and dermal toxicity.

6 At that time, most of the test data submitted addressed crude (combined) exposure of animals by vapour, as well as mists/droplets. Only very few tests were based on nose/mouth only and/or vapour only exposure. This combined exposure was in line with the approach taken by GESAMP in the past. When developing a new rating system, the cut-off criteria from the developing GHS were to be taken into consideration. The draft of the final report from the OECD (OECD Series on Testing and Assessment Number 33, August 2001) was adopted as guidance in the late 1990s by GESAMP/EHS.

7 The GESAMP/EHS experts found the OECD guidance very difficult to apply for combined exposure to a vapour/mist phase, as typical bulk liquid products are identified by their principal constituents (technically pure chemicals), but in fact they have chemical compositions equivalent to mixtures of chemicals (including technical impurities or by-products).

8 The OECD guidance contained three footnotes:

.1 The draft GHS at the OECD level contained the following guidance for liquid and vapour phases and for the use of ppm versus mg/l:

> *"For some chemicals the test atmosphere will not just be a vapour but will consist of a mixture of liquid and vapour phases. For other chemicals the test atmosphere may consist of a vapour which is near the gaseous phase. In these latter cases, classification should be based on ppm as follows: Category 1 (100 ppm), Category 2 (500 ppm), Category 3 (2500 ppm), Category 4 (5000 ppm). Work in the OECD Test Guidelines Programme should be undertaken to better define the terms "dusts", "mists" and "vapours" in relation to inhalation toxicity testing."*

The test data that had been submitted to GESAMP/EHS prior to that generally referred to a mixture of liquid and vapour phase or lacked information about the specific type of exposure (testing). Most of the data on file referred to technically pure products containing different chemicals (technical impurities or by-products) with different molecular weights at average concentrations and they were presented in mg/l. In some cases concentrations were reported in ppm and it was often not clear whether the pure vapour of the chemical was near to the gaseous phase. GESAMP/EHS decided to introduce a transfer formula between ppm and mg/l to address some cases. The vapour cut-off criteria from the OECD guidance were selected as the first sentence of this guidance (cited above), but offered no clear solution for the test data to be evaluated and rated. To date there is still no clear guidance in paragraph 3.1.2.6.2 of the GHS; however, ppm cut-off values for categorization are very similar to those for mg/l for molecular weights between 24 and 120.

.2 The draft GHS at the OECD level contained the following guidance for the conversion for exposure times:

> *"Inhalation cut-off values in the table are based on 4 hour testing exposures. Conversion of existing inhalation toxicity data which has been generated according to 1 hour exposures should be by dividing by a factor of 2 for gases and vapours and 4 for dusts and mists."*

There was no guidance for the existing testing data on file at IMO concerning combined exposure to vapours and mists. After a detailed discussion, GESAMP/EHS decided, based on Haber's rule[1], to adopt a conservative approach and employ the factor for mists to the testing time extrapolation from the OECD guidance.

[1] Where C is the concentration of the gas (mass per unit volume), t is the amount of time necessary to breathe the gas, in order to produce a given toxic effect, and k is a constant, depending on both the gas and the effect.

.3 The draft GHS at the OECD level contained the following guidance for the sustainability of cut-off values:

> *"The values for dusts and mists should be reviewed to adapt to any future changes to OECD Test Guidelines with respect to technical limitation in generating, maintaining and measuring dust and mist concentrations in respirable form."*

That footnote introduced an uncertainty about the cut-offs which has not been addressed in the UN GHS (Globally Harmonized System of Classification and Labelling of Chemicals, 6th Ed, 2015; para. 3.1.2.6.4).

9 Based on these considerations GESAMP/EHS developed the rating system for column C3, based on the following:

.1 taking into account existing test data on mixed exposure to vapour/mist;

.2 based on the GHS cut-off criteria for vapours with a formula transferring ppm into mg/l; and

.3 based on Haber's rule for time extrapolation using the factor 4 for transferring 1 hr exposure to 4 hr exposure.

As a result, column C3 ratings are not fully harmonized with the GHS.

10 After introducing these criteria it became clear that for most of the products carried as bulk noxious liquids, inhalation toxicity data was not available, resulting in large numbers of NI ratings in the C3 column. Before the revised IBC Code was finally approved by the Maritime Safety Committee, MSC 79 stated that a rating under the C3 column was a prerequisite for any approval of products under chapter 17 or 18 of the IBC Code. This requirements was then communicated via and MEPC/MSC Circular identifying those chemicals with missing C3 ratings (MSC/Circ.1128-MEPC/Circ.423, December 2004).

11 Based on this decision by MSC, GESAMP/EHS was asked to extrapolate ratings under column C3 for those chemicals where no test results were available. The Working Group developed a scientific extrapolation procedure to be applied to those products with NI ratings under column C3 (see BLG.1/Circ.15). This permitted transportation of these chemicals (as listed in the circular MSC/Circ.1128 a year before) without the need for new testing on animals. Further to a request to GESAMP/EHS to undertake a scientific review of the procedure, a scientific paper was submitted to a toxicological journal covering a scientific review (Höfer T., James D., Syversen T., Bowmer T.: Estimation of the Acute Inhalation Hazard of Chemicals Based on Route-to-route and Endpoint Extrapolation. ATLA 2011-39: 541-556). Within the review process and also mentioned in this paper, the limitations of the extrapolation approach for mist and vapour/mist exposure were presented. There was a clear and common understanding that any extrapolation of acute vapour toxicity would not be possible.

12 In 2004, the IMO bodies confirmed that GESAMP/EHS should not consider occupational health issues as part of the evaluation of chemical hazards. This additionally clarified that further evaluation of the occupational health impact from vapours on board would remain outside the remit of GESAMPEHS (EHS 40/9). There was therefore no need to develop any procedure for evaluating vapour toxicity data.

13 More than ten years later, GESAMP/EHS was asked by ESPH to reconsider the situation. The reasoning behind this request was based on practical experience using the GESAMP Hazard Profile for assigning carriage requirements: The maritime administrations, as well as the ESPH Working Group, were using C3 ratings directly for occupational risk management, without specifically evaluating the vapour exposure.

14 GESAMP/EHS explained the situation and introduced specific paragraphs in Report & Studies No.64, 2nd edition, as follows:

.1 page 40, section 4.3.1.3

"Under accidental conditions on board ships, bursting pipes could create aerosols, while in the aftermath of an accidental discharge, mist may be generated by waves on the sea surface. In such cases, the estimated hazard could correspond to the situation and the potential exposure. On the other hand, under normal operational conditions, there may not be any aerosol generated in tanks, and liquids with very low vapour pressure will not even create vapours. Under such circumstances, the inhalation risk could be significantly lower than indicated by the hazard identification on its own and further data may need be taken into consideration, e.g. vapour pressure of the cargo at the transport temperature or the saturated vapour pressure, in order to apply appropriate risk management measures."

.2 top of page 43:

"In some cases the ratings shown in brackets may overestimate the potential for poisoning by inhalation, particularly for substances with low saturated vapour pressure. Consequently, a decision may be taken by IMO to utilize other methods for defining specific occupational health protection requirements on board ships (risk management)."

15 Accordingly, for some products, the chemical industry at the ESPH Working Group questioned the use of the C3 rating, as the IBC Code refers only to vapour exposure when assigning carriage requirements. The ESPH Working Group subsequently requested GESAMP/EHS to provide advice in this situation for specific cases (BLG.1/Circ.30). In response, GESAMP/EHS introduced a hash mark (#) notation within Reports & Studies No.64, 2nd edition (page 44) and in the GESAMP Composite List (starting at BLG.1/Circ.35):

"Entries with a hash mark (#) reflect that for the C3 rating, the product, as a vapour rather than an aerosol or mist, could be considered to have a lower inhalation hazard for the purpose of risk management."

16 The report of GESAMP/EHS 52 (PPR.1/Circ.2) clearly outlined the limitations of assigning a hash mark:

"3.10 The Group had agreed, in particular, that where the GESAMP acute inhalation toxicity extrapolation method had been applied or an aerosol test result had been evaluated, and a high rating had been assigned, but test data using saturated vapour were also available indicating no toxicity or less toxicity, then the extrapolated or aerosol-based rating would be retained to indicate that a mist or aerosol is likely to be hazardous under certain circumstances (e.g. burst or leaking pipe joints under pressure, or due to wave action following a release into the marine environment). In such cases the Group had agreed that a hash mark (#) notation would be added to the product name to indicate that for inhalation concerns from vapour, the product would be likely to have a lower inhalation hazard.

3.11 In reviewing the new product submissions, the Group debated as to whether the hash (#) notation could be assigned based on estimation or extrapolation, or whether actual saturated vapour test results should be required, as stated in Reports and Studies No.64 (paragraph 4.3.4.2).

3.12 The Group concluded its discussions by reconfirming that it would indeed continue to require actual vapour test data in order to assign the (#) rating to a product presenting a reduced vapour inhalation hazard."

Understanding the challenge

17 The ESPH Working Group, in developing the revised chapter 21 of the IBC Code, setting out the rules and criteria for assigning carriage requirements, introduced a direct reference to GESAMP hazard ratings. This included the use of the C3 rating for assigning a number of carriage requirements (ship type, tank vents, gauging, vapour detection, requirements for toxic products, etc.). Alternatively, in relation to the hash mark (#), an assignment of carriage requirements should be possible, taking into account LC50 values in combination with the saturated vapour pressure (ATE/SVC ratio; see PPR 3/4/4).

18 In 2015, GESAMP/EHS was advised that application of the GESAMP Hazard Profile was no longer limited to pollution hazards, but also addressed ship safety and occupational health and safety aspects (GESAMP Reports & Studies No. 92, page 9). In the debate at the meeting (although not recorded in the report) an amendment to the terms of reference was considered unnecessary as other GESAMP working groups (e.g. working group 34 for ballast water management systems) were also addressing aspects of occupational health and safety.

19 In 2016, GESAMP/EHS 53 discussed the issue. As a first effort to address these considerations, the Group recalled that at EHS 51, it had developed a new notation whereby a hash mark is added to those product entries with a lower inhalation risk by vapour exposure than is indicated by the hazard rating in column C3. However, noting that this was not sufficient and could not be used in the new ATE/SVC ratio calculation being introduced in the revised chapter 21 of the IBC Code, the Group agreed to consider other possibilities within the GESAMP Hazard Profile for providing the information needed for the calculation. One option considered was dividing the C3 ratings into sub-categories (similar to the A1 column) to consider inhalation of both vapours and mists, where possible, based on the data submitted. Noting that more discussion was needed, the Group agreed to progress the matter in more detail intersessionally and to revisit this topic at EHS 54.

20 ESPH 22 in October 2016 noted the discussions of GESAMP/EHS concerning a refinement of the C3 column. The Group asked GESAMP/EHS to address this topic as a matter of priority, noting the timeline for finalization of chapter 21 of the IBC Code (PPR 4/3).

Cornerstones and proposal for a refined C3 rating

21 As there is no capacity nor budget for undertaking a re-evaluation of up to 1000 substances contained in the GESAMP Composite List, any refinement should be limited to a structural change and a pragmatic guidance on assigning ratings under a refined structure. New or additional ratings would be limited to those substances which come up under the agenda items "Evaluation of new substances" or "Correspondence with industry/government and consideration of issues related to evaluations".

22 Taking into account the urgent need for the refinement in respect to the revision of the IBC Code, any new structure should be introduced as soon as possible.

23 To refrain from any fundamental amendment to the upcoming revised chapter 21 of the IBC Code, the relevant column used for assigning carriage requirements will be called "C3 column". This column will cover, as far as possible, the classification used directly in the IBC Code, which is the acute toxicity based on vapour exposure ATE (LC_{50}) test data. Any extrapolation procedure from other exposure routes or toxic properties is not possible for rating vapour exposure acute toxicity hazards.

24 However, as per the current situation, ratings under Column C3 for chemicals lacking specific vapour toxicity data will be based on combined vapour/mist or mist-only exposure test data (as the existing C3 ratings). There could be two reasons for this:

.1 as an extrapolation is possible for combined vapour/mist exposures only, the rating in brackets should be kept as in the existing C3 column;

.2 the rating for combined vapour/mist exposures has to be used for the rating in column E3.

25 The new (additional) ratings will be based on cut-off values and related specifications, as outlined in the UN GHS chapter 3.1 for vapour only exposure. Vapour only studies showing no deaths following exposure to a saturated vapour (limit test) should be rated C3b = 0.

26 Acute mist inhalation toxicity studies using particle exposure strictly with a mass median aerodynamic diameter (MMAD) 1 - 4 µm (ideally in the range 1.5 - 3 µm) according to OECD Test Guidelines 403 or 436 and the OECD Guidance document on acute inhalation toxicity testing (OECD Series on Testing and Assessment No. 39) have to be evaluated on a case by case basis. These were developed along the "split-entry principle" assuming that non-laboratory mist exposure would only contain a small part of fully respirable aerosol particles. For testing according to OECD standards, mists have to be limited to fully respirable aerosol sizes (MMAD 1 - 4 µm). Thus, in the GHS specific cut-off values for such artificially derived mists containing only the fraction of the fully respirable part were introduced. Based on GESAMP expert judgement such studies could be used for ratings under column C3a in approximation bearing in mind the cut-off values for mists contained in the GHS.

Ratings

27 The modification to the rating system would be more of a refinement of the existing approach and structure. The addition of a column for vapour inhalation under column C3 appears to be the best way forward. To refrain from creating cross-referencing issues with the revised chapter 21 of the IBC Code, a "C3 rating" for the assignment of carriage requirements is proposed, as set out below. The existing C3 rating is retained, as it is required for the environmental risk assessment under column E3. The following is proposed as the new structure under column C3:

Rating*	Relative Hazard	C3	
		C3a	C3b
		Vapour/mist exp. ATE (mg/l/4 hr)	Vapour-only exp. ATE (mg/l/4 hr)
0	Negligible	>20	>20
1	Slight	>10 - ≤20	>10 - ≤20
2	Moderate	>2 - ≤10	>2 - ≤10
3	Moderately high	>0.5 - ≤2	>0.5 - ≤2
4	High	≤0.5	≤0.5

* Additional entry/rating could be "NI"

Application

28 The C3a column addresses the existing column C3 ratings based on combined vapour/mist exposure data or such data achieved by extrapolation. Extrapolated hazard assessments are identified by ratings in brackets as in the existing column C3. The conversion along exposure times would be made according to the existing rules in GESAMP Reports & Studies No.64 (factor 4 for 1 hr to 4 hr). The C3a ratings will be used for two purposes:

.1 for the assessment of environmental hazards, i.e. for the ratings in column E3 by GESAMP-EHS (for coastal response, e.g. at the beaches) or in case of spillage into the sea by emergency responders (when they use the GESAMP Hazard Rating as information source); or

.2 for the generation of the C3 rating as long as no vapour toxicity testing data are available, but only mixed vapour/aerosol exposure testing results or an extrapolated rating according to the procedure outlined in paragraph 4.3.4.2 of GESAMP Reports & Studies No.64.

29 The C3b column covers ratings based on the evaluation of vapour only exposures. Extrapolated hazard assessments and ratings would not be acceptable. The conversion along exposure times would be made according to the guidance given in the UN GHS Chapter 3.1 for vapours (factor 2 for 1 hr to 4 hr). Initially, most entries in that column will read "NI". The C3b rating will be used in general for the risk management and the occupational health protection issues on board tankers, e.g. the assignment of carriage requirements for bulk liquids under the IBC Code regulation.

30 The C3 rating would be shown in the GESAMP Composite List similar to the ratings given under column A1. The C3a rating would be shown by default, but a C3b rating would overrule (see figure 1). Values in brackets are only acceptable if vapour only exposure data are not available. Initially, most entries in that column will show the existing ratings in column C3. The C3 rating remains the point of reference in chapter 21 of the IBC Code.

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ANNEX 7

PROVISIONAL AGENDA FOR THE FIFTY-FIFTH SESSION OF THE GESAMP/EHS WORKING GROUP

1 Adoption of the agenda

2 Outcome of other bodies

3 Evaluation of new substances

4 Re-evaluation of substances and consideration of issues related to evaluations

5 Classification issues

6 Consolidation of existing data files

7 Revision of Reports and Studies No.64

8 Any other business

9 Consideration and adoption of the report