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*
1 Identification

· **Product identifier**

· **Trade name: In-line Indicating Oxygen Trap**
· **Article number** N9301191
· **Application of the substance / the mixture** Laboratory chemicals

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**

PerkinElmer, Inc.
710 Bridgeport Avenue
Shelton, Connecticut 06484 USA
CustomerCareUS@perkinelmer.com
203-925-4600
· **Emergency telephone number:**
CHEMTREC (within US) 800-424-9300
CHEMTREC (from outside US) +1 703-527-3887 (call collect)
CHEMTREC (within AU) +(61)-290372994

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2 Hazard(s) identification

· **Classification of the substance or mixture**

Flame

Self-heat. 1 H251 Self-heating: may catch fire.

Health hazard

Carc. 1A H350 May cause cancer.

Environment

Aquatic Acute 1 H400 Very toxic to aquatic life.
Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H332 Harmful if inhaled.
Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS02, GHS07, GHS08, GHS09
· **Signal word** Danger

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· **Hazard-determining components of labeling:**
manganese dioxide
Quartz (SiO2)
barium oxide, obtained by calcining witherite
· **Hazard statements**
H251 Self-heating: may catch fire.
H302+H332 Harmful if swallowed or if inhaled.
H319 Causes serious eye irritation.
H350 May cause cancer.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
· **Precautionary statements**
P280 Wear protective gloves / eye protection / face protection.
P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.
P330 Rinse mouth.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P391 Collect spillage.
P407 Maintain air gap between stacks/pallets.
P420 Store away from other materials.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 2
Fire = 4
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = *2
Fire = 4
Reactivity = 0

· **Other hazards**
The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

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· **Hazardous components:**		
1313-13-9	manganese dioxide Acute Tox. 4, H302; Acute Tox. 4, H332	43.5%
1317-38-0	copper(II) oxide Aquatic Acute 1, H400; Aquatic Chronic 1, H410	22.8%
14807-96-6	Talc (Mg3H2(SiO3)4)	14.0%
1344-28-1	aluminium oxide	4.0%
1305-78-8	calcium oxide Eye Dam. 1, H318	1.7%
1314-13-2	zinc oxide - (non-pyrophoric) Aquatic Acute 1, H400; Aquatic Chronic 1, H410	1.0%
1304-28-5	barium oxide, obtained by calcining witherite Acute Tox. 3, H331 Acute Tox. 4, H302	1.0%
14808-60-7	Quartz (SiO2) Carc. 1A, H350	0.3%

· **Additional Components**		
7631-86-9	silicon dioxide, chemically prepared	10.0%
1313-59-3	SODIUM OXIDE	1.7%

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4 First-aid measures

· **Description of first aid measures**
· **General information:**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Generally the product does not irritate the skin.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:** Immediately call a doctor.
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

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5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture** No further relevant information available.

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· ***Advice for firefighters***
· ***Protective equipment:*** *Mouth respiratory protective device.*

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6 Accidental release measures

· ***Personal precautions, protective equipment and emergency procedures***
Wear protective equipment. Keep unprotected persons away.
· ***Environmental precautions:*** *Inform respective authorities in case of seepage into water course or sewage system.*
· ***Methods and material for containment and cleaning up:***
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
· ***Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
· ***Protective Action Criteria for Chemicals***

· **PAC-1:**		
1313-13-9	manganese dioxide	4.7 mg/m³
1317-38-0	copper(II) oxide	0.75 mg/m³
7631-86-9	silicon dioxide, chemically prepared	18 mg/m³
1344-28-1	aluminium oxide	15 mg/m³
1305-78-8	calcium oxide	6 mg/m³
1313-59-3	SODIUM OXIDE	0.5 mg/m³
1314-13-2	zinc oxide - (non-pyrophoric)	10 mg/m³
1304-28-5	barium oxide, obtained by calcining witherite	1.7 mg/m³
14808-60-7	Quartz (SiO2)	0.075 mg/m³

· **PAC-2:**		
1313-13-9	manganese dioxide	7.9 mg/m³
1317-38-0	copper(II) oxide	11 mg/m³
7631-86-9	silicon dioxide, chemically prepared	740 mg/m³
1344-28-1	aluminium oxide	170 mg/m³
1305-78-8	calcium oxide	110 mg/m³
1313-59-3	SODIUM OXIDE	5 mg/m³
1314-13-2	zinc oxide - (non-pyrophoric)	15 mg/m³
1304-28-5	barium oxide, obtained by calcining witherite	200 mg/m³
14808-60-7	Quartz (SiO2)	33 mg/m³

· **PAC-3:**		
1313-13-9	manganese dioxide	690 mg/m³
1317-38-0	copper(II) oxide	93 mg/m³
7631-86-9	silicon dioxide, chemically prepared	4,500 mg/m³
1344-28-1	aluminium oxide	990 mg/m³
1305-78-8	calcium oxide	660 mg/m³

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1313-59-3	SODIUM OXIDE	50 mg/m³
1314-13-2	zinc oxide - (non-pyrophoric)	2,500 mg/m³
1304-28-5	barium oxide, obtained by calcining witherite	1,200 mg/m³
14808-60-7	Quartz (SiO2)	200 mg/m³

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7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Thorough dedusting.
Ensure good ventilation/exhaustion at the workplace.
· **Information about protection against explosions and fires:** Keep ignition sources away - Do not smoke.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

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8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
At this time, the remaining constituent has no known exposure limits.

1313-13-9 manganese dioxide	
PEL	Ceiling limit value: 5 mg/m³ as Mn
REL	Short-term value: 3 mg/m³ Long-term value: 1 mg/m³ as Mn
TLV	Long-term value: 0.02* 0.1** mg/m³ as Mn; *respirable **inhalable fraction
14807-96-6 Talc (Mg3H2(SiO3)4)	
PEL	Long-term value: 20 mppcf ppm (containing <1% Quartz)
REL	Long-term value: 2* mg/m³ *respirable dust; and <1% Quartz
TLV	Long-term value: 2* mg/m³ *as respirable fraction; E

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1344-28-1 aluminium oxide	
PEL	Long-term value: 15*; 5** mg/m³ *Total dust; ** Respirable fraction
REL	Long-term value: 10* 5** mg/m³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV	Long-term value: 1* mg/m³ as Al; *as respirable fraction
1305-78-8 calcium oxide	
PEL	Long-term value: 5 mg/m³
REL	Long-term value: 2 mg/m³
TLV	Long-term value: 2 mg/m³
1314-13-2 zinc oxide - (non-pyrophoric)	
PEL	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction and fume
REL	Short-term value: 10** mg/m³ Long-term value: 5 mg/m³ Ceiling limit value: 15* mg/m³ *dust only **fume
TLV	Short-term value: 10* mg/m³ Long-term value: 2* mg/m³ *as respirable fraction
1304-28-5 barium oxide, obtained by calcining witherite	
PEL	Long-term value: 0.5 mg/m³ as Ba
REL	Long-term value: 0.5 mg/m³ as Ba
TLV	Long-term value: 0.5 mg/m³ as Ba
14808-60-7 Quartz (SiO2)	
PEL	Long-term value: 0.05* mg/m³ *resp. dust; 30mg/m3/%SiO2+2
REL	Long-term value: 0.05* mg/m³ *respirable dust; See Pocket Guide App. A
TLV	Long-term value: 0.025* mg/m³ *as respirable fraction

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes.

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Avoid contact with the eyes and skin.

· **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

Tightly sealed goggles or safety glasses

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9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	*Solid*
Color:	*According to product specification*
· **Odor:**	*Characteristic*
· **Odor threshold:**	*Not determined.*
· **pH-value:**	*Not applicable.*
· **Change in condition**	
Melting point/Melting range:	*Undetermined.*
Boiling point/Boiling range:	*3,600 °C (6,512 °F)*
· **Flash point:**	*Not applicable.*
· **Flammability (solid, gaseous):**	*Not determined.*
· **Decomposition temperature:**	*Not determined.*
· **Auto igniting:**	*Product is not selfigniting.*
· **Danger of explosion:**	*Product does not present an explosion hazard.* *Not determined.*

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· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	2.96755 g/cm³ (24.7642 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Not miscible or difficult to mix.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Solvent content:**	
VOC content:	0.00 %
Solids content:	59.0 %
· **Other information**	No further relevant information available.

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10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

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11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
1314-13-2 zinc oxide - (non-pyrophoric)		
Oral	LD50	>5,000 mg/kg (rat)

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:

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Harmful
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
14807-96-6	Talc (Mg3H2(SiO3)4)	3
7631-86-9	silicon dioxide, chemically prepared	3
14808-60-7	Quartz (SiO2)	1

· **NTP (National Toxicology Program)**		
14808-60-7	Quartz (SiO2)	K

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

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12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Ecotoxical effects:**
· **Remark:** Very toxic for fish
· **Additional ecological information:**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Dispose of container and materials in accordance with local, regional and national regulations.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

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14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	UN3190
· **UN proper shipping name**	
· **DOT**	Self-heating solid, inorganic, n.o.s. (Activated copper oxide)
· **ADR**	3190 SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated copper oxide), ENVIRONMENTALLY HAZARDOUS
· **IMDG, IATA**	SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated copper oxide)
· **Transport hazard class(es)**	
· **DOT**	

· **Class**	4.2 Substances liable to spontaneous combustion
· **Label**	4.2
· **ADR**	

· **Class**	4.2 (T5) Substances liable to spontaneous combustion
· **Label**	4.2
· **IMDG, IATA**	

· **Class**	4.2 Substances liable to spontaneous combustion
· **Label**	4.2
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	II
· **Environmental hazards:**	
· **Marine pollutant:**	No
· **Special marking (ADR):**	Symbol (fish and tree)
· **Special precautions for user**	Warning: Substances liable to spontaneous combustion
· **Danger code (Kemler):**	60
· **EMS Number:**	F-A,S-A
· **Stowage Category**	E
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.

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· **Transport/Additional information:**	*See 49 CFR Ch.I § 173.4 for small quantity exceptions.*
· **DOT**	
· **Quantity limitations**	*On passenger aircraft/rail: 15 kg* *On cargo aircraft only: 50 kg*
· **ADR**	
· **Excepted quantities (EQ)**	*Code: E2* *Maximum net quantity per inner packaging: 30 g* *Maximum net quantity per outer packaging: 500 g*
· **IMDG**	
· **Limited quantities (LQ)**	*0*
· **Excepted quantities (EQ)**	*Code: E2* *Maximum net quantity per inner packaging: 30 g* *Maximum net quantity per outer packaging: 500 g*
· **UN "Model Regulation":**	*UN 3190 SELF-HEATING SOLID, INORGANIC, N.O.S. (ACTIVATED COPPER OXIDE), 4.2, II, ENVIRONMENTALLY HAZARDOUS*

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15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

1313-13-9	*manganese dioxide*	*Acute Tox. 4, H302; Acute Tox. 4, H332*	*43.5%*
1317-38-0	*copper(II) oxide*	*Aquatic Acute 1, H400; Aquatic Chronic 1, H410*	*22.8%*
14807-96-6	*Talc (Mg3H2(SiO3)4)*		*14.0%*

· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

1313-13-9	*manganese dioxide*
1317-38-0	*copper(II) oxide*
1344-28-1	*aluminium oxide*
1314-13-2	*zinc oxide - (non-pyrophoric)*
1304-28-5	*barium oxide, obtained by calcining witherite*

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

1313-13-9	*manganese dioxide*	*ACTIVE*
1317-38-0	*copper(II) oxide*	*ACTIVE*
14807-96-6	*Talc (Mg3H2(SiO3)4)*	*ACTIVE*
7631-86-9	*silicon dioxide, chemically prepared*	*ACTIVE*
1344-28-1	*aluminium oxide*	*ACTIVE*
1305-78-8	*calcium oxide*	*ACTIVE*

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1313-59-3	SODIUM OXIDE	ACTIVE
1314-13-2	zinc oxide - (non-pyrophoric)	ACTIVE
1304-28-5	barium oxide, obtained by calcining witherite	ACTIVE
14808-60-7	Quartz (SiO2)	ACTIVE

· **Hazardous Air Pollutants**

1313-13-9	manganese dioxide

· **Proposition 65**

· **Chemicals known to cause cancer:**

14808-60-7	Quartz (SiO2)

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

1313-13-9	manganese dioxide	D
1314-13-2	zinc oxide - (non-pyrophoric)	D, I, II
1304-28-5	barium oxide, obtained by calcining witherite	D, CBD(inh), NL(oral)

· **TLV (Threshold Limit Value established by ACGIH)**

14807-96-6	Talc (Mg3H2(SiO3)4)	A4
1344-28-1	aluminium oxide	A4
1304-28-5	barium oxide, obtained by calcining witherite	A4
14808-60-7	Quartz (SiO2)	A2

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

14808-60-7	Quartz (SiO2)

· **National regulations:**

· **Additional classification according to Decree on Hazardous Materials:**
Carcinogenic hazardous material group III (dangerous).

· **Information about limitation of use:**
Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.
Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.

· **Water hazard class:** Water hazard class 3 (Self-assessment): extremely hazardous for water.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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16 Other information

Disclaimer
The information provided in this Material Safety Data Sheet is based on our present knowledge,

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and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. PerkinElmer shall not be held liable for any damage resulting from handling or from contact with the product.

· **Department issuing SDS:** *Environmental, Health and Safety*
· **Contact:**
Within the USA: 1-(800)-762-4000
Outside the USA: 1-(203)-712-8488
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Self-heat. 1: Self-heating substances and mixtures – Category 1
Acute Tox. 4: Acute toxicity – Category 4
Acute Tox. 3: Acute toxicity – Category 3
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Carc. 1A: Carcinogenicity – Category 1A
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
· **** Data compared to the previous version altered.***