

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

**brake fluid DOT 4 PLUS**  
**Article number: 26748, 23932, 23930, 180589**

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

#### 1.2.1 Relevant uses

brake fluid

#### 1.2.2 Uses advised against

None known.

### 1.3 Details of the supplier of the safety data sheet

**Company** Ferdinand Bilstein GmbH + Co. KG  
Wilhelmstr. 47  
58256 Ennepetal / GERMANY  
Phone +49 2333 911-0  
Fax +49 2333 911-444  
Homepage [www.febi.com](http://www.febi.com)  
E-mail [info@febi.com](mailto:info@febi.com)

#### Address enquiries to

**Technical information** [info@febi.com](mailto:info@febi.com)

**Safety Data Sheet** [info@febi.com](mailto:info@febi.com)

### 1.4 Emergency telephone number

**Advisory body** +49 (0)89-19240 (24h) (English)

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

Repr. 2: H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.

### 2.2 Label elements

The product is classified as hazardous in accordance to OSHA Standard 29 CFR 1910.1200 (HCS 2012)

#### Hazard pictograms



#### Signal word

WARNING

#### Contains:

Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0

#### Hazard statements

H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.

#### Precautionary statements

P101 If medical advice is needed, have product container or label at hand.  
P102 Keep out of reach of children.  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P405 Store locked up.  
P501 Dispose of contents/container to in accordance with local/regional/national/international regulation.



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**2.3 Other hazards**

<b>Physico-chemical hazards</b>	Material will burn in fire.
<b>Human health dangers</b>	Contains no ingredients with endocrine-disrupting properties.
<b>Environmental hazards</b>	Does not contain any PBT or vPvB substances.
<b>Other hazards</b>	None
	This product is classified as hazardous in accordance to OSHA Standard 29 CFR 1910.1200.

**SECTION 3: Composition / Information on ingredients**

**3.1 Substances**

Not applicable

**3.2 Mixtures**

The product is a mixture.

Range [%]	Substance
80 - 95	Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate CAS: 30989-05-0
10 - 15	2-(2-(2-Butoxyethoxy)ethoxy)ethanol CAS: 143-22-6
< 1	2-(2-Methoxyethoxy)ethanol CAS: 111-77-3

**Comment on component parts** For full text of H-statements and R-phrases: see SECTION 16.

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

<b>General information</b>	Take off contaminated clothing and wash before reuse.
<b>Inhalation</b>	Ensure supply of fresh air. In the event of symptoms seek medical treatment.
<b>Skin contact</b>	When in contact with the skin, clean with soap and water. Consult a doctor if skin irritation persists.
<b>Eye contact</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
<b>Ingestion</b>	Seek medical advice immediately. Do not induce vomiting. Rinse out mouth and give plenty of water to drink.

**4.2 Most important symptoms and effects, both acute and delayed**

No information available.

**4.3 Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.  
Forward this sheet to the doctor.

**SECTION 5: Fire-fighting measures**

**5.1 Extinguishing media**

<b>Suitable extinguishing media</b>	Foam, dry powder, water spray jet, carbon dioxide
<b>Extinguishing media that must not be used</b>	Full water jet

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**5.2 Special hazards arising from the substance or mixture**

Not combusted hydrocarbons.  
Risk of formation of toxic pyrolysis products.  
Carbon monoxide (CO)

**5.3 Advice for firefighters**

Use self-contained breathing apparatus.  
Collect contaminated firefighting water separately, must not be discharged into the drains.  
Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation.  
High risk of slipping due to leakage/spillage of product.  
Forms slippery surfaces with water.

**6.2 Environmental precautions**

Prevent spread over a wide area (e.g. by containment or oil barriers).  
Do not discharge into the drains/surface waters/groundwater.

**6.3 Methods and material for containment and cleaning up**

Take up with absorbent material (e.g. general-purpose binder).  
Dispose of absorbed material in accordance within the regulations.

**6.4 Reference to other sections**

See SECTION 8+13

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

Use only in well-ventilated areas.  
The product is combustible.  
Do not eat, drink or smoke when using this product.  
Use barrier skin cream.  
Wash hands before breaks and after work.  
Contaminated work clothing should not be allowed out of the workplace.  
Take off contaminated clothing and wash before reuse.

**7.2 Conditions for safe storage, including any incompatibilities**

Keep only in original container.  
Prevent penetration into the ground.  
Do not store together with oxidizing agents.  
Do not store together with food and animal food/diet.  
Keep in a cool place. Store in a dry place.  
Keep container tightly closed.  
Protect from heat/overheating.  
Keep container in a well-ventilated place.  
Recommended storage temperature: 15 - 30°C

**7.3 Specific end use(s)**

See product use, SECTION 1.2



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**SECTION 8: Exposure controls/personal protection**

**8.1 Control parameters**

**Ingredients with occupational exposure limits to be monitored (US)**

Not applicable

**DNEL**

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
Industrial, inhalative, Long-term - systemic effects, 24 mg/m <sup>3</sup>
Industrial, inhalative, Acute - systemic effects, 96 mg/m <sup>3</sup>
Industrial, inhalative, Long-term - local effects, 30,5 mg/m <sup>3</sup>
Industrial, inhalative, Acute - local effects, 96 mg/m <sup>3</sup>
Industrial, dermal, Long-term - systemic effects, 1005 mg/kg bw/day
Industrial, dermal, Acute - systemic effects, 400 mg/kg bw/day
Industrial, dermal, Long-term - local effects, 5,65 mg/cm <sup>2</sup>
Industrial, dermal, Acute - local effects, 8,35 mg/cm <sup>2</sup>
general population, inhalative, Long-term - systemic effects, 12 mg/m <sup>3</sup>
general population, inhalative, Acute - systemic effects, 48 mg/m <sup>3</sup>
general population, inhalative, Long-term - local effects, 15,252 mg/m <sup>3</sup>
general population, inhalative, Acute - local effects, 48 mg/m <sup>3</sup>
general population, dermal, Long-term - systemic effects, 125 mg/kg bw/day
general population, dermal, Acute - systemic effects, 200 mg/kg bw/day
general population, dermal, Long-term - local effects, 2,823 mg/cm <sup>2</sup>
general population, dermal, Acute - local effects, 4,173 mg/cm <sup>2</sup>
general population, oral, Long-term - systemic effects, 12,5 mg/kg bw/day
general population, oral, Acute - systemic effects, 103,4 mg/kg bw/day
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
Industrial, inhalative, Long-term - systemic effects, 50,1 mg/m <sup>3</sup>
Industrial, dermal, Long-term - systemic effects, 2,22 mg/kg bw/day
general population, inhalative, Long-term - systemic effects, 30,1 mg/m <sup>3</sup>
general population, dermal, Long-term - systemic effects, 1,33 mg/kg bw/day
general population, oral, Long-term - systemic effects, 7,5 mg/kg bw/day
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
Industrial, inhalative, Long-term - systemic effects, 14.8 mg/m <sup>3</sup> (AF=25)
Industrial, dermal, Long-term - systemic effects, 4.2 mg/kg bw/d (AF=100)
general population, inhalative, Long-term - systemic effects, 2.6 mg/m <sup>3</sup> (AF=50)
general population, dermal, Long-term - systemic effects, 1.5 mg/kg bw/d (AF=200)
general population, oral, Long-term - systemic effects, 1.5 mg/kg bw/d (AF=200)

**PNEC**

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
freshwater, 2 - 100 mg/L
seawater, 200 - 142570 µg/L
sewage treatment plants (STP), 199,5 - 200 mg/L
sediment (freshwater), 7,7 - 11,115 mg/kg sediment dw
sediment (seawater), 770 - 1111,5 µg/kg sediment dw
soil, 470 - 11510 µg/kg soil dw



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2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
freshwater, 12 mg/L
seawater, 1,2 mg/L
sewage treatment plants (STP), 10000 mg/L
sediment (freshwater), 44,4 mg/kg sediment dw
sediment (seawater), 0,44 mg/kg sediment dw
terrestrial, 2,1 mg/kg
oral (food), 0,09 g/kg
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
There are no PNEC values established for the substance.

**8.2 Exposure controls**

<b>Additional advice on system design</b>	Ensure adequate ventilation on workstation. Measurement methods for taking workplace measurements must meet the performance requirements of DIN EN 482. For example, recommendations are given in the IFA's list of hazardous substances.
<b>Eye protection</b>	safety glasses
<b>Hand protection</b>	The details concerned are recommendations. Please contact the glove supplier for further information. > 0,2 mm; Nitrile rubber, >480 min (EN 374-1/-2/-3). > 0,3 mm; Butyl rubber, >480 min (EN 374-1/-2/-3).
<b>Skin protection</b>	Oil-resistant protective clothing.
<b>Other</b>	Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity handled. The resistance of this equipment to chemicals should be ascertained with the respective supplier. Avoid contact with eyes and skin. Do not inhale vapors.
<b>Respiratory protection</b>	In the event of occupational exposure limits being exceeded or of inadequate ventilation: wear appropriate respiratory protection. Short term: filter apparatus, filter A. (DIN EN 14387)
<b>Thermal hazards</b>	None
<b>Delimitation and monitoring of the environmental exposition</b>	Comply with applicable environmental regulations limiting discharge to air, water and soil.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state	Liquid
Form	Liquid
Color	amber colour
Odor	characteristic
Odor threshold	Not applicable
pH-value	7 - 10.5
pH-value [1%]	No information available.
Boiling point or initial boiling point and boiling range [°C]	> 260
Flash point [°C]	> 120
Flammability	No
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Oxidizing properties	No
Vapor pressure/gas pressure [kPa]	0.1
Density [g/cm <sup>3</sup> ]	1.02 - 1.07
Relative density	Not determined
Bulk density [kg/m <sup>3</sup> ]	Not applicable
Solubility in water	Miscible
Solubility other solvents	No information available.
Partition coefficient n-octanol/water (log value)	1.5
Kinematic viscosity	5 - 10 cSt (20°C)
Relative vapour density	No information available.
Melting point [°C]	< -50
Auto-ignition temperature [°C]	> 280
Decomposition temperature [°C]	300
Particle characteristics	Not applicable

### 9.2 Other information

None

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No dangerous reactions known if used as directed.

### 10.2 Chemical stability

Stable under normal ambient conditions (ambient temperature).  
Decomposes begins at ca. 300 °C.

### 10.3 Possibility of hazardous reactions

Reactions with oxidizing agents.  
The product is hygroscopic.

### 10.4 Conditions to avoid

See SECTION 7.2.



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**10.5 Incompatible materials**

Oxidizing agent  
Reducing agent  
Strong bases.  
strong acids

**10.6 Hazardous decomposition products**

No hazardous decomposition products known.



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**SECTION 11: Toxicological information**

**11.1 Information on toxicological effects**

**Acute oral toxicity**

Product
ATE-mix, oral, Rat, > 5000 mg/kg bw
Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
LD50, oral, Rat, 5000 - 11300 mg/kg bw
LD0, oral, Rat, 5 mL/kg bw
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
LD50, oral, Rat, 7128 mg/kg
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
LD50, oral, Rat, > 2000 mg/kg bw, OECD 401

**Acute dermal toxicity**

Product
ATE-mix, dermal, Rabbit, > 3000 mg/kg bw
Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
LC50, dermal, Rabbit, 3540 mg/kg bw
LDLo, dermal, Rabbit, 2000 mg/kg bw
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
LD50, dermal, Rabbit, 9404 mg/kg
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
LD50, dermal, Rat, > 2000 mg/kg bw

**Acute inhalational toxicity**

Product
inhalative, Based on the information available, the classification criteria have not been fulfilled.
Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
LC50, inhalative, Rat, 2,4 mg/L air
LCLO, inhalative, Rat, 1,2 mg/L air, 8h
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
LC0, inhalativ (vapor ), Rat, > 1,2 mg/l 6h

**Serious eye damage/irritation**

Toxicological data of complete product are not available.  
No classification.  
Calculation method

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
Eye, adverse effect observed
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
Eye, non-irritating
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0





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Eye, non-irritating

**Skin corrosion/irritation** Based on the information available, the classification criteria have not been fulfilled.

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
dermal, non-irritating
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
dermal, non-irritating
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
dermal, non-irritating

**Respiratory or skin sensitisation** Based on the information available, the classification criteria have not been fulfilled.

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
dermal, non-sensitizing
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
dermal, non-sensitizing
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
dermal, non-sensitizing

**Specific target organ toxicity — single exposure** Based on the information available, the classification criteria have not been fulfilled.

**Specific target organ toxicity — repeated exposure** Based on the information available, the classification criteria have not been fulfilled.

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
NOAEL, oral, Rat, 500 mg/kg bw/day
NOAEL, dermal, Rat, 5000 mg/kg bw/day
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
NOAEL, oral, Rat, 1000 mg/kg bw/day

**Mutagenicity** Based on the information available, the classification criteria have not been fulfilled.

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
in vitro, negativ
in vivo, negativ
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
in vitro, negativ

**Reproduction toxicity** Suspected of damaging the unborn child.  
Suspected of damaging fertility.  
The classification occurred based on substance-specific concentration limits.  
Calculation method

**- Fertility**

Substance
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
NOAEL, oral, 200 mg/kg bw/day, adverse effect observed, Effect on developmental toxicity,
NOAEL, dermal, Rabbit, 50 mg/kg bw/day, adverse effect observed, Effect on developmental toxicity,

**- Development**



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Substance
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
NOAEL, oral, 200 mg/kg bw/day, adverse effect observed, Effect on developmental toxicity,
NOAEL, dermal, Rabbit, 50 mg/kg bw/day, adverse effect observed, Effect on developmental toxicity,
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
NOAEL, oral, Rabbit, 250 mg/kg bw/day, adverse effect observed

**Carcinogenicity** Based on the information available, the classification criteria have not been fulfilled.

**Aspiration hazard** Based on the information available, the classification criteria have not been fulfilled.

**General remarks**  
Toxicological data of complete product are not available.  
The toxicity data listed pertaining to the ingredients are intended for those working in the medicinal professions, experts for occupational health and safety and toxicologists.

**SECTION 12: Ecological information**

**12.1 Toxicity**

Substance
2-(2-(2-Butoxyethoxy)ethoxy)ethanol, CAS: 143-22-6
LC50, (96h), fish, 2,182 - 14,257 g/L
LC50, (48h), fish, 2,4 g/L
LC50, (24h), fish, 2,4 - 2,967 g/L
EC50, (21d), Invertebrates, 518,3 mg/L
EC50, (72h), Algae, 500 - 3211 mg/L
LC0, (96h), fish, 2,15 g/L
NOEC, (21d), fish, 174,6 mg/L
NOEC, (21d), Invertebrates, 97,7 - 174,6 mg/L
NOEC, (72h), Algae, 62,5 - 499 mg/L
LC100, (96h), fish, 4,6 g/L
EC10, (21d), Invertebrates, 233,9 - 235,6 mg/L
EC10, (72h), Algae, 151 - 1185 mg/L
EC20, (72h), Algae, 270 - 364 mg/L
2-(2-Methoxyethoxy)ethanol, CAS: 111-77-3
LC50, (96h), Pimephales promelas, 5741 mg/L
EC50, (96h), Pseudokirchneriella subcapitata, > 1000 mg/L
EC50, (48h), Daphnia magna, 1192 mg/L
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
LC50, (48h), Oncorhynchus mykiss, > 222,2 mg/L
EC50, (24h), Daphnia magna, > 211,2 mg/L
EC50, (72h), Algae, > 224,4 mg/L

**12.2 Persistence and degradability**

**Behaviour in environment compartments** Not determined  
**Behaviour in sewage plant** Not determined  
**Biological degradability** The product is biodegradable.



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**12.3 Bioaccumulative potential**

Product has having no bioaccumulation potential.

**12.4 Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Based on all available information not to be classified as PBT or vPvB respectively.

**12.6 Endocrine disrupting properties**

Contains no ingredients with endocrine-disrupting properties.

**12.7 Other adverse effects**

Ecological data of complete product are not available.

Do not discharge product unmonitored into the environment or into the drainage.

The toxicity data pertaining to the ingredients were supplied by the manufacturers of raw materials.

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

**Product**

Coordinate disposal with the disposal contractor/authorities if necessary.

**Contaminated packaging**

Packaging that cannot be cleaned should be disposed of as for product.  
Uncontaminated packaging may be taken for recycling.

**RCRA Hazard Class (40CFR 261)**

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Consult your local or regional authorities.

**SECTION 14: Transport**

**14.1 UN number**

Transport by land according to ADR/RID Not applicable

Inland navigation (ADN) Not applicable

Marine transport in accordance with IMDG Not applicable

Air transport in accordance with IATA Not applicable

DOT Road Shipment Information (49 CFR) Not applicable



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**14.2 UN proper shipping name**

Transport by land according to ADR/RID	NO DANGEROUS GOODS
Inland navigation (ADN)	NO DANGEROUS GOODS
Marine transport in accordance with IMDG	NOT CLASSIFIED AS "DANGEROUS GOODS"
Air transport in accordance with IATA	NOT CLASSIFIED AS "DANGEROUS GOODS"
DOT Road Shipment Information (49 CFR)	Not applicable

**14.3 Transport hazard class(es)**

Transport by land according to ADR/RID	Not applicable
Inland navigation (ADN)	Not applicable
Marine transport in accordance with IMDG	Not applicable
Air transport in accordance with IATA	Not applicable
DOT Road Shipment Information (49 CFR)	Not applicable

**14.4 Packing group**

Transport by land according to ADR/RID	Not applicable
Inland navigation (ADN)	Not applicable
Marine transport in accordance with IMDG	Not applicable
Air transport in accordance with IATA	Not applicable
DOT Road Shipment Information (49 CFR)	Not applicable

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**14.5 Environmental hazards**

Transport by land according to ADR/RID No

Inland navigation (ADN) No

Marine transport in accordance with IMDG No

Air transport in accordance with IATA No

DOT Road Shipment Information (49 CFR) No

**14.6 Special precautions for user**

Relevant information under SECTION 6 to 8.

**14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code**

Not applicable

**SECTION 15: Regulatory information**

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

**US Regulations**

**National regulations** 29 CFR 1910.1200-HCS 2012, OSHA-PEL, ACGIH-TLV, NTP, IARC, SARA Title III, NFPA, TSCA, California - Prop. 65

- SARA, 302 Does not contain any relevant substances fulfilling the classification criteria.

- SARA, 311 This product is classified as hazardous under SARA 311 - Delayed .

- SARA, 313 CAS 143-22-6 This product contain one ingredient regulated under this list.

- CA Proposition 65 No components require labeling under California Proposition 65.

No chemical substances in this material are named on the California P65 list.

- TSCA All chemical substances in this material are included on or exempted from listing on the TSCA Inventory.

- FDA

**American Conference of Governmental Industrial Hygienists - ACGIH** Does not contain any relevant substances fulfilling the classification criteria.

**International Agency for Research on Cancer IARC** Does not contain any relevant substances fulfilling the classification criteria.

**National Toxicology Program - NTP** This product is named NTP - National Toxicology Program (contains CAS: 111-77-3).

**HAP-VOC** No information available.

**Transport-regulations** DOT-Classification, ADR (2023); IMDG-Code (2023, 41. Amdt.); IATA-DGR (2024)

**15.2 Chemical safety assessment**

For this product a chemical safety assessment has not been carried out.

## SECTION 16: Other information

### 16.1 Abbreviations and acronyms:

ACGIH = American Conference of Governmental Industrial Hygienists;  
ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route;  
RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses;  
ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure;  
CAS = Chemical Abstracts Service;  
CERCLA = Comprehensive Environmental Response, Compensation and Liability Act;  
CFR = Code of Federal Regulations;  
CPR = Controlled Products Regulations;  
DMEL = Derived Minimum Effect Level;  
DNEL = Derived No Effect Level;  
DOT = Department of Transportation;  
EC50 = Median effective concentration;  
EPA = Environmental Protection Agency;  
GHS = Globally Harmonized System of Classification and Labelling of Chemicals;  
IATA = International Air Transport Association;  
IBC-Code = International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk;  
IC50 = Inhibition concentration, 50%;  
IMDG = International Maritime Code for Dangerous Goods;  
IARC = International Agency of Research on Cancer;  
IATA = International Air Transport Association;  
TSCA = Toxic Substance Control Act;  
HMIS = Hazardous Materials Identification System;  
NFPA = National Fire Protection Association;  
NIOSH = National Institute for Occupational Safety and Health;  
OSHA = Occupational Safety and Health Administration;  
LC50 = Lethal concentration, 50%;  
LD50 = Median lethal dose, 50%;  
MARPOL = International Convention for the Prevention of Marine Pollution from Ships;  
PBT = Persistent, Bioaccumulative and Toxic substance;  
PNEC = Predicted No-Effect Concentration;  
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals;  
SARA = Superfund Amendments and Reauthorization Act;  
TLV@/TWA = Threshold limit value – time-weighted average;  
TLV@STEL = Threshold limit value – short-time exposure limit;  
VOC = Volatile Organic Compounds;  
vPvB = very Persistent and very Bioaccumulative;

### 16.2 Ratings



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**NFPA Ratings**



TOP, FLAMMABILITY: 1 - Slight Hazard  
LEFT, HEALTH: 2\* - Moderate chronic Hazard  
RIGHT, REACTIVITY: 0 - Minimal Hazard  
BOTTOM, SPECIAL NOTICE: -

**HMIS Ratings**

HEALTH	2*
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	X

2\* - Moderate chronic Hazard  
1 - Slight Hazard  
0 - Minimal Hazard  
X - Personal protection rating to be supplied by user depending on use conditions

**PERSONAL PROTECTION:**

- A - Safety Glasses
- B - Safety Glasses and Gloves
- C - Safety Glasses, Gloves and Protection Apron
- D - Face Shield, Gloves and Protection Apron
- E - Safety Glasses, Gloves and Dust Respirator
- F - Safety Glasses, Gloves, Protection Apron and Dust Respirator
- G - Safety Glasses, Gloves and Vapor Respirator.
- H - Splash Goggles, Gloves, Protection Apron and Vapor Respirator.
- I - Safety Glasses, Gloves, Dust Respirator and Vapor Respirator.
- J - Splash Goggles, Gloves, Protection Apron, Dust Respirator and Vapor Respirator.
- K - Airline Mask or Hood, Gloves, Full Suit and Boots.
- X - Personal protection rating to be supplied by user depending on use conditions

**Modified position**

1.3, 2.1, 2.2, 2.3, 3.2, 7.2, 8.1, 8.2, 9.1, 10.2, 10.5, 11.1, 11.2, 12.3, 12.6, 12.7, 15.1, 16.2, 16.3