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**2.3. Other hazards**

No information available.

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

**3.2. Mixtures**

**Chemical characterization**

Preparation of base oils and additives.

**Hazardous components**

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	GHS Classification			
68442-22-8	Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts			1 - < = 2 %
	270-478-5		01-2119948548-22	
	Skin Irrit. 2, Eye Dam. 1, Aquatic Chronic 2; H315 H318 H411			
61789-86-4	Sulfonic acids, petroleum, calcium salts			0 - < = 0,2 %
	263-093-9		01-2119488992-18	
	Skin Sens. 1B; H317			

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

CAS No	EC No	Chemical name	Quantity
	Specific Conc. Limits, M-factors and ATE		
68442-22-8	270-478-5	Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts	1 - < = 2 %
	dermal: LD50 = > 2002 mg/kg; oral: LD50 = > 2000 - < 5000 mg/kg		
61789-86-4	263-093-9	Sulfonic acids, petroleum, calcium salts	0 - < = 0,2 %
	dermal: LD50 = > 5000 mg/kg; oral: LD50 = > 16000 mg/kg		

**Further Information**

This mixture contains no substances of very high concern (SVHC) which are included in the Candidate List according to Article 59 of REACH.

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**General information**

Remove affected person from the danger area and lay down.  
Do not leave affected person unattended.  
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

**After inhalation**

Remove person to fresh air and keep comfortable for breathing.  
In all cases of doubt, or when symptoms persist, seek medical advice.

**After contact with skin**

After contact with skin, wash immediately with plenty of water and soap.  
Take off contaminated clothing and wash it before reuse.  
In case of skin irritation, consult a physician.

**After contact with eyes**

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

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**After ingestion**

Rinse mouth thoroughly with water.  
Let water be drunk in little sips (dilution effect).  
Do NOT induce vomiting.  
In all cases of doubt, or when symptoms persist, seek medical advice.

**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.

**SECTION 5: Firefighting measures**

**5.1. Extinguishing media**

**Suitable extinguishing media**

Use water spray jet to protect personnel and to cool endangered containers.  
Co-ordinate fire-fighting measures to the fire surroundings.

**Unsuitable extinguishing media**

Full water jet

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

Formation of toxic gases is possible during heating or in case of fire.

In case of fire may be liberated:

- Carbon monoxide (CO)
- Carbon dioxide (CO<sub>2</sub>).
- Nitrogen oxides (NO<sub>x</sub>)
- Pyrolysis products, toxic

**5.3. Advice for firefighters**

In case of fire: Wear self-contained breathing apparatus. Use of protective clothing  
In case of fire and/or explosion do not breathe fumes.

**Additional information**

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

**SECTION 6: Accidental release measures**

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

**General measures**

Keep people at a distance and stay on the windward side.  
Special danger of slipping by leaking/spilling product.

**For non-emergency personnel**

Wear protective gloves/protective clothing and eye/face protection.

**6.2. Environmental precautions**

Do not allow to enter into surface water or drains.  
Do not allow to enter into soil/subsoil.  
Prevent spread over a wide area (e.g. by containment or oil barriers).

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

**For containment**

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.

**For cleaning up**

Clean contaminated articles and floor according to the environmental legislation.  
Remove from the water surface (e.g. skimming, sucking).

**6.4. Reference to other sections**

Safe handling: see section 7

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Personal protection equipment: see section 8

Disposal: see section 13

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

**Advice on safe handling**

Avoid formation of oil dust.

Use personal protection equipment.

Do not put any product-impregnated cleaning rags into your trouser pockets.

Clear spills immediately.

**Advice on protection against fire and explosion**

No special fire protection measures are necessary.

Take precautionary measures against static discharges.

Keep away from sources of ignition - No smoking.

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

**Requirements for storage rooms and vessels**

Keep container tightly closed and in a well-ventilated place.

Keep only in the original container. Store in a cool dry place. (Protect from moisture.)

Floors should be impervious, resistant to liquids and easy to clean.

**Hints on joint storage**

Do not store together with:

- Materials capable of ignition under almost all normal temperature conditions
- Explosives

**7.3. Specific end use(s)**

Motor oil multigrade

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

**8.1. Control parameters**

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**DNEL/DMEL values**

CAS No	Substance		
DNEL type	Exposure route	Effect	Value
68442-22-8	Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts		
Worker DNEL, long-term	inhalation	systemic	8,05 mg/m <sup>3</sup>
Worker DNEL, long-term	dermal	systemic	11,4 mg/kg bw/day
Consumer DNEL, long-term	inhalation	systemic	1,98 mg/m <sup>3</sup>
Consumer DNEL, long-term	dermal	systemic	5,71 mg/kg bw/day
Consumer DNEL, long-term	oral	systemic	0,24 mg/kg bw/day
61789-86-4	Sulfonic acids, petroleum, calcium salts		
Consumer DNEL, long-term	inhalation	systemic	2,9 mg/m <sup>3</sup>
Consumer DNEL, long-term	dermal	systemic	1,667 mg/kg bw/day
Consumer DNEL, long-term	dermal	local	0,513 mg/cm <sup>2</sup>
Consumer DNEL, long-term	oral	systemic	0,833 mg/kg bw/day
Worker DNEL, long-term	inhalation	systemic	11,75 mg/m <sup>3</sup>
Worker DNEL, long-term	dermal	systemic	3,33 mg/kg bw/day
Worker DNEL, long-term	dermal	local	1,03 mg/cm <sup>2</sup>

**PNEC values**

CAS No	Substance	
Environmental compartment	Value	
68442-22-8	Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts	
Freshwater	0,004 mg/l	
Freshwater (intermittent releases)	0,045 mg/l	
Marine water	0,0046 mg/l	
Freshwater sediment	0,045 mg/kg	
Marine sediment	0,005 mg/kg	
Secondary poisoning	10,67 mg/kg	
Micro-organisms in sewage treatment plants (STP)	100 mg/l	
Soil	0,007 mg/kg	
61789-86-4	Sulfonic acids, petroleum, calcium salts	
Freshwater	1 mg/l	
Freshwater (intermittent releases)	10 mg/l	
Marine water	1 mg/l	
Freshwater sediment	226000000 mg/kg	
Marine sediment	226000000 mg/kg	
Secondary poisoning	16,667 mg/kg	
Micro-organisms in sewage treatment plants (STP)	1000 mg/l	
Soil	271000000 mg/kg	

**Additional advice on limit values**

To date, no national critical limit values exist.

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**8.2. Exposure controls**



**Appropriate engineering controls**

Provide adequate ventilation as well as local exhaust at critical locations.

**Protective and hygiene measures**

Take off contaminated clothing and wash it before reuse.

Wash hands before breaks and after work.

When using do not eat, drink, smoke, sniff.

**Eye/face protection**

During filling, metering, mixing and sampling must be used:

Wear eye/face protection. DIN EN 166

**Hand protection**

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.

Recommended glove articles: EN ISO 374

Suitable material: NBR (Nitrile rubber)

Thickness of the glove material: 0,4 mm

Breakthrough times and swelling properties of the material must be taken into consideration. Breakthrough time: > 8h

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

**Skin protection**

Wear suitable protective clothing.

**Respiratory protection**

In case of inadequate ventilation wear respiratory protection.

**SECTION 9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

Physical state:	Liquid	
Colour:	yellow - brown	
Odour:	Mineral-oil-like	
Odour threshold:	not determined	
pH-Value:		not determined

**Changes in the physical state**

Melting point:	not determined
Boiling point or initial boiling point and boiling range:	not determined
Pour point:	-36 °C
Flash point:	236 °C

**Flammability**

Solid/liquid:	not applicable
Gas:	not applicable

**Explosive properties**

Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

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Lower explosion limits: not determined

Upper explosion limits: not determined

**Self-ignition temperature**

Solid: not applicable

Gas: not applicable

Decomposition temperature: not determined

**Oxidizing properties**

The product is not: oxidising.

Vapour pressure: not determined

Density (at 15 °C): 0,867 g/cm<sup>3</sup>

Water solubility: not determined

**Solubility in other solvents**

not determined

Partition coefficient n-octanol/water: not determined

Viscosity / dynamic: not determined

Viscosity / kinematic:  
(at 40 °C) 91 mm<sup>2</sup>/s

Relative vapour density: not determined

Evaporation rate: not determined

**9.2. Other information**

Solid content: not determined

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

No hazardous reaction when handled and stored according to provisions.

**10.2. Chemical stability**

The product is stable under storage at normal ambient temperatures.

**10.3. Possibility of hazardous reactions**

The formation of combustible vapours is possible at temperatures above: Flash point

**10.4. Conditions to avoid**

Avoid: Thermal decomposition

**10.5. Incompatible materials**

Materials to avoid:

- Oxidising agent
- Reducing agent

**10.6. Hazardous decomposition products**

Hazardous combustion products:

- Carbon monoxide (CO)
- Carbon dioxide (CO<sub>2</sub>)
- Nitrogen oxides (NO<sub>x</sub>)
- Pyrolysis products, toxic

**SECTION 11: Toxicological information**

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Acute toxicity**

Based on available data, the classification criteria are not met.

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CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
68442-22-8	Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts				
	oral	LD50 > 2000 - < 5000 mg/kg	Rat	Study report (1983)	other: Section 1500.3 – Federal Hazardou
	dermal	LD50 > 2002 mg/kg	Rat	Study report (1985)	OECD Guideline 402
61789-86-4	Sulfonic acids, petroleum, calcium salts				
	oral	LD50 > 16000 mg/kg	Rat	Study report (1981)	other: Section 772 .112-21 CFR 40
	dermal	LD50 > 5000 mg/kg	Rabbit	Study report (1981)	OECD Guideline 402

**Irritation and corrosivity**

Causes serious eye irritation.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

**Sensitising effects**

Contains Sulfonic acids, petroleum, calcium salts. May produce an allergic reaction.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

The product contains less than 3% DMSO extract (method IP346). A classification as a carcinogen with R45 is deleted. (Note L)

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Based on available data, the classification criteria are not met.

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**Additional information on tests**

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

**11.2. Information on other hazards**

**Endocrine disrupting properties**

No information available.

**SECTION 12: Ecological information**

**12.1. Toxicity**



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CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
68442-22-8	Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts					
	Acute fish toxicity	LL50 4,5 mg/l	96 h	Oncorhynchus mykiss	Study report (2005)	OECD Guideline 203
	Acute algae toxicity	ErC50 21 mg/l	72 h	Desmodesmus subspicatus	Study report	OECD Guideline 201
	Acute crustacea toxicity	EL50 23 mg/l	48 h	Daphnia magna	Study report (2005)	OECD Guideline 202
	Crustacea toxicity	NOEC 0,4 mg/l	21 d	Daphnia magna	Study report (2010)	OECD Guideline 211
	Acute bacteria toxicity	(> 10000 mg/l)	3 h	activated sludge of a domestic residential sewage	Study report (1994)	OECD Guideline 209
61789-86-4	Sulfonic acids, petroleum, calcium salts					
	Acute fish toxicity	LL50 > 10000 mg/l	96 h	Cyprinodon variegatus	Study report (1986)	OECD Guideline 203
	Acute algae toxicity	ErC50 > 1000 mg/l	72 h	Pseudokirchneriella subcapitata	Study report (1994)	EPA OTS 797.1050
	Acute crustacea toxicity	EC50 > 1000 mg/l	48 h	Daphnia magna	Study report (1993)	EPA OTS 797.1300
	Acute bacteria toxicity	(> 10000 mg/l)	3 h	activated sludge of a predominantly domestic sewage	Study report (1994)	OECD Guideline 209

**12.2. Persistence and degradability**

No information available.

**12.3. Bioaccumulative potential**
**Partition coefficient n-octanol/water**

CAS No	Chemical name	Log Pow
68442-22-8	Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts	1,67
61789-86-4	Sulfonic acids, petroleum, calcium salts	> 4,46

**12.4. Mobility in soil**

No information available.

**12.5. Results of PBT and vPvB assessment**

The substance in the mixture does not meet the PBT/vPvB criteria according to REACH, annex XIII.

**12.6. Endocrine disrupting properties**

No information available.

**12.7. Other adverse effects**

No information available.

**SECTION 13: Disposal considerations**
**13.1. Waste treatment methods**
**Disposal recommendations**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation.

**Contaminated packaging**

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

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**SECTION 14: Transport information**

**Land transport (ADR/RID)**

- 14.1. UN number:** No dangerous good in sense of this transport regulation.  
**14.2. UN proper shipping name:** No dangerous good in sense of this transport regulation.  
**14.3. Transport hazard class(es):** No dangerous good in sense of this transport regulation.  
**14.4. Packing group:** No dangerous good in sense of this transport regulation.

**Inland waterways transport (ADN)**

- 14.1. UN number:** No dangerous good in sense of this transport regulation.  
**14.2. UN proper shipping name:** No dangerous good in sense of this transport regulation.  
**14.3. Transport hazard class(es):** No dangerous good in sense of this transport regulation.  
**14.4. Packing group:** No dangerous good in sense of this transport regulation.

**Marine transport (IMDG)**

- 14.1. UN number:** No dangerous good in sense of this transport regulation.  
**14.2. UN proper shipping name:** No dangerous good in sense of this transport regulation.  
**14.3. Transport hazard class(es):** No dangerous good in sense of this transport regulation.  
**14.4. Packing group:** No dangerous good in sense of this transport regulation.

**Air transport (ICAO-TI/IATA-DGR)**

- 14.1. UN number:** No dangerous good in sense of this transport regulation.  
**14.2. UN proper shipping name:** No dangerous good in sense of this transport regulation.  
**14.3. Transport hazard class(es):** No dangerous good in sense of this transport regulation.  
**14.4. Packing group:** No dangerous good in sense of this transport regulation.

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: No

**14.6. Special precautions for user**

No dangerous good in sense of this transport regulation.

**14.7. Maritime transport in bulk according to IMO instruments**

No dangerous good in sense of this transport regulation.

**SECTION 15: Regulatory information**

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

**EU regulatory information**

Restrictions on use (REACH, annex XVII):

Entry 3

Information according to 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

**National regulatory information**

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).

Water hazard class (D): 2 - obviously hazardous to water

Skin resorption/Sensitization: Causes allergic hypersensitivity reactions.

**15.2. Chemical safety assessment**

Chemical safety assessments for substances in this mixture were not carried out.

**SECTION 16: Other information**

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**Changes**

This data sheet contains changes from the previous version in section(s): 1,2,3,4,5,6,7,8,9,10,11,12,13,15,16.

**Abbreviations and acronyms**

- 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
  - IATA: International Air Transport Association
  - GHS: Globally Harmonized System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - ELINCS: European List of Notified Chemical Substances
  - CAS: Chemical Abstracts Service
  - LC50: Lethal concentration, 50%
  - LD50: Lethal dose, 50%
  - CLP: Classification, labelling and Packaging
  - REACH: Registration, Evaluation and Authorization of Chemicals
  - GHS: Globally Harmonised System of Classification, Labelling and Packaging of Chemicals
  - UN: United Nations
  - DNEL: Derived No Effect Level
  - DMEL: Derived Minimal Effect Level
  - PNEC: Predicted No Effect Concentration
  - ATE: Acute toxicity estimate
  - LL50: Lethal loading, 50%
  - EL50: Effect loading, 50%
  - EC50: Effective Concentration 50%
  - ErC50: Effective Concentration 50%, growth rate
  - NOEC: No Observed Effect Concentration
  - BCF: Bio-concentration factor
  - PBT: persistent, bioaccumulative, toxic
  - vPvB: very persistent, very bioaccumulative
  - RID: Regulations concerning the international carriage of dangerous goods by rail
  - ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures)
  - EmS: Emergency Schedules
  - MFAG: Medical First Aid Guide
  - ICAO: International Civil Aviation Organization
  - MARPOL: International Convention for the Prevention of Marine Pollution from Ships
  - IBC: Intermediate Bulk Container
  - SVHC: Substance of Very High Concern
- For abbreviations and acronyms, see table at <http://abbrev.esdscom.eu>

**Classification for mixtures and used evaluation method according to Regulation (EC) No. 1272/2008 [CLP]**

Classification	Classification procedure
Eye Irrit. 2; H319	Calculation method

**Relevant H and EUH statements (number and full text)**

- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H319 Causes serious eye irritation.
- H411 Toxic to aquatic life with long lasting effects.
- EUH208 Contains Sulfonic acids, petroleum, calcium salts. May produce an allergic reaction.

**Further Information**

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible

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for adhering to existing laws and regulations.

*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*