

Safety Data Sheet



SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Havoline GHC Pre-mixed 50/50

Product Number(s): 802890

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

Identified Uses:

Formulation & (re)packing of substances and mixtures

Use as antifreeze/coolant

1.3 Details of the supplier of the safety data sheet

Chevron Products UK Limited

1 Westferry Circus

Canary Wharf

London E14 4HA

United Kingdom

email : eumsds@chevron.com

1.4 Emergency telephone number

Transportation Emergency Response

Europe: 0044/(0)18 65 407333 and CHEMTREC: +1 703 527 3887

Health Emergency

Chevron Emergency Information Center: Located in the USA, international calls accepted 24 hours: +1 510 231 0623

Europe: 0044/(0)18 65 407333

Product Information

Product Information: FAX number: 0044/20 77 19 5171

SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLP CLASSIFICATION: Target organ toxicant (repeated exposure): Category 2, H373.

2.2 Label elements

Under the criteria of Regulation (EC) No 1272/2008 (CLP):



Signal Word: Warning

HAZARD STATEMENTS:

Health Hazards: May cause damage to organs (Kidney) through prolonged or repeated exposure (H373).

- contains: Ethylene Glycol

PRECAUTIONARY STATEMENTS:

General: If medical advice is needed, have product container or label at hand (P101). Keep out of reach of children (P102).

Prevention: Do not breathe dust/fume/gas/mist/vapours/spray (P260).

Response: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician (P301+P310). Get medical advice/attention if you feel unwell (P314).

Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations (P501).

2.3 Other hazards

This product is not, or does not contain, a substance that is a potential PBT or a vPvB.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

3.2 Mixtures

This material is a mixture.

COMPONENTS	CAS NUMBER	EC NUMBER	REGISTRATION NUMBER	CLP CLASSIFICATION	AMOUNT
Ethylene Glycol	107-21-1	203-473-3	01-2119456816-28	Acute Tox. 4/H302; STOT RE 2/H373	34 - < 80 %weight
Sodium 2-ethylhexanoate	19766-89-3	243-283-8	Exempt	Repr. 2/H361D	1 - < 3 %weight
Sodium tetraborate, pentahydrate	12179-04-3	215-540-4	01-2119490790-32	Eye Irrit. 2/H319; Repr. 1B/H360D; Repr. 1B/H360F	0.1 - < 1 %weight

The full text of all CLP H-statements is shown in Section 16.

SECTION 4 FIRST AID MEASURES

4.1 Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

4.2 Most important symptoms and effects, both acute and delayed

IMMEDIATE SYMPTOMS AND HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to be harmful.

Ingestion: May be harmful if swallowed.

Inhalation: Breathing this material at concentrations above the recommended exposure limits may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER SYMPTOMS AND HEALTH EFFECTS: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit: Kidney

See Section 11 for additional information. Risk depends on duration and level of exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Not applicable.

SECTION 5 FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry Chemical, CO₂, Aqueous Film Forming Foam (AFFF) or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Sodium .

5.3 Advice for firefighters

This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Eliminate all sources of ignition in vicinity of spilled material. Refer to Sections 5 and 8 for more information.

6.2 Environmental precautions

Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater.

6.3 Methods and material for containment and cleaning up

Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil and dispose of in a manner consistent with applicable requirements. Place other contaminated materials in disposable containers and dispose of in a manner consistent with applicable requirements. Report spills to local authorities as appropriate or required.

6.4 Reference to other sections

See sections 8 and 13.

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for safe handling

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

7.2 Conditions for safe storage, including any incompatibilities

Not Applicable

7.3 Specific end use(s):

Formulation & (re)packing of substances and mixtures

Use as antifreeze/coolant

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

8.1 Control parameters

Occupational Exposure Limits:

Component	Country/ Agency	Form	TWA	STEL	Ceiling	Notation
Ethylene Glycol	EU-Indicative	--	52 mg/m ³	104 mg/m ³	--	Skin
Ethylene Glycol	United Kingdom	--	10 mg/m ³	104 mg/m ³	--	Skin
Sodium tetraborate, pentahydrate	United Kingdom	--	1 mg/m ³	--	--	--

Consult local authorities for appropriate values.

8.2 Exposure controls

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: Neoprene, Nitrile Rubber.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational

exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors, Dusts and Mists. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

ENVIRONMENTAL EXPOSURE CONTROLS:

See relevant Community environmental protection legislation or the Annex, as applicable.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

9.1 Information on basic physical and chemical properties

Appearance

Color: Green

Physical State: Liquid

Odor: Faint or Mild

Odor Threshold: No data available

pH: 7.80 - 8.30

Melting Point: No data available

Freezing Point: -37°C (-34.6°F) Maximum

Initial Boiling Point: 109°C (228.2°F) (Estimated)

Flashpoint: Not Applicable

Evaporation Rate: No data available

Flammability (solid, gas): Not Applicable

Flammability (Explosive) Limits (% by volume in air):

Lower: No data available Upper: No data available

Vapor Pressure: No data available

Vapor Density (Air = 1): No data available

Density: 1.0720 kg/l - 1.0750 kg/l @ 20°C (68°F)

Solubility: Soluble in water.

Partition coefficient: n-octanol/water: No data available

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity: No data available

Explosive Properties: No Data Available

Oxidising properties: No Data Available

9.2 Other Information: No Data Available

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

10.2 Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions: Hazardous polymerization will not occur.

10.4 Conditions to Avoid: Not applicable

10.5 Incompatible materials to avoid: Not applicable

10.6 Hazardous decomposition products: Ketones (Elevated temperatures), Aldehydes (Elevated temperatures)

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Product Information:

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate (dermal): Not Applicable

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate (oral): Not Applicable

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate (inhalation): Not Applicable

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material.

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

Aspiration Hazard: No data available

Component Information:

Serious Eye Damage/Irritation:	
Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Test Result: Causes eye irritation

Skin Corrosion/Irritation:	
Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Skin Sensitization:	
Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Acute Dermal Toxicity:	
-------------------------------	--

Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Acute Oral Toxicity:

Ethylene Glycol	Test Qualifier: LD50 Test Result: 1600 mg/kg Species: cat
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Acute Inhalation Toxicity:

Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Germ Cell Mutagenicity:

Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Carcinogenicity:

Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Reproductive Toxicity:

Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Protocol: OECD 415 - One-Generation Reproduction Toxicity Test Result: Suspected of damaging fertility or the unborn child if ingested based on animal data
Sodium 2-ethylhexanoate	Protocol: Developmental Toxicity Study Test Result: Suspected of damaging fertility or the unborn child if ingested based on animal data
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Specific Target Organ Toxicity - Single Exposure:

Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Specific Target Organ Toxicity - Repeated Exposure:

Ethylene Glycol	Test Result: May cause damage to organs through prolonged and repeated exposure if ingested based on human data
Ethylene Glycol	Test Result: May cause damage to organs through prolonged and repeated exposure if inhalation based on human data
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains ethylene glycol (EG). The toxicity of EG via inhalation or skin contact is expected to be slight at room temperature. The estimated oral lethal dose is about 100 cc (3.3 oz.) for an adult human. Ethylene glycol is oxidized to oxalic acid which results in the deposition of calcium oxalate crystals mainly in the brain and kidneys. Early signs and symptoms of EG poisoning may resemble those of alcohol intoxication. Later, the victim may experience nausea, vomiting, weakness, abdominal

and muscle pain, difficulty in breathing and decreased urine output. When EG was heated above the boiling point of water, vapors formed which reportedly caused unconsciousness, increased lymphocyte count, and a rapid, jerky movement of the eyes in persons chronically exposed. When EG was administered orally to pregnant rats and mice, there was an increase in fetal deaths and birth defects. Some of these effects occurred at doses that had no toxic effects on the mothers. We are not aware of any reports that EG causes reproductive toxicity in human beings.

2-Ethylhexanoic acid (2-EXA) caused an increase in liver size and enzyme levels when repeatedly administered to rats via the diet. When administered to pregnant rats by gavage or in drinking water, 2-EXA caused teratogenicity (birth defects) and delayed postnatal development of the pups. Additionally, 2-EXA impaired female fertility in rats. Birth defects were seen in the offspring of mice who were administered sodium 2-ethylhexanoate via intraperitoneal injection during pregnancy.

SECTION 12 ECOLOGICAL INFORMATION

Product Information:

12.1 Toxicity

This material is not expected to be harmful to aquatic organisms. The product has not been tested. The statement has been derived from the properties of the individual components.

12.2 Persistence and degradability

This material is expected to be readily biodegradable. The product has not been tested. The statement has been derived from the properties of the individual components.

12.3 Bioaccumulative potential

Bioconcentration Factor: No Data Available
 Octanol/Water Partition Coefficient: No data available

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This product is not, or does not contain, a substance that is a potential PBT or a vPvB.

12.6 Other adverse effects

No other adverse effects identified.

Component Information:

Acute Toxicity:	
Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Long-term Toxicity:	
Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Biodegradation:	
Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

Bioaccumulative Potential:

Ethylene Glycol	Based on available data, the classification criteria are not met
Sodium 2-ethylhexanoate	Based on available data, the classification criteria are not met
Sodium tetraborate, pentahydrate	Based on available data, the classification criteria are not met

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations. In accordance with European Waste Catalogue (E.W.C.) the codification is the following: 16 01 14

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult appropriate Dangerous Goods Regulations for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

ADR/RID

NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT

- 14.1 UN number: Not applicable
- 14.2 UN proper shipping name: Not applicable
- 14.3 Transport hazard class(es): Not applicable
- 14.4 Packing group: Not applicable
- 14.5 Environmental hazards: Not applicable
- 14.6 Special precautions for user: Not applicable

ICAO / IATA

NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT

- 14.1 UN number: Not applicable
- 14.2 UN proper shipping name: Not applicable
- 14.3 Transport hazard class(es): Not applicable
- 14.4 Packing group: Not applicable
- 14.5 Environmental hazards: Not applicable
- 14.6 Special precautions for user: Not applicable

IMO / IMDG

NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT

- 14.1 UN number: Not applicable
- 14.2 UN proper shipping name: Not applicable
- 14.3 Transport hazard class(es): Not applicable
- 14.4 Packing group: Not applicable
- 14.5 Environmental hazards: Not applicable
- 14.6 Special precautions for user: Not applicable
- 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: Not applicable

SECTION 15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture REGULATORY LISTS SEARCHED:

- 01=EU Directive 76/769/EEC: Restrictions on the marketing and use of certain dangerous substances.
- 02=EU Directive 90/394/EEC: Carcinogens at work.
- 03=EU Directive 92/85/EEC: Pregnant or breastfeeding workers.

04=EU Directive 96/82/EC (Seveso II): Article 9.
 05=EU Directive 96/82/EC (Seveso II): Articles 6 and 7.
 06=EU Directive 98/24/EC: Chemical agents at work.
 07=EU Directive 2004/37/EC: On the protection of workers.
 08=EU Regulation EC No. 689/2008: Annex 1, Part 1.
 09=EU Regulation EC No. 689/2008: Annex 1, Part 2.
 10=EU Regulation EC No. 689/2008: Annex 1, Part 3.
 11=EU Regulation EC No. 850/2004: Prohibiting and restricting persistent organic pollutants (POPs).
 12=EU REACH, Annex XVII: Restrictions on manufacture, placing on the market and use of certain dangerous substances, mixture & article.
 13=EU REACH, Annex XIV: Authorization List or Candidate List of Substances of Very High Concern for Authorization (SVHC).

The following components of this material are found on the regulatory lists indicated.

Ethylene Glycol	06
Sodium tetraborate, pentahydrate	03, 06, 12, 13

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICC (Australia), DSL (Canada), EINECS (European Union), IECSC (China), KECI (Korea), PICCS (Philippines), TCSI (Taiwan), TSCA (United States).

15.2 Chemical safety assessment

Yes

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: SECTION 08 - Occupational Exposure Limit Table information was modified.
 SECTION 15 - Regulatory Information information was modified.

Revision Date: May 27, 2021

Full text of CLP H-statements:

H319; Causes serious eye irritation
 H302; Harmful if swallowed
 H360D; May damage the unborn child
 H360F; May damage fertility
 H361d; Suspected of damaging the unborn child
 H373; May cause damage to organs through prolonged or repeated exposure

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
CVX	-	Chevron	CAS	-	Chemical Abstract Service Number
NQ	-	Not Quantifiable			

Prepared according to the EU Regulation 1907/2006 (as amended) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Annex

Use as antifreeze/coolant - Industrial

Section 1	
Title	
Use as antifreeze/coolant	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 4, 8a, 8b, 9
Environmental Release Categories	7
Specific Environmental Release Category	Not Applicable
Processes, tasks, activities covered	
Covers general use of coolant in vehicles in closed systems. Includes the filling and draining of containers and operation of enclosed machinery and associated maintenance and storage activities.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapor pressure 0.004 kPa at 20°C
Vapour Pressure	See above
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently). [G13]
Amount used	Not Applicable
Frequency and duration of use/exposure	Covers up to ... (days/week): 5
Human factors not influenced by risk management	None identified
Other Operational Conditions affecting exposure	Not Applicable
Contributing Scenarios Specific Risk Management Measures and Operating Conditions	
[PROC 1] Use in closed process, no likelihood of exposure. Covers more than 4 hours (unless stated differently). Handle substance within a closed system. [E47] Use suitable eye protection. [PPE26]	
[PROC 2] Use in closed process with occasional controlled exposure. Covers more than 4 hours (unless stated differently). Handle substance within a closed system. [E47] Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17] Use suitable eye protection. [PPE26]	
[PROC 3] Use in closed batch process (synthesis or formulation). Covers more than 4 hours (unless stated differently). Ensure good ventilation at the workstation. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]	

Use suitable eye protection. [PPE26]

[PROC 4] Use in batch or other process (synthesis) where opportunity for exposure arises.

Covers more than 4 hours (unless stated differently).

Provide enhanced general ventilation by mechanical means. [E48]

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]

Use suitable eye protection. [PPE26]

[PROC 8a] Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.

Avoid carrying out activities involving exposure for more than 4 hours. [OC28]

Provide extract ventilation to points where emissions occur. [E54]

Effectiveness (of a measure): 90%

Use suitable eye protection. [PPE26]

If above technical/organisational control measures are not feasible, then adopt following PPE: [PPE30]

Wear suitable respiratory protection.

Effectiveness (of a measure): 95%

[PROC 8b] Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.

Covers more than 4 hours (unless stated differently).

Provide extract ventilation to points where emissions occur. [E54]

Effectiveness (of a measure): 90%

Use suitable eye protection. [PPE26]

If above technical/organisational control measures are not feasible, then adopt following PPE: [PPE30]

Wear suitable respiratory protection.

Effectiveness (of a measure): 95%

[PROC 9] Transfer of substance or preparation into small containers (dedicated filling line, including weighing).

Covers more than 4 hours (unless stated differently).

Provide enhanced general ventilation by mechanical means. [E48]

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]

Use suitable eye protection. [PPE26]

Section 2.2 Control of environmental exposure

Product characteristics

Not Applicable

Amounts used

Maximum daily site tonnage (kg/day) [A4]: 2000

Frequency and duration of use

Emission Days (days/year) [FD4]: 300

Environmental factors not influenced by risk management

Local freshwater dilution factor [EF1]: 10

Local marine water dilution factor [EF2]: 100

Other given operational conditions affecting environmental exposure

Not Applicable

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites thus conservative process release estimates used. [TCS1]

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14]

User site assumed to be separate chemical and foul/rain water and be equipped with a WWTP.

[ENVT15]

Organisation measures to prevent/limit release from site

Do not apply industrial sludge to natural soils. [OMS2]

Sludge should be incinerated, contained or reclaimed. [OMS3]
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2000
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3]
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]
Section 3 Exposure Estimation
3.1. Health
The Risk Management Measures/Operational Conditions that are identified in the Exposure Scenario are the outcome of a quantitative and qualitative assessment that covers this product.
3.2. Environment
Used ECETOC TRA model. [EE1]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23]
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1]

Use as antifreeze/coolant - Professional

Section 1	
Title	
Use as antifreeze/coolant	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 4, 8a, 9
Environmental Release Categories	9a, 9b
Specific Environmental Release Category	Not Applicable
Processes, tasks, activities covered	
Covers handling and dilution of functional fluids	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapor pressure 0.004 kPa at 20°C
Vapour Pressure	See above
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently). [G13]
Amount used	Not Applicable
Frequency and duration of use/exposure	Covers up to ... (days/week): 5
Human factors not influenced by risk management	None identified
Other Operational Conditions affecting	Not Applicable

exposure
Contributing Scenarios Specific Risk Management Measures and Operating Conditions
<p>[PROC 1] Use in closed process, no likelihood of exposure. Covers more than 4 hours (unless stated differently). Handle substance within a closed system. [E47] Use suitable eye protection. [PPE26]</p> <p>[PROC 2] Use in closed process with occasional controlled exposure. Covers more than 4 hours (unless stated differently). Provide enhanced general ventilation by mechanical means. [E48] Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17] Use suitable eye protection. [PPE26]</p> <p>[PROC 3] Use in closed batch process (synthesis or formulation). Covers more than 4 hours (unless stated differently). Ensure good ventilation at the workstation. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17] Use suitable eye protection. [PPE26]</p> <p>[PROC 4] Use in batch or other process (synthesis) where opportunity for exposure arises. Covers daily exposure up to 8 hours. Use suitable eye protection. [PPE26]</p> <p>[PROC 8a] Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Avoid carrying out activities involving exposure for more than 1 hour. [OC27] Provide extract ventilation to points where emissions occur. [E54] Effectiveness (of a measure): 80% Use suitable eye protection. [PPE26] If above technical/organisational control measures are not feasible, then adopt following PPE: [PPE30] Wear suitable respiratory protection. Effectiveness (of a measure): 80% Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]</p> <p>[PROC 9] Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Avoid carrying out activities involving exposure for more than 4 hours. [OC28] Provide enhanced general ventilation by mechanical means. [E48] Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17] Use suitable eye protection. [PPE26]</p>
Section 2.2 Control of environmental exposure
Product characteristics
Not Applicable
Amounts used
Maximum daily site tonnage (kg/day) [A4]: 1000
Frequency and duration of use
Emission Days (days/year) [FD4]: 300
Environmental factors not influenced by risk management
Local freshwater dilution factor [EF1]: 10
Local marine water dilution factor [EF2]: 100
Other given operational conditions affecting environmental exposure
Not Applicable
Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites thus conservative process release estimates used. [TCS1]
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14] User site assumed to be separate chemical and foul/rain water and be equipped with a WWTP. [ENVT15]
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. [OMS2] Sludge should be incinerated, contained or reclaimed. [OMS3]
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2000
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3]
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]
Section 3 Exposure Estimation
3.1. Health
The Risk Management Measures/Operational Conditions that are identified in the Exposure Scenario are the outcome of a quantitative and qualitative assessment that covers this product.
3.2. Environment
Used ECETOC TRA model. [EE1]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23]
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1]

Formulation & (re)packing of substances and mixtures - Industrial

Section 1	
Title	
Formulation & (re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 4, 5, 8a, 8b, 9
Environmental Release Categories	2
Specific Environmental Release Category	Not Applicable
Processes, tasks, activities covered	
Covers general use of coolant in vehicles in closed systems. Includes the filling and draining of containers and operation of enclosed machinery and associated maintenance and storage activities.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapor pressure 0.004 kPa at 20°C
Vapour Pressure	See above
Concentration of	Covers percentage substance in the product up to 100 % (unless stated

substance in product	differently). [G13]
Amount used	Not Applicable
Frequency and duration of use/exposure	Covers up to ... (days/week): 5
Human factors not influenced by risk management	None identified
Other Operational Conditions affecting exposure	Not Applicable

Contributing Scenarios Specific Risk Management Measures and Operating Conditions

[PROC 1] Use in closed process, no likelihood of exposure.

Covers more than 4 hours (unless stated differently).

Handle substance within a closed system. [E47]

Use suitable eye protection. [PPE26]

[PROC 2] Use in closed process with occasional controlled exposure.

Covers more than 4 hours (unless stated differently).

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]

[PROC 3] Use in closed batch process (synthesis or formulation).

Covers more than 4 hours (unless stated differently).

Handle substance within a closed system. [E47]

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]

Use suitable eye protection. [PPE26]

[PROC 4] Use in batch or other process (synthesis) where opportunity for exposure arises.

Covers more than 4 hours (unless stated differently).

Provide enhanced general ventilation by mechanical means. [E48]

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]

Use suitable eye protection. [PPE26]

[PROC 5] Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact).

Avoid carrying out activities involving exposure for more than 4 hours. [OC28]

Provide enhanced general ventilation by mechanical means. [E48]

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17]

[PROC 8a] Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.

Avoid carrying out activities involving exposure for more than 1 hour. [OC27]

Provide extract ventilation to points where emissions occur. [E54]

Effectiveness (of a measure): 90%

Use suitable eye protection. [PPE26]

If above technical/organisational control measures are not feasible, then adopt following PPE.: [PPE30]

Wear suitable respiratory protection.

Effectiveness (of a measure): 95%

[PROC 8b] Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.

Avoid carrying out activities involving exposure for more than 4 hours. [OC28]

Provide extract ventilation to points where emissions occur. [E54]

Effectiveness (of a measure): 90%

Use suitable eye protection. [PPE26] If above technical/organisational control measures are not feasible, then adopt following PPE.: [PPE30] Wear suitable respiratory protection. Effectiveness (of a measure): 95%
[PROC 9] Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Covers more than 4 hours (unless stated differently). Provide enhanced general ventilation by mechanical means. [E48] Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. [PPE17] Use suitable eye protection. [PPE26]
Section 2.2 Control of environmental exposure
Product characteristics
Not Applicable
Amounts used
Maximum daily site tonnage (kg/day) [A4]: 4545
Frequency and duration of use
Emission Days (days/year) [FD4]: 300
Environmental factors not influenced by risk management
Local freshwater dilution factor [EF1]: 10 Local marine water dilution factor [EF2]: 100
Other given operational conditions affecting environmental exposure
Not Applicable
Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites thus conservative process release estimates used. [TCS1]
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14] User site assumed to be separate chemical and foul/rain water and be equipped with a WWTP. [ENVT15]
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. [OMS2] Sludge should be incinerated, contained or reclaimed. [OMS3]
Conditions and measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2000
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3]
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]
Section 3 Exposure Estimation
3.1. Health
The Risk Management Measures/Operational Conditions that are identified in the Exposure Scenario are the outcome of a quantitative and qualitative assessment that covers this product.
3.2. Environment
Used ECETOC TRA model. [EE1]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23]
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1]

