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

1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: Cooling medium for recooling (Chiller) systems (ready mix 1:4 standard)

Article number: 3301960 / 3301965 / 3301967

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

Relevant application of the substance / the preparation
Heat transfer fluid
antifreeze

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Clariant Produkte (Deutschland) GmbH
65926 Frankfurt am Main
Telephone no. : +49 69 305 18000

Information about the substance/mixture
Corp Product Stewardship
E-mail: MSDS.CorpPS_BU_ICS@clariant.com

1.4 Emergency telephone number:

00800-5121 5121 (24h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according CLP regulation (Regulation (EC) No. 1272/2008, as amended)

<table>
<thead>
<tr>
<th>Hazard class</th>
<th>Hazard category</th>
<th>H-phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific target organ toxicity -</td>
<td>Category 2</td>
<td>May cause damage to organs through prolonged or repeated exposure.</td>
</tr>
<tr>
<td>repeated exposure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.2 Label elements

Labelling according CLP regulation (Regulation (EC) No. 1272/2008, as amended)
Hazard pictograms

Signal word
Warning

Hazard statements
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P314 Get medical advice/ attention if you feel unwell.
P501 Dispose of contents/ container to an approved waste disposal plant.

2.3. Other hazards
According to the present state of knowledge provided this product is handled correctly, there is no danger to humans or the environment

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical characterization
Monoethylene glycol (1,2-ethane diol) and corrosion inhibitors in aqueous solution (20% active)

Hazardous ingredients

<table>
<thead>
<tr>
<th>Ethanediol</th>
<th>Concentration : 19 - 22 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number :</td>
<td>107-21-1</td>
</tr>
<tr>
<td>EC number:</td>
<td>203-473-3</td>
</tr>
<tr>
<td>Index Number</td>
<td>603-027-00-1</td>
</tr>
<tr>
<td>REACH - Registration number according to article 20(3):</td>
<td>01-2119456816-28, 01-2119456816-28-0000, 01-2119456816-28-0003, 01-2119456816-28-XXXX</td>
</tr>
<tr>
<td>GHS classification EC</td>
<td>Specific target organ toxicity - repeated exposure</td>
</tr>
</tbody>
</table>
**SECTION 4: First aid measures**

4.1. Description of first aid measures

General information
Remove/Take off immediately all contaminated clothing.

After inhalation
If inhaled, remove to fresh air.
Get medical advice/attention.

After contact with skin
In case of contact, immediately flush skin with plenty of water.

After contact with eyes
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

After ingestion
Get medical attention immediately.

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

Symptoms
No symptoms known currently.

Hazards
No hazards known at this time.

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

Treatment
Treat symptomatically.

**SECTION 5: Firefighting measures**

5.1. Extinguishing media

Suitable extinguishing media
Not combustible.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture

In case of fires, hazardous combustion gases are formed: Carbon monoxide (CO)
Nitrogen oxides (NOx)

5.3. Advice for firefighters
Special protective equipment for firefighting
   Self-contained breathing apparatus

Further information
   Wear suitable protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
   Ensure adequate ventilation.
   Wear suitable protective equipment.

6.2. Environmental precautions
   Do not allow to enter drains or waterways

6.3. Methods and material for containment and cleaning up
   Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
   Can be landfilled or incinerated, when in compliance with local regulations.

6.4. Reference to other sections
   Additional information
   Information regarding Safe handling, see chapter 7.
   For personal protection see section 8.
   Information regarding Waste Disposal, see chapter 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
   Advice on safe handling
      Provide adequate ventilation.
   Hygiene measures
      Keep away from food and drink.
   Advice on protection against fire and explosion
      Not combustible.

7.2. Conditions for safe storage, including any incompatibilities
   Further information on storage conditions
      Protect from frost.
   Storage stability
      Storage time: 24 months

7.3. Specific end use(s)
   No further recommendations.
SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limit values

ethylene glycol
EC number: 203-473-3
CAS number : 107-21-1

<table>
<thead>
<tr>
<th>Regulatory basis / Regulatory list</th>
<th>Revision</th>
<th>Type of value</th>
<th>Values</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values</td>
<td>2009-12-19</td>
<td>Limit Value - eight hours</td>
<td>52 mg/m3 20 ppm</td>
<td></td>
</tr>
<tr>
<td>Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values</td>
<td>2009-12-19</td>
<td>Short term exposure limit</td>
<td>104 mg/m3 40 ppm</td>
<td></td>
</tr>
</tbody>
</table>

DNEL/DMEL values

Ethanediol
EC number: 203-473-3
CAS number : 107-21-1

<table>
<thead>
<tr>
<th>Route of exposure</th>
<th>Personnel</th>
<th>Exposure time/Effect</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal</td>
<td>Workers</td>
<td>Long-term systemic effects</td>
<td>106 mg/kg bw/day</td>
<td>DNEL</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Workers</td>
<td>Long-term local effects</td>
<td>35 mg/m3</td>
<td>DNEL</td>
</tr>
<tr>
<td>Dermal</td>
<td>General population</td>
<td>Long-term systemic effects</td>
<td>53 mg/kg bw/day</td>
<td>DNEL</td>
</tr>
<tr>
<td>Inhalation</td>
<td>General population</td>
<td>Long-term local effects</td>
<td>7 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

PNEC values

Ethanediol
EC number: 203-473-3
CAS number : 107-21-1

<table>
<thead>
<tr>
<th>Environmental compartment</th>
<th>Personnel/Exposure time/Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>10 mg/l</td>
<td></td>
</tr>
<tr>
<td>salt water</td>
<td>1 mg/l</td>
<td></td>
</tr>
<tr>
<td>Water (intermittent release)</td>
<td>10 mg/l</td>
<td></td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>20.9 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>1.53 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>199.5 mg/l</td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls
General protective measures 
Do not inhale vapours

Respiratory protection: Use respiratory protection in case of insufficient exhaust ventilation or prolonged exposure
Full mask to standard DIN EN 136
Filter A (organic gases and vapours) to standard DIN EN 141
The use of filter apparatus presupposes that the environment atmosphere contains at least 17% oxygen by volume, and does not exceed the maximum gas concentration, usually 0.5% by volume. Relevant guidelines to be considered include EN 136/141/143/371/372 as well as other national regulations.

Hand protection: Long-term exposure
Impervious butyl rubber gloves
Minimum breakthrough time / gloves: 480 min
Minimum thickness / gloves 0.7 mm
For short-term exposure (splash protection):
Nitrile rubber gloves.
Minimum breakthrough time / gloves: 30 min
Minimum thickness / gloves 0.4 mm
These types of protective gloves are offered by various manufacturers. Please note the manufacturers’ detailed statements, especially about the minimum thickness and the minimum breakthrough time. Consider also the particular working conditions under which the gloves are being used.

Eye protection: Safety glasses

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: liquid
Form: Liquid
Particle size: Not applicable
Colour: light yellow
Odour: slightly perceptible
Odour threshold: not tested.
PpH value: approx. 8 (20 °C, 100 g/l)
Method: DIN 19268
Melting point: -11 °C
Method: DIN 51583
Boiling point: 103 °C (1.013 mbar)
Method: ASTM D 1120
Flash point : Method : ASTM D6450 (closed cup)
does not flash
Evaporation rate : Not applicable
Lower explosion limit : not tested.
Upper explosive limit : not tested.
Combustion number : Not applicable
Minimum ignition energy : not tested.
Vapour pressure : < 0.01 kPa (20 °C)
Method : Calculated by Syracuse.
Vapour density relative to air : Not applicable
Solubility in water : (20 °C)
completely miscible
Soluble in ... : fat
not tested.
Octanol/water partition coefficient (log Pow) : Not applicable
Ignition temperature : Method : DIN 51794
Not applicable for Liquids with Flash Point > 70 °C.
Self-ignition temperature : Not applicable
Thermal decomposition : > 250 °C
Method : DSC
Measurement under nitrogen
No decomposition upto 250 °C.
Viscosity (dynamic) : 1.72 mPa.s (20 °C)
Viscosity (kinematic) : 1.68 mm2/s (20 °C)
Method : DIN 51562
Explosive properties : Explosive according to EU supply regulations : Not explosive
Method : Expert judgement
Oxidizing properties : Type of oxidizing effect : The substance or mixture is not
classified as oxidizing.
Method : Expert judgement

9.2. Other information
Density : 1.0259 g/cm3 (20 °C)
Method : DIN 51757
Bulk density : Not applicable
Surface tension : Not applicable

SECTION 10: Stability and reactivity
10.1. Reactivity
See section 10.3. "Possibility of hazardous reactions"

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
Incompatible with oxidizing agents.

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
not known

10.6. Hazardous decomposition products
When handled and stored appropriately, no dangerous decomposition products are known

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Information related to the product itself:
Acute oral toxicity : not tested.
Acute toxicity estimate > 2.000 mg/kg
Method : Calculation method
Acute dermal toxicity : not tested.
Acute inhalation toxicity : not tested.
Irritant effect on skin : not tested.
Irritant effect on eyes : not tested.
Sensitization : not tested.
Repeated dose toxicity: not tested.
Assessment of mutagenicity : No information available.
Assessment of carcinogenicity : No information available.
Assessment of toxicity to reproduction : No information available.
Assessment of teratogenicity : No information available.
Specific target organ toxicity (STOT) - single exposure : not tested.
Specific target organ toxicity (STOT) - repeated exposure:

Remarks
Kidney injury may occur.
Poisoning affects the central nervous system.
The data on toxicology refer to the active ingredient.
The classification was made by the conventional (calculation) method of the CLP Regulation (EC) No 1272/2008.

Information related to the component: Ethanediol

Acute oral toxicity:
LD50: 22,000 mg/kg (Rat)
Method: Other

Acute dermal toxicity:
LD50: > 3,500 mg/kg (Mouse)
Method: Other

Acute inhalation toxicity:
LC50: > 2,5 mg/l (6 h, Rat)
Method: Other

Irritant effect on skin:
No skin irritation (20 h, Rabbit)
Method: BASF test
Source: European Chemicals Agency (ECHA)

Irritant effect on eyes:
Non-irritant (24 h, rabbit eye)
Method: BASF test
Source: European Chemicals Agency (ECHA)

Sensitization:
Does not cause skin sensitisation. (Guinea pig)
Method: OECD Test Guideline 406
Source: European Chemicals Agency (ECHA)

Repeated dose toxicity:
Route of application: oral (feed)
NOAEL: 150 mg/kg (Exposure time: 16 w, Frequency of treatment: daily, Dose: 50 - 150 - 500 - 1000 mg/kg, Rat, male)
Method: OECD Test Guideline 408
Source: European Chemicals Agency (ECHA)

Genetic toxicity in vivo:
Dominant lethal assay
Rat (Fischer F344, male and female)
oral (feed) 3 generation 40 - 200 - 1000 mg/kg
Method: Other
Source: literature
negative
Genetic toxicity in vitro:
- Test type: Ames test
- Test system: Salmonella typhimurium
- Concentration: 33 - 5000 μg/plate
- Metabolic activation: with and without
- Result: negative
- Method: OECD Test Guideline 471
- Source: European Chemicals Agency (ECHA)

Assessment of mutagenicity:
It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Assessment of carcinogenicity:
Not classifiable as a human carcinogen.

Developmental toxicity/teratogenicity:
- Route of application: oral (gavage)
- NOAEL: 500 mg/kg (Exposure time: gestation day 6-15, Frequency of treatment: daily, Dose: 150 - 500 - 1000 - 2500 mg/kg, Rat)
- NOAEL (maternal): 1.000 mg/kg (Exposure time: gestation day 6-15, Frequency of treatment: daily, Dose: 150 - 500 - 1000 - 2500 mg/kg, Rat)
- Method: Other
- Source: literature

Toxicity to reproduction/fertility:
- NOAEL parent: > 1.000 mg/kg (Frequency of treatment: daily, Test duration: 3 generations, Dose: 40 - 200 - 1000, Rat, male and female)
- NOAEL F1: > 1.000 mg/kg (Frequency of treatment: daily, Test duration: 3 generations, Dose: 40 - 200 - 1000, Rat, male and female)
- NOAEL F2: > 1.000 mg/kg (Frequency of treatment: daily, Test duration: 3 generations, Dose: 40 - 200 - 1000, Rat, male and female)
- Method: Other
- Source: literature

Assessment of toxicity to reproduction:
No reproductive toxicity to be expected.

Assessment of teratogenicity:
No teratogenic effects to be expected.

Specific target organ toxicity (STOT) - single exposure:
- Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.
Specific target organ toxicity (STOT) - repeated exposure:

Target organs: Kidney
Assessment: May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard:
No aspiration toxicity classification

SECTION 12: Ecological information

12.1. Toxicity

Information related to the product itself:

Fish toxicity:
- LC0: 1.000 mg/l (Leuciscus idus (Golden orfe))
  By analogy with a product of similar composition
- LL50: > 100 mg/l (96 h, Danio rerio (zebra fish))
  Method: OECD Test Guideline 203
  By analogy with a product of similar composition

Daphnia toxicity: not tested.
Algae toxicity: not tested.
Bacteria toxicity: not tested.

Information related to the component: Ethanediol

Fish toxicity:
- LC50: 72.860 mg/l (96 h, Pimephales promelas (fathead minnow))
  Method: EPA
  Source: European Chemicals Agency (ECHA)
  The details of the toxic effect relate to the nominal concentration.

Fish toxicity (chronic):
- Chronic Toxicity Value: 2.629 mg/l (30 d, Fish)
  Method: Other
  Source: European Chemicals Agency (ECHA)
  The details of the toxic effect relate to the nominal concentration.

Daphnia toxicity:
- EC50: > 100 mg/l (48 h, Daphnia magna (Water flea))
  Method: OECD Test Guideline 202
  Source: European Chemicals Agency (ECHA)

Daphnia toxicity (chronic):
- NOEC: 8.590 mg/l (7 d, Ceriodaphnia spec.)
  Analytical monitoring: yes
  Method: Other
  Source: Literature
  The details of the toxic effect relate to the nominal concentration.
Algae toxicity: EC50: 3.536 mg/l (96 h, Chlamydomonas angulosa. Green algae)
Method: Estimated (Ecosar)
Source: European Chemicals Agency (ECHA)

Bacteria toxicity: EC20: > 1.995 mg/l (0.5 h, activated sludge, domestic)
Method: ISO 8192
Source: European Chemicals Agency (ECHA)

Toxicity to soil-dwelling organisms: The study is not necessary from a scientific perspective.

Toxicity to terrestrial plants: The study is not necessary from a scientific perspective.

Toxicity to other environmentally relevant organisms: The study is not necessary from a scientific perspective.

Sediment toxicity: The study is not necessary from a scientific perspective.

12.2. Persistence and degradability

Information related to the product itself:

Biodegradability: 90 %
Readily biodegradable
Method: OECD Test Guideline 302B
By analogy with a product of similar composition

Information related to the component: Ethanediol
Biodegradability: 90 - 100 % (10 d, DOC decrease)
Readily biodegradable
Method: OECD Test Guideline 301A
Source: European Chemicals Agency (ECHA)

12.3. Bioaccumulative potential

Information related to the product itself:
Bioaccumulation: not tested.

Information related to the component: Ethanediol
Bioaccumulation: Due to the low logPow bioaccumulation is not expected

12.4. Mobility in soil

Information related to the product itself:
Transport and distribution between environmental compartments: not tested.

Behaviour in environmental compartments: no data available
Information related to the component: Ethanediol

Transport and distribution
between environmental compartments: Adsorption/Soil (water - soil)
log Koc : 0
Method : other (calculated)
Source : European Chemicals Agency (ECHA)

Behaviour in environmental compartments
not available

12.5. Results of PBT and vPvB assessment

Information related to the product itself:
no data available

Information related to the component: Ethanediol
This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

12.6. Other adverse effects

Information related to the product itself:

Additional ecotoxicological remarks
If handled correctly it causes no disturbance in treatment plants.
Determined in the undiluted form
The classification was made by the conventional (calculation) method of the CLP Regulation (EC) No 1272/2008.

Information related to the component: Ethanediol

Additional ecotoxicological remarks
Do not allow to enter ground water, waterways or waste water.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product
Dispose of in accordance with local regulations.

Uncleaned packaging
Uncontaminated packaging may be reused
Packaging that cannot be cleaned should be disposed of as product waste

SECTION 14: Transport information

Section 14.1. to 14.5.

ADR not restricted
ADN not restricted
RID not restricted
IATA  
not restricted 
IMDG  
not restricted 

14.6. Special precautions for user  
See sections 6 to 8 of this Safety Data Sheet. 

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code (International Bulk Chemicals Code) 
No transport as bulk according IBC - Code. 

SECTION 15: Regulatory information 

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture 
Other regulations 
Apart from the data/regulations specified in this chapter, no further information is available concerning safety, health and environmental protection. 

15.2. Chemical safety assessment 
Chemical Safety Assessments (CSAs) are available for one or more of the component substances contained in this product. 

SECTION 16: Other information 

Observe national and local legal requirements 
List of the text of the hazard statements mentioned section 3 (H-phrases) : 

H302 Harmful if swallowed. 
H373 May cause damage to organs through prolonged or repeated exposure. 

Legend 
ADN European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways 
ADR European Agreement concerning the International Carriage of Dangerous Goods by Road 
AOX Adsorbable organic bound halogens 
CAS Chemical Abstracts Service 
DMEL Derived Minimal Effect Level (genotoxic substances) 
DNEL Derived No Effect Level 
EC50 Half maximal effective concentration 
GHS Globally Harmonized System 
IATA International Air Transport Association 
IMDG International Maritime Dangerous Goods 
LC50 Lethal Concentration 50% 
LD50 Lethal Dose 50% 
MARPOL International Convention for the Prevention of Pollution From Ships
NOAEC  No Observed Adverse Effect Concentration
NOAEL  No Observed Adverse Effect Level
NOEC  Non Observed Effect Concentration
OEL  Occupational Exposure Limit
PBT  Persistent, Bioaccumulative, Toxic
PEC  Predicted Environmental Concentration
PNEC  Predicted No Effect Concentration
REACH  Registration, Evaluation, Authorisation and Restriction of Chemicals
RID  International Rule for Transport of Dangerous Substances by Railway
SVHC  Substances of Very High Concern
vPvB  very Persistent and very Bioaccumulative

Decimal notation: "thousands" places are identified with a dot (for example, "2.000 mg/kg" means "two thousand mg/kg"). Decimal places are identified with a comma (for example, "1,35 g/cm³" means "one point three five g/cm³").

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