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 1:2 outdoor)
   Article number: 3301950 / 3301955 / 3301957

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Application of the substance / the preparation
   Heat transfer fluid
   Antifreeze

1.3 Details of the supplier of the safety data sheet
   Manufacturer/Supplier:
   Rittal GmbH & Co. KG
   Auf dem Stützberg
   D – 35745 Herborn
   Informing department:
   Department Marketing, Phone: 02772/505-9052
   E-Mail: info@rittal.de

1.4 Emergency telephone number:
   00800-5121 5121 (24 h)

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>Acute toxicity</td>
<td>Category 4</td>
<td>Harmful if swallowed.</td>
</tr>
<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)
Safety Data Sheet in accordance with Regulation (EU) No. 453/2010

Antifrogen N 34% Aqueous Mixture

Substance key: SXR089060  Revision Date: 28.05.2015
Version : 7 - 5 / EU  Date of printing : 11.06.2015

Hazard pictograms

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

Precautionary statements
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P314 Get medical advice/ attention if you feel unwell.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P501 Dispose of contents/ container to an approved waste disposal plant.

2.3. Other hazards
No additional hazards are known except those derived from the labelling.

SECTION 3: Composition/information on ingredients

3.2. Mixtures
Chemical characterization
Monoethylene glycol (1,2-ethane diol) and corrosion inhibitors in aqueous solution (34% active)

Hazardous ingredients

Ethanediol
Concentration : 33 - 37 %
CAS number : 107-21-1
EC number: 203-473-3
Index Number 603-027-00-1
REACH - Registration number according to article 20(3): 01-2119456816-28, 01-2119456816-28-0000, 01-2119456816-28-0003, 01-2119456816-28-XXXX
GHS classification EC
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
Handle and open container with care.
Ensure 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
Keep containers tightly closed in a cool, well-ventilated place.
Handle and open container with care.

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

<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</td>
<td>20 ppm</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</td>
<td>40 ppm</td>
</tr>
</tbody>
</table>

DNEL/DMEL values

<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

<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></td>
<td>10 mg/l</td>
</tr>
<tr>
<td>salt water</td>
<td></td>
<td>1 mg/l</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**: Depending on the risk, wear sufficient eye protection (safety glasses with side protection or goggles, and if necessary, face shield.)

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### 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.

pH value: approx. 8 (20 °C, 100 g/l)
Method: DIN 19268

Melting point: -22 °C
Method: DIN 51583

Boiling point: 106 °C (1.013 hPa)
Method: ASTM D 1120

Flash point: Method: ASTM D6450 (closed cup)
does not flash

Evaporation rate: not tested.

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 tested.

Solubility in water: (20 °C)
completely miscible

Soluble in ...: fat
not tested.

Octanol/water partition coefficient (log Pow): not tested.

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): 2,62 mPa.s (20 °C)

Viscosity (kinematic): 2,5 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
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 1.423 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: not tested.
Aspiration hazard: no data available

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)
Route of application: Skin contact
NOAEL: ca. 2,200 mg/kg (Exposure time : 4 w, Frequency of
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))
- 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:
Ethanol

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)
By analogy with a product of similar composition

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:

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.
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

- **ADR** European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
- **ADN** 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
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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