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 Stützelberg
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)

Hazard class	Hazard category	H-phrase
Acute toxicity	Category 4	Harmful if swallowed.
Specific target organ toxicity - repeated exposure	Category 2	May cause damage to organs through prolonged or repeated exposure.

2.2. Label elements

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

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	

Specific target organ toxicity - repeated exposure	Category 2	H373
Acute toxicity	Category 4	H302

The text of the H-phrases is shown in section 16.

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

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

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

DNEL/DMEL values

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

Route of exposure	Personnel	Exposure time/Effect	Value	Remarks
Dermal	Workers	Long-term systemic effects	106 mg/kg bw/day	DNEL
Inhalation	Workers	Long-term local effects	35 mg/m3	DNEL
Dermal	General population	Long-term systemic effects	53 mg/kg bw/day	DNEL
Inhalation	General population	Long-term local effects	7 mg/m3	

PNEC values

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

Environmental compartment	Personnel/Exposure time/Effect	Value
Fresh water		10 mg/l
salt water		1 mg/l

Water (intermittent release)		10 mg/l
Fresh water sediment		20,9 mg/kg dry weight (d.w.)
Soil		1,53 mg/kg dry weight (d.w.)
Sewage treatment plant		199,5 mg/l

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.)

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

9.2. Other information

Density :	1,0466 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 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

	treatment: daily, Dose: 0,5 - 2 - 8 ml/kg, Dog, male) Method : OECD Test Guideline 410 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) Test type : Ames test Test system : Escherichia coli 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) 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 :	not tested.

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").