Rittal GmbH & Co. KG
Auf dem Stützelberg
D-35745 Herborn
Phone +49 2772 505 0
www.rittal.com

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

1.1. Product identifier

Trade name:
Cooling medium for recooling (Chiller) systems 1:4 Standard
Article number: 3301960 / 3301965 / 3301967

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: +49 2772 505 9052
E-Mail: info@rittal.de

1.4. Emergency telephone number:

Germany: +49 800 5121 5121 (24 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Specific target organ toxicity - repeated exposure, Category 2	H373: May cause damage to organs through prolonged or repeated exposure.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Warning

Hazard statements : H373 May cause damage to organs through prolonged or

repeated exposure.

Precautionary statements :

Prevention:

P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

Response:

P314 Get medical advice/ attention if you feel unwell.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Hazardous components which must be listed on the label:
Ethanediol

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
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

Hazardous components

Chemical name	CAS-No. EC-No. Registration number	Classification	Concentration (% w/w)
Ethanediol	107-21-1 203-473-3 01-2119456816-28 01-2119456816-28-0000 01-2119456816-28-0003 01-2119456816-28-0038 01-2119456816-28-XXXX	STOT RE 2; H373 Acute Tox. 4; H302	>= 20 - < 30

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Remove/Take off immediately all contaminated clothing.

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

In case of skin contact	:	In case of contact, immediately flush skin with plenty of water.
In case of eye contact	:	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
If swallowed	:	Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	No symptoms known currently.
Risks	:	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

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

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Self-contained breathing apparatus
Further information	:	Wear suitable protective equipment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Ensure adequate ventilation. Wear suitable protective equipment.

6.2 Environmental precautions

Environmental precautions	:	Do not allow to enter drains or waterways

6.3 Methods and material for containment and cleaning up

Methods for 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

Information regarding Safe handling, see chapter 7., For personal protection see section 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Provide adequate ventilation.

Advice on protection against fire and explosion : Not combustible.

Hygiene measures : Keep away from food and drink.

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage conditions : Protect from frost.

Other data : Storage time: 24 months

7.3 Specific end use(s)

Specific use(s) : No further recommendations.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Ethanediol	107-21-1	TWA	20 ppm 52 mg/m3	2000/39/EC
Further information	Identifies the possibility of significant uptake through the skin, Indicative			
		STEL	40 ppm 104 mg/m3	2000/39/EC
Further information	Identifies the possibility of significant uptake through the skin, Indicative			

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value

Ethanediol CAS-No.: 107-21-1	Workers	Dermal	Long-term systemic effects	106 mg/kg bw/day
Remarks:	DNEL			
	Workers	Inhalation	Long-term local effects	35 mg/m3
Remarks:	DNEL			
	General population	Dermal	Long-term systemic effects	53 mg/kg bw/day
Remarks:	DNEL			
	General population	Inhalation	Long-term local effects	7 mg/m3
	Workers	Dermal	Long-term systemic effects	106 mg/kg bw/day
Remarks:	DNEL			
	Workers	Inhalation	Long-term local effects	35 mg/m3
Remarks:	DNEL			
	General population	Dermal	Long-term systemic effects	53 mg/kg bw/day
Remarks:	DNEL			
	General population	Inhalation	Long-term local effects	7 mg/m3

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Ethanediol CAS-No.: 107-21-1	Fresh water	10 mg/l
	salt water	1 mg/l
	Water (intermittent release)	10 mg/l
	Fresh water sediment	37 mg/kg dry weight (d.w.)
	Soil	1,53 mg/kg dry weight (d.w.)
	Sewage treatment plant	199,5 mg/l
	Marine sediment	3,7 mg/kg dry weight (d.w.)
	Fresh water	10 mg/l
	salt water	1 mg/l
	Water (intermittent release)	10 mg/l
	Fresh water sediment	37 mg/kg dry weight (d.w.)
	Soil	1,53 mg/kg dry weight (d.w.)
	Sewage treatment plant	199,5 mg/l
	Marine sediment	3,7 mg/kg dry weight (d.w.)

8.2 Exposure controls

Personal protective equipment

Eye protection : Safety glasses

Hand protection

Break through time	:	480 min
Glove thickness	:	0,7 mm
Remarks	:	Long-term exposure Impervious butyl rubber gloves
Break through time	:	30 min
Glove thickness	:	0,4 mm
Remarks	:	For short-term exposure (splash protection): Nitrile rubber gloves.
Remarks	:	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.
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.
Protective measures	:	Do not inhale vapours

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	Liquid
Colour	:	light yellow
Odour	:	slightly perceptible
Odour Threshold	:	not tested.
pH	:	approx. 8 (20 °C) Concentration: 100 g/l Method: DIN 19268
Melting point	:	-11 °C Method: DIN 51583
Boiling point	:	103 °C (1.013 hPa) Method: ASTM D 1120
Flash point	:	Method: ASTM D6450 (closed cup) does not flash

Evaporation rate	:	Not applicable
Upper explosion limit	:	not tested.
Lower explosion limit	:	not tested.
Combustion number :		Not applicable
Vapour pressure	:	< 0,01 kPa (20 °C) Method: Calculated by Syracuse.
Relative vapour density	:	Not applicable
Density	:	1,0259 g/cm3 (20 °C) Method: DIN 51757
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	completely miscible (20 °C)
Solubility in other solvents	:	not tested. Solvent: fat
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	Method: DIN 51794 Not applicable for Liquids with Flash Point > 70 °C.
Decomposition temperature	:	> 250 °C Method: DSC Measurement under nitrogen No decomposition up to 250 °C.
Viscosity		
Viscosity, dynamic	:	1,72 mPa.s (20 °C)
Viscosity, kinematic	:	1,68 mm2/s (20 °C) Method: DIN 51562
Explosive properties	:	Not explosive Method: Expert judgement
Oxidizing properties	:	The substance or mixture is not classified as oxidizing. Method: Expert judgement

9.2 Other information

Surface tension	:	Not applicable
Metal corrosion rate	:	< 6,25 mm/a

Minimum ignition energy	:	not tested.
Particle size	:	Not applicable
Self-ignition	:	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

Hazardous reactions : Incompatible with oxidizing agents.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : 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

Acute toxicity

Product:

Acute oral toxicity : Remarks: not tested.

Acute toxicity estimate: > 2.000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Remarks: not tested.

Acute dermal toxicity : Remarks: not tested.

Components:

Ethanediol:

Acute oral toxicity : LD50 (Rat, male and female): 22.000 mg/kg
Method: Other
GLP: no

Acute inhalation toxicity	:	LC50 (Rat, male and female): > 2,5 mg/l Exposure time: 6 h Method: Other GLP: yes
Acute dermal toxicity	:	LD50 (Mouse, male and female): > 3.500 mg/kg Method: Other GLP: yes

Skin corrosion/irritation

Product:

Remarks: not tested.

Components:

Ethanediol:

Species: Rabbit
Exposure time: 20 h
Method: BASF test
Result: No skin irritation
GLP: no

Serious eye damage/eye irritation

Product:

Remarks: not tested.

Components:

Ethanediol:

Species: rabbit eye
Exposure time: 24 h
Method: BASF test
Result: non-irritant
GLP: no

Respiratory or skin sensitisation

Product:

Remarks: not tested.

Components:

Ethanediol:

Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
GLP: yes

Germ cell mutagenicity

Product:

Germ cell mutagenicity-Assessment	:	No information available.

Components:

Ethanediol:

Genotoxicity in vitro	:	Test Type: Ames test Species: Salmonella typhimurium Concentration: 33 - 5000 µg/plate Metabolic activation: with and without Method: OECD Test Guideline 471 Result: negative GLP: yes
	:	Test Type: Ames test Species: Escherichia coli Concentration: 33 - 5000 µg/plate Metabolic activation: with and without Method: OECD Test Guideline 471 Result: negative GLP: yes
Genotoxicity in vivo	:	Test Type: Dominant lethal assay Species: Rat (male and female) Strain: Fischer F344 Application Route: oral (feed) Exposure time: 3 generation Dose: 40 - 200 - 1000 mg/kg Method: Other Result: negative GLP: no
Germ cell mutagenicity-Assessment	:	It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Carcinogenicity

Product:

Carcinogenicity - Assessment	:	No information available.

Components:

Ethanediol:

Carcinogenicity - Assessment	:	Not classifiable as a human carcinogen.

Reproductive toxicity

Product:

Reproductive toxicity - Assessment : No information available.

No information available.

Components:

Ethanediol:

Effects on fertility : Species: Rat
Sex: male and female
Dose: 40 - 200 - 1000
Frequency of Treatment: daily
Fischer F344
Application Route: oral (feed)
Test period: 3 generations
NOAEL: > 1.000 mg/kg,
F1: > 1.000 mg/kg,
F2: > 1.000 mg/kg,
Method: Other
GLP: no

Effects on foetal development : Species: Rat
Application Route: oral (gavage)
Exposure time: gestation day 6-15
Dose: 150 - 500 - 1000 - 2500 mg/kg
Group: yes
500 mg/kg
1.000 mg/kg
Number of exposures: daily
Method: Other
GLP: yes

Reproductive toxicity - Assessment : No reproductive toxicity to be expected.
No teratogenic effects to be expected.

STOT - single exposure

Product:

Remarks: not tested.

Components:

Ethanediol:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Product:

Remarks: not tested.

Components:

Ethanediol:

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

Repeated dose toxicity

Product:

Remarks: not tested.

Components:

Ethanediol:

Species: Rat, male
NOAEL: 150 mg/kg
Application Route: oral (feed)
Exposure time: 16 w
Number of exposures: daily
Dose: 50 - 150 - 500 - 1000 mg/kg
Group: yes
Method: OECD Test Guideline 408
GLP: yes

Species: Dog, male
NOAEL: ca. 2.200 mg/kg
Application Route: Skin contact
Exposure time: 4 w
Number of exposures: daily
Dose: 0,5 - 2 - 8 ml/kg
Group: yes
Method: OECD Test Guideline 410
GLP: yes

Aspiration toxicity

Components:

Ethanediol:

No aspiration toxicity classification

Further information

Product:

Remarks: Kidney injury may occur.

Remarks: Poisoning affects the central nervous system

Remarks: The data on toxicology refer to the active ingredient.

Remarks: The classification was made by the conventional (calculation) method of the CLP Regulation (EC) No 1272/2008.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish	:	LC0 (Leuciscus idus (Golden orfe)): 1.000 mg/l Remarks: By analogy with a product of similar composition LL50 (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: not tested.
Toxicity to algae	:	Remarks: not tested.
Toxicity to microorganisms	:	Remarks: not tested.

Components:

Ethanediol:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 72.860 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: yes Method: EPA GLP: no Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 6.500 - 13.000 mg/l End point: Growth rate Exposure time: 7 d Test Type: static test Analytical monitoring: no data available Method: EPA GLP: No information available.

Toxicity to microorganisms	:	EC20 (activated sludge, domestic): > 1.995 mg/l End point: Bacteria toxicity (respiration inhibition) Exposure time: 0,5 h Analytical monitoring: no Method: ISO 8192 GLP: no Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	:	Chronic Toxicity Value: 2.629 mg/l Exposure time: 30 d End point: Other Species: Fish Method: Other GLP: no Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 8.590 mg/l Exposure time: 7 d End point: Reproduction rate Species: Ceriodaphnia spec. Test Type: semi-static test Analytical monitoring: yes Method: Other GLP: No information available. Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to soil dwelling organisms	:	Remarks: The study is not necessary from a scientific perspective.
Plant toxicity	:	Remarks: The study is not necessary from a scientific perspective.
Sediment toxicity	:	Remarks: The study is not necessary from a scientific perspective.
Toxicity to terrestrial organisms	:	Remarks: The study is not necessary from a scientific perspective.

12.2 Persistence and degradability

Product:

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

Components:

Ethanediol:

Biodegradability	:	Test Type: aerobic

Inoculum: activated sludge
Concentration: 53 mg/l
Result: Readily biodegradable.
Biodegradation: 90 - 100 %
Related to: DOC decrease
Exposure time: 10 d
Method: OECD Test Guideline 301A
GLP: yes

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: not tested.

Components:

Ethanediol:

Bioaccumulation : Remarks: Due to the low logPow bioaccumulation is not expected

12.4 Mobility in soil

Product:

Distribution among environmental compartments : Remarks: not tested.

Components:

Ethanediol:

Distribution among environmental compartments : Adsorption/Soil
Medium: water - soil
Koc: log Koc: 0
Method: other (calculated)

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

Components:

Ethanediol:

Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT)..

12.6 Other adverse effects

Product:

Environmental fate and : no data available

pathways

Additional ecological information	:	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.

Components:

Ethanediol:

Environmental fate and pathways	:	not available
Additional ecological information	:	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.
Contaminated 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

Full text of H-Statements

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

Full text of other abbreviations

Acute Tox. : Acute toxicity
STOT RE : Specific target organ toxicity - repeated exposure

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; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical

Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Other information : Observe national and local legal requirements

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