

Trade name: R507

Current version : 1.0.0, issued: 19.03.2019

Replaced version: -, issued: -

Region: GB

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

Trade name

R507**1.2 Relevant identified uses of the substance or mixture and uses advised against****Relevant identified uses of the substance or mixture**

Industrial Use

Professional use

Refrigerant

Uses advised against

Consumer use

1.3 Details of the supplier of the safety data sheet**Address**

TEGA - Technische Gase und Gasetechnik GmbH

Werner-von-Siemens-Straße 18

97076 Würzburg

Telephone no. +49 931 2093-220

Fax no. +49 931 2093-180

e-mail kaeltmittel@tega.de

Advice on Safety Data Sheet

sdb_info@umco.de

1.4 Emergency telephone number

For medical advice (in German and English):

+49 (0)551 192 40 (Giftinformationszentrum Nord)

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture****Classification in accordance with Regulation (EC) No 1272/2008 (CLP)**

Press. Gas liq.; H280

Classification information

This product is assessed and classified using the methods and criteria below referred to in Article 9 of Regulation (EC) n° 1272/2008:

Physical hazards: determined through assessment data based on the methods or standards referred to in part 2 of Annex I to CLP

Health hazards and environmental hazards: determined through toxicological and ecotoxicological assessment data based on the methods or standards referred to in Part 3, 4 and 5 of Annex I to CLP.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008 (CLP Regulation)****Hazard pictograms**

GHS04

Signal word

Warning

Hazard statement(s)

H280

Contains gas under pressure; may explode if heated.

Hazard statements (EU)

EUH018

In use may form flammable/explosive vapour-air mixture.

EUH209

Can become highly flammable in use.

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Precautionary statement(s)

P410+P403 Protect from sunlight. Store in a well-ventilated place.

Supplemental label elements

Contains fluorinated greenhouse gases (HFC-125, HFC-143a).

2.3 Other hazards

Danger of suffocation by displacement of air / oxygen. Contact with the liquid can cause cold burns or frostbite. Please observe the information given in this safety data sheet.

PBT assessment

The product is not considered to be a PBT.

vPvB assessment

The product is not considered to be a vPvB.

SECTION 3: Composition/information on ingredients**3.1 Substances**

Not applicable. The product is not a substance.

3.2 Mixtures**Hazardous ingredients**

No	Substance name	Additional information	
	CAS / EC / Index / REACH no	Classification (EC) 1272/2008 (CLP)	Concentration
			%
1	pentafluoroethane		
	354-33-6 206-557-8 - 01-2119485636-25	Press. Gas liq.; H280	>= 50.00 - < 70.00 Vol%
2	1,1,1-trifluoroethane		
	420-46-2 206-996-5 - 01-2119492869-13	Flam. Gas 1; H220 Press. Gas liq.; H280	>= 50.00 - < 70.00 Vol%

Full Text for all H-phrases and EUH-phrases: pls. see section 16

No	Note	Specific concentration limits	M-factor (acute)	M-factor (chronic)
2	-	Flam. Gas 1; H220: C >= 7%	-	-

SECTION 4: First aid measures**4.1 Description of first aid measures****General information**

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Remove affected person from danger area, lay him down. Seek medical advice immediately.

After inhalation

Remove affected persons from dangerous area by observing suitable respiratory protection measures. Ensure supply of fresh air. Irregular breathing/no breathing: artificial respiration. Call a doctor immediately.

After skin contact

In case of contact with skin wash off immediately with soap and water. Rinse with much water in case of frostbites. Remove clothes only after unfreezing. Cover wounds with sterile dressing. Call a doctor immediately.

After eye contact

Remove contact lenses. Rinse eye thoroughly under running water keeping eyelids wide open and protecting the unaffected eye (at least 10 to 15 minutes). Seek medical assistance.

After ingestion

Rinse mouth thoroughly with water. Do not induce vomiting. Never give anything by mouth to an unconscious person.

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4.2 Most important symptoms and effects, both acute and delayed

Symptoms

The following symptoms may occur: respiratory arrest. Shortness of breath; Dizziness; muscle incoordination; Unconsciousness; cardiac arrhythmia; Dizziness; confusion; anesthetic effect; Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling. May be fatal if inhaled.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Extinguishing measures to suit surroundings.

Unsuitable extinguishing media

High power water jet

5.2 Special hazards arising from the substance or mixture

In the event of fire, the following can be released: Carbon monoxide and carbon dioxide; fluorine compounds; Liquefied gas: Spilled liquid can cause cold burns. This gas is heavier than air and may accumulate in low areas.

5.3 Advice for firefighters

Use self-contained breathing apparatus. Wear full protective suit. Containers close to fire should be transferred to a safe place. Cool closed containers exposed to fire with water. Pressure increase, bursting and explosion hazard during heating. Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Refer to protective measures listed in sections 7 and 8. Provide good room ventilation even at ground level (vapours are heavier than air). Do not breathe gas. Avoid contact with skin, eyes and clothing. Keep away sources of ignition. Use personal protective clothing. Cordon and mark contaminated area. Remove persons to safety.

For emergency responders

No data available. Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions

Avoid release in the environment. Suppress gases/vapours/mists with water spray jet.

6.3 Methods and material for containment and cleaning up

Ensure adequate ventilation. Dispose of absorbed material in accordance with the regulations.

6.4 Reference to other sections

Information regarding safe handling, see chapter 7. Information regarding personal protective measures, see chapter 8. Information regarding waste disposal, see chapter 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Only qualified and trained persons are authorised to handle. Provide good ventilation at the work area (local exhaust ventilation, if necessary). To be used only according to instructions for use. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers heat or sources of ignition. In case of accidental release: danger due to low temperature of the liquid product. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Comply with the health and safety at work laws.

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General protective and hygiene measures

Wash hands before breaks and after work. Do not inhale gases. Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Have emergency shower available.

Advice on protection against fire and explosion

The product is not combustible. The substance can form a combustible mixture with air at elevated pressure. Isolate from sources of heat, sparks and open flame. Take precautionary measures against electrostatic loading (earthing necessary during loading operations). Electrical equipment should be protected to the appropriate standard.

7.2 Conditions for safe storage, including any incompatibilities**Technical measures and storage conditions**

Keep container tightly closed in a cool, well-ventilated place, open and handle carefully. Protect from heat and direct sunlight.

Recommended storage temperature

Value < 50 °C

Storage stability

Value > 10 a
Comments When stored properly, the storage life is unlimited.

Requirements for storage rooms and vessels

Containers which are opened must be carefully closed and kept upright to prevent leakage. Always keep in containers of same material as the original one.

Advice on storage assembly

Do not store together with: self-reactive substances and mixtures; organic peroxides; oxidizing agents; inflammatory substances; pyrophoric substances; self-heating substances and mixtures; Materials in contact with water emit flammable gases. explosives; toxic substances and mixtures

7.3 Specific end use(s)

No data available.

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****DNEL, DMEL and PNEC values****DNEL values (worker)**

No	Substance name			CAS / EC no
	Route of exposure	Exposure time	Effect	Value
1	pentafluoroethane			354-33-6 206-557-8
	inhalative	Long term (chronic)	systemic	16444 mg/m ³
2	1,1,1-trifluoroethane			420-46-2 206-996-5
	inhalative	Long term (chronic)	systemic	38800 mg/m ³

DNEL value (consumer)

No	Substance name			CAS / EC no
	Route of exposure	Exposure time	Effect	Value
1	pentafluoroethane			354-33-6 206-557-8
	inhalative	Long term (chronic)	systemic	1753 mg/m ³
2	1,1,1-trifluoroethane			420-46-2 206-996-5
	inhalative	Long term (chronic)	systemic	10700 mg/m ³

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PNEC values

No	Substance name		CAS / EC no	
	ecological compartment	Type	Value	
1	pentafluoroethane		354-33-6 206-557-8	
	water	fresh water	0.1	mg/L
	water	fresh water sediment	0.6	mg/kg dry weight
	water	Aqua intermittent	1	mg/L
2	1,1,1-trifluoroethane		420-46-2 206-996-5	
	water	fresh water	350	µg/L

8.2 Exposure controls

Appropriate engineering controls

Ensure adequate ventilation, local exhaust at the work station if necessary. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.

Personal protective equipment**Respiratory protection**

Self-contained breathing apparatus. In case of insufficient ventilation or long-term effect use breathing apparatus.

Danger of suffocation due to high concentrations in breathing air.

Respiratory filter (gas) : AX

Eye / face protection

Tightly fitting safety glasses (EN 166).

Hand protection

Low-temperature-resistant gloves (EN 511). Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product. Before use, the protective gloves should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Appropriate Material leather

Other

Chemical-resistant work clothes. Protective shoes.

Environmental exposure controls

Information regarding waste disposal, see chapter 13.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form/Colour	
liquified gas	
colourless	
Odour	
slightly like ether	
Odour threshold	
No data available	
pH value	
No data available	
Boiling point / boiling range	
Value	-46.7 °C
Reference pressure	1013 hPa

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Melting point / melting range

No data available

Decomposition point / decomposition range

No data available

Flash point

No data available

Auto-ignition temperature

No data available

Oxidising properties

none (supplier)

Explosive properties

This product is not explosive. In and after use danger of production of inflammable compounds.

Flammability (solid, gas)

The product is not combustible.

Lower flammability or explosive limits

none

Method	ASTM E 681
Reference substance	mixture R507
Source	supplier

Upper flammability or explosive limits

none

Method	ASTM E 681
Reference substance	mixture R507
Source	supplier

Vapour pressure

Value	12826	hPa
Reference temperature	25	°C

Vapour density

Value	3.5
Comments	Air = 1

Evaporation rate

Value	>	1
Comments	CCl4 = 1	

Relative density

No data available

Density

Value	1.05	g/cm ³
Reference temperature	25	°C
Comments	as liquid	

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Solubility in water
No data available

Solubility(ies)
No data available

Partition coefficient: n-octanol/water			
No	Substance name	CAS no.	EC no.
1	pentafluoroethane	354-33-6	206-557-8
log Pow		1.48	
Reference temperature		25	°C
with reference to		pH 6.34	
Method		OECD 107	
Source		ECHA	
2	1,1,1-trifluoroethane	420-46-2	206-996-5
log Pow		1.06	
Reference temperature		20	°C
Source		ECHA	

Viscosity
No data available

9.2 Other information

Other information
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity

Dangerous reactions are not expected if the product is handled according to its intended use.

10.2 Chemical stability

Stable under recommended storage and handling conditions (See section 7).

10.3 Possibility of hazardous reactions

Stable under recommended storage and handling conditions (See section 7). Reacts with strong oxidizing agents.

10.4 Conditions to avoid

Temperatures > 50°C. Heat, naked flames and other ignition sources.

10.5 Incompatible materials

Oxidizing agents

10.6 Hazardous decomposition products

None, if handled according to intended use. In case of fire: see section 5.

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SECTION 11: Toxicological information**11.1 Information on toxicological effects**

Acute oral toxicity			
No data available			
Acute dermal toxicity			
No data available			
Acute inhalational toxicity			
No	Substance name	CAS no.	EC no.
1	pentafluoroethane	354-33-6	206-557-8
ATE	>	800000	ppmV
Duration of exposure		4	h
State of aggregation	Gas		
Species	rat		
Method	OECD 403		
Source	ECHA		
Evaluation/classification	Based on available data, the classification criteria are not met.		
2	1,1,1-trifluoroethane	420-46-2	206-996-5
ATE	>	591000	ppmV
Duration of exposure		4	h
State of aggregation	Gas		
Species	rat		
Method	OECD 403		
Source	ECHA		
Evaluation/classification	Based on available data, the classification criteria are not met.		

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Skin corrosion/irritation			
No data available			
Serious eye damage/irritation			
No data available			
Respiratory or skin sensitisation			
No data available			
Germ cell mutagenicity			
No	Substance name	CAS no.	EC no.
1	pentafluoroethane	354-33-6	206-557-8
Type of examination		in vitro gene mutation study in bacteria	
Species		Salmonella typhimurium / Escherichia coli	
Method		OECD 471	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	
Type of examination		In vitro Mammalian Chromosomal Aberration Test	
Species		Chinese hamster Ovary (CHO)	
Method		OECD 473	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	
Route of exposure		inhalational	
Type of examination		Mammalian Erythrocyte Micronucleus Test, In vivo	
Species		mouse	
Method		OECD 474	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	
2	1,1,1-trifluoroethane	420-46-2	206-996-5
Type of examination		In vitro Mammalian Chromosomal Aberration Test	
Species		Human Lymphocyte	
Method		EPA OPPTS 870.5375	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	
Type of examination		in vitro gene mutation study in bacteria	
Species		Salmonella typhimurium / Escherichia coli	
Method		OECD 471	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	
Type of examination		in vitro gene mutation study in mammalian cells	
Species		Mouse lymphoma cells	
Method		OECD 490	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	
Reproduction toxicity			
No data available			
Carcinogenicity			
No	Substance name	CAS no.	EC no.
1	1,1,1-trifluoroethane	420-46-2	206-996-5
Route of exposure		oral	
NOAEL		> 300	mg/kg bw/d
Duration of exposure		52	week/s
Type of examination		Toxicity study	
Species		rat	
Method		Value taken from the literature	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	

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STOT - single exposure	
No data available	

STOT - repeated exposure		CAS no.	EC no.
No	Substance name		
1	pentafluoroethane	354-33-6	206-557-8
Route of exposure		inhalational	
Species		rat	
Method		OECD 413	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	
No	Substance name	CAS no.	EC no.
2	1,1,1-trifluoroethane	420-46-2	206-996-5
Route of exposure		inhalational	
Species		rat	
Method		OECD 413	
Source		ECHA	
Evaluation/classification		Based on available data, the classification criteria are not met.	

Aspiration hazard	
No data available	

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish (acute)		CAS no.	EC no.
No	Substance name		
1	1,1,1-trifluoroethane	420-46-2	206-996-5
LC50		>	40 mg/l
Duration of exposure			96 h
Species	Rainbow trout		
Method	OECD 203		
Source	ECHA		
Evaluation/classification	Based on available data, the classification criteria are not met.		

Toxicity to fish (chronic)	
No data available	

Toxicity to Daphnia (acute)		CAS no.	EC no.
No	Substance name		
1	1,1,1-trifluoroethane	420-46-2	206-996-5
EC50			300 mg/l
Duration of exposure			48 h
Species	Daphnia magna		
Method	OECD 202		
Source	ECHA		
Evaluation/classification	Based on available data, the classification criteria are not met.		

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Toxicity to Daphnia (chronic)

No data available

Toxicity to algae (acute)

No data available

Toxicity to algae (chronic)

No data available

Bacteria toxicity

No data available

12.2 Persistence and degradability**Biodegradability**

No	Substance name	CAS no.	EC no.
1	pentafluoroethane	354-33-6	206-557-8
Type		aerobic biodegradation	
Value		appr. 5	%
Duration		28	d
Method		Closed Bottle Test (OECD 301D)	
Source		ECHA	
Evaluation		not readily biodegradable	
2	1,1,1-trifluoroethane	420-46-2	206-996-5
Type		aerobic biodegradation	
Method		QSAR	
Source		ECHA	
Evaluation		not readily biodegradable	

12.3 Bioaccumulative potential**Partition coefficient: n-octanol/water**

No	Substance name	CAS no.	EC no.
1	pentafluoroethane	354-33-6	206-557-8
log Pow		1.48	
Reference temperature		25	°C
with reference to		pH 6.34	
Method		OECD 107	
Source		ECHA	
2	1,1,1-trifluoroethane	420-46-2	206-996-5
log Pow		1.06	
Reference temperature		20	°C
Source		ECHA	

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment**Results of PBT and vPvB assessment**

PBT assessment	The product is not considered to be a PBT.
vPvB assessment	The product is not considered to be a vPvB.

12.6 Other adverse effects**Other adverse effects**

Contains fluorinated greenhouse gases.
global warming potential within a 100 year period: 3985

12.7 Other information**Other information**

Do not discharge product unmonitored into the environment.

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SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product**

dispose of in accordance with local regulation.

Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging

Compressed gas packaging under pressure. Do not open by force. Do not heat above 50°C. Dispose of compressed gas packagings only if completely discharged. Do not burn empty compressed gas packagings. Do not pierce, cut or weld uncleaned containers.

SECTION 14: Transport information**14.1 Transport ADR/RID/ADN**

Class	2
Classification code	2A
Hazard identification no.	20
UN number	UN1078
Proper shipping name	REFRIGERANT GAS, N.O.S.
Technical name	pentafluoroethane 1,1,1-trifluoroethane
Tunnel restriction code	C/E
Label	2.2 RID: (+13)

14.2 Transport IMDG

Class	2.2
UN number	UN1078
Proper shipping name	REFRIGERANT GAS, N.O.S.
Technical name	pentafluoroethane 1,1,1-trifluoroethane
EmS	F-C, S-V
Label	2.2

14.3 Transport ICAO-TI / IATA

Class	2.2
UN number	UN1078
Proper shipping name	Refrigerant gas, n.o.s.
Technical name	pentafluoroethane 1,1,1-trifluoroethane
Label	2.2

14.4 Other information

No data available.

14.5 Environmental hazards

Information on environmental hazards, if relevant, please see 14.1 - 14.3.

14.6 Special precautions for user

To be transported always in closed, upright and safe containers. Make sure that persons handling these containers are aware of the rules of conduct in case of incident or spillage.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not relevant

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SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulations****Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)**

According to the data available and/or specifications supplied by upstream suppliers, this product does not contain any substances considered as substances requiring authorisation as listed on Annex XIV of the REACH regulation (EC) 1907/2006.

REACH candidate list of substances of very high concern (SVHC) for authorisation

According to available data and the information provided by preliminary suppliers, the product does not contain substances that are considered substances meeting the criteria for inclusion in annex XIV (List of Substances Subject to Authorisation) as laid down in Article 57 and article 59 of REACH (EC) 1907/2006.

Regulation (EC) No 1907/2006 (REACH) Annex XVII: RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, PREPARATIONS AND ARTICLES

According to the data available and/or specifications supplied by upstream suppliers, this product does not contain any substances requiring authorisation as listed on Annex XVII of the REACH regulation (EC) 1907/2006.

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances

This product is not subject to Part 1 or 2 of Annex I.

Other regulations

REGULATION (EU) No 517/2014 on fluorinated greenhouse gases
Adhere to the national sanitary and occupational safety regulations when using this product.

15.2 Chemical safety assessment

Chemical safety assessments have been conducted for the substances in this mixture. For a mixture a chemical safety assessment according to (EC) 1907/2006 is not mandatory.

SECTION 16: Other information**Sources of key data used to compile the data sheet:**

Regulation (EC) No 1907/2006 (REACH), 1272/2008 (CLP) as amended in each case.

EC Directives 2000/39/EC, 2006/15/EC, 2009/161/EU

National Threshold Limit Values of the corresponding countries as amended in each case.

Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.

The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding chapter.

Full text of the H- and EUH- phrases drawn up in sections 2 and 3 (provided not already drawn up in these sections)

H220 Extremely flammable gas.

Department issuing safety data sheet

UMCO GmbH

This information is based on our present knowledge and experience.

The safety data sheet describes products with a view to safety requirements.

It does not however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

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