WT69

Refrigerant (R-469A)

Product Information

R-469A (WT69) is a zeotropic refrigerant based on R-410A and R-744 (CO_2). It has a Global Warming Potential (GWP) of 1,357 and no ozone-depleting potential. R-469A was designed as a replacement for R-23 in industrial applications down to a temperature of - 70 °C. It offers similar cooling capacity and efficiency.

Properties

- ASHRAE Class A1 nonflammable refrigerant
- GWP 1.357 (90 % less than R-23)
- Compatible with common POE lubricants and standard cooling-circuit components (valves, condenser, …)
- Comparable system pressures like R-23

Comparison of Properties

	R-23	**R-469A (WT69)**
Components	R-23	R-410A, R-744
ASHRAE Safety Classification	A1	A1
GWP	14,800	1,357
Saturation Temperature at 1 bar	-82.1 °C	-78.5 °C to -61.5 °C
Temperature glide at 1 bar	0 K	17 K
Specific evaporation enthalpy at 1 bar	239.5 kJ/kg	333.1 kJ/kg
Density at dew point line ρ'' at 1 bar	4.61 kg/m³	3.46 kg/m³
Specific refrigeration capacity at 1 bar	1,102 kJ/m³	1,170 kJ/m³
Freezing Point	- 155 °C	- 86 °C
Critical Temperature	26.14 °C	57.05 °C

For questions regarding R-469A, please visit www.weiss-technik.com.

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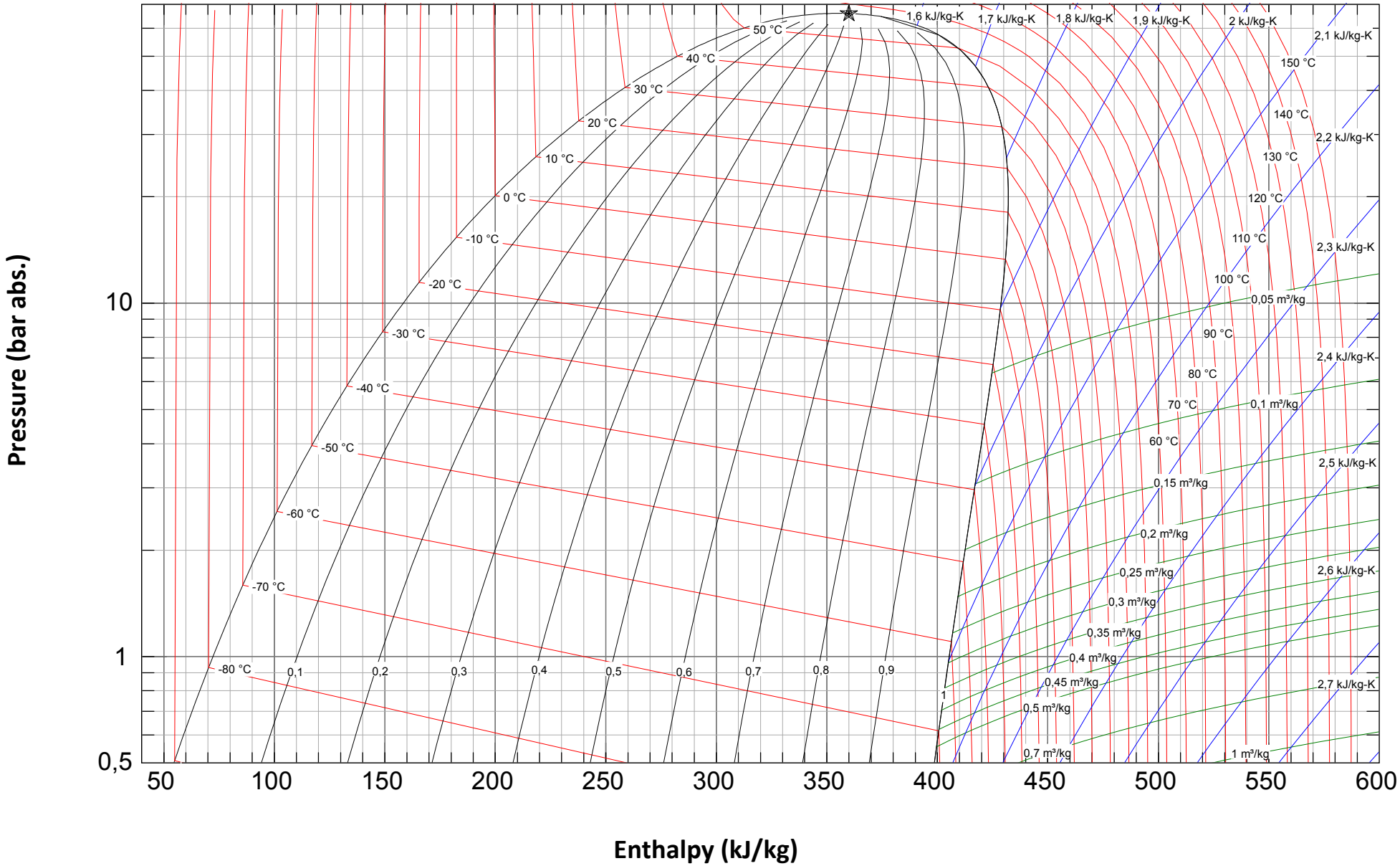
Log p h Diagram for WT69 (R-469A)



WT69 (R-469A)

Saturation Table

Pressure (bar)	Temperature (°C)		Density (kg/m³)		Enthalpy (kJ/kg)		Entropy (kJ/kg-K)	
	liquid	vapour	liquid	vapour	liquid	vapour	liquid	vapour
0,50	-90,22	-73,33	1399,5	1,813	54,53	398,65	0,36341	2,15980
1,00	-78,73	-61,75	1364,0	3,468	72,23	405,32	0,45704	2,09710
1,50	-71,18	-54,21	1340,1	5,072	83,89	409,47	0,51570	2,06130
2,00	-65,40	-48,46	1321,5	6,649	92,86	412,49	0,55931	2,03630
2,50	-60,63	-43,76	1305,9	8,208	100,28	414,87	0,59440	2,01700
3,00	-56,55	-39,75	1292,4	9,754	106,66	416,83	0,62396	2,00140
3,50	-52,95	-36,23	1280,3	11,297	112,30	418,48	0,64961	1,98810
4,00	-49,72	-33,08	1269,3	12,832	117,38	419,91	0,67236	1,97670
4,50	-46,78	-30,23	1259,2	14,363	122,03	421,15	0,69284	1,96670
5,00	-44,07	-27,60	1249,8	15,897	126,32	422,26	0,71152	1,95760
5,50	-41,56	-25,18	1240,9	17,429	130,32	423,24	0,72871	1,94940
6,00	-39,21	-22,92	1232,6	18,959	134,07	424,13	0,74467	1,94190
6,50	-37,01	-20,80	1224,6	20,495	137,62	424,92	0,75957	1,93500
7,00	-34,92	-18,80	1217,0	22,035	140,98	425,65	0,77357	1,92860
7,50	-32,94	-16,91	1209,8	23,577	144,18	426,30	0,78678	1,92260
8,00	-31,06	-15,12	1202,8	25,119	147,24	426,90	0,79931	1,91690
8,50	-29,26	-13,41	1196,0	26,672	150,18	427,45	0,81122	1,91160
9,00	-27,53	-11,77	1189,5	28,227	153,00	427,95	0,82259	1,90650
9,50	-25,88	-10,21	1183,2	29,785	155,73	428,41	0,83346	1,90170
10,00	-24,28	-8,70	1177,0	31,354	158,36	428,83	0,84390	1,89700
10,50	-22,74	-7,25	1171,1	32,927	160,90	429,21	0,85393	1,89260
11,00	-21,26	-5,85	1165,2	34,506	163,37	429,56	0,86359	1,88840
11,50	-19,82	-4,51	1159,5	36,089	165,77	429,88	0,87292	1,88430
12,00	-18,43	-3,20	1154,0	37,685	168,11	430,18	0,88194	1,88030
12,50	-17,08	-1,94	1148,5	39,283	170,38	430,44	0,89068	1,87650
13,00	-15,76	-0,72	1143,1	40,892	172,60	430,68	0,89915	1,87280
13,50	-14,48	0,47	1137,9	42,511	174,77	430,90	0,90738	1,86920
14,00	-13,24	1,63	1132,7	44,136	176,89	431,10	0,91538	1,86570
14,50	-12,03	2,75	1127,7	45,767	178,96	431,27	0,92317	1,86230
15,00	-10,84	3,85	1122,7	47,409	180,99	431,43	0,93076	1,85900
15,50	-9,69	4,91	1117,7	49,064	182,98	431,57	0,93816	1,85580
16,00	-8,56	5,95	1112,9	50,722	184,93	431,69	0,94538	1,85260
16,50	-7,45	6,97	1108,1	52,393	186,85	431,79	0,95245	1,84950
17,00	-6,37	7,96	1103,4	54,076	188,74	431,88	0,95935	1,84650
17,50	-5,31	8,93	1098,7	55,767	190,59	431,95	0,96611	1,84350
18,00	-4,27	9,88	1094,1	57,468	192,41	432,01	0,97274	1,84060
18,50	-3,26	10,81	1089,5	59,180	194,21	432,05	0,97923	1,83770

WT69 (R-469A)

Saturation Table

Pressure (bar)	Temperature (°C)		Density (kg/m³)		Enthalpy (kJ/kg)		Entropy (kJ/kg-K)	
	liquid	vapour	liquid	vapour	liquid	vapour	liquid	vapour
19,00	-2,26	11,72	1085,0	60,903	195,97	432,08	0,98559	1,83490
19,50	-1,28	12,61	1080,5	62,637	197,72	432,09	0,99184	1,83210
20,00	-0,32	13,48	1076,0	64,383	199,43	432,10	0,99798	1,82930
20,50	0,63	14,34	1071,6	66,141	201,13	432,09	1,00400	1,82660
21,00	1,56	15,18	1067,3	67,910	202,80	432,06	1,00990	1,82400
21,50	2,47	16,00	1062,9	69,692	204,45	432,03	1,01580	1,82130
22,00	3,37	16,81	1058,6	71,486	206,08	431,98	1,02150	1,81870
22,50	4,26	17,61	1054,3	73,294	207,70	431,92	1,02720	1,81620
23,00	5,13	18,39	1050,1	75,114	209,29	431,86	1,03270	1,81360
23,50	5,99	19,16	1045,9	76,948	210,87	431,78	1,03820	1,81110
24,00	6,83	19,91	1041,7	78,796	212,43	431,69	1,04360	1,80860
24,50	7,66	20,66	1037,5	80,658	213,97	431,59	1,04900	1,80610
25,00	8,48	21,39	1033,4	82,534	215,50	431,48	1,05420	1,80360

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

1.1. Product identifier

Trade name : WT69 (R-469A)

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

1.2.1. Relevant identified uses

Main use category : Industrial use,Professional uses
Use of the substance/mixture : Refrigerant

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier
Weiss Umwelttechnik GmbH
Greizer Straße 41-49
35447 Reiskirchen - Germany
T + 49 6408 84 0
info@weiss-technik.com - www.weiss-technik.com

Email competent person
sds@kft.de

1.4. Emergency telephone number

Emergency number : GIZ-Nord, Göttingen
Germany
+49 551 19240

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Gases under pressure : Liquefied gas H280

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Contains gas under pressure; may explode if heated.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS04

Signal word (CLP) : Warning
Hazard statements (CLP) : H280 - Contains gas under pressure; may explode if heated.
Precautionary statements (CLP) : P410+P403 - Protect from sunlight. Store in a well-ventilated place.
Extra phrases : Fluorinated greenhouse gases - (EC) No 517/2014.
In high concentrations may cause asphyxiation.

2.3. Other hazards

PBT: not relevant – no registration required
vPvB: not relevant – no registration required

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
carbon dioxide	(CAS-No.) 124-38-9 (EC-No.) 204-696-9	30-40	Press. Gas (Comp.), H280
Pentafluoroethane	(CAS-No.) 354-33-6 (EC-No.) 206-557-8 (REACH-no) 01-2119485636-25-xxxx	30-40	Press. Gas (Liq.), H280
Difluoromethane	(CAS-No.) 75-10-5 (EC-No.) 200-839-4 (REACH-no) 01-2119471312-47-xxxx	30-40	Flam. Gas 1A, H220 Press. Gas (Liq.), H280

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : In all cases of doubt, or when symptoms persist, seek medical attention.

First-aid measures after inhalation : In high concentrations may cause asphyxiation. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and quiet. Artificial respiration if indicated.

First-aid measures after skin contact : Contact with the liquid the may cause cold burns/frostbite. Wash skin with plenty of water.

First-aid measures after eye contact : Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. If symptoms persist, call a physician.

First-aid measures after ingestion : Call a poison center or a doctor if you feel unwell. Ingestion is not considered a potential route of exposure.

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

Symptoms/effects after inhalation : Respiratory collapse.

Symptoms/effects after skin contact : Contact with the liquefied gas may cause frostbite.

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 : The product is not flammable. Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : None.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : fluorinated compounds. Carbon monoxide.

5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

Other information : Do not allow run-off from fire fighting to enter drains or water courses. Disposal must be done according to official regulations. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. Cool closed containers exposed to fire with water spray.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area. Ensure adequate air ventilation.

6.1.1. For non-emergency personnel

Protective equipment : Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. EN 137.

Emergency procedures : Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Vapours are heavier than air and may spread along floors. Avoid sub-soil penetration. Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

Other information : Disposal must be done according to official regulations.

6.4. Reference to other sections

Information for safe handling. See section 7. Concerning personal protective equipment to use, see section 8. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Manipulations are to be done only by qualified and authorised persons. Contact your gas supplier in case of doubt.

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Handle in accordance with good industrial hygiene and safety practice. Ensure valve protection device (where provided) is correctly fitted. Securely chain cylinders when in use and protect against physical damage.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Protect from sunlight. Store in a well-ventilated place. Keep cool. Keep away from combustible material.

Storage temperature : < 50 °C

Information about storage in one common storage facility : Keep away from food, drink and animal feeding stuffs.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

carbon dioxide (124-38-9)	
EU - Occupational Exposure Limits	
Local name	Carbon dioxide
IOELV TWA (mg/m³)	9000 mg/m³
IOELV TWA (ppm)	5000 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC

carbon dioxide (124-38-9)	
United Kingdom - Occupational Exposure Limits	
Local name	Carbon dioxide
WEL TWA (mg/m³)	9150 mg/m³
WEL TWA (ppm)	5000 ppm
WEL STEL (mg/m³)	27400 mg/m³
WEL STEL (ppm)	15000 ppm
Regulatory reference	EH40/2005 (Third edition, 2018). HSE

Pentafluoroethane (354-33-6)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	16444 mg/m³
DNEL/DMEL (General population)	
Long-term - systemic effects, inhalation	1753 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0.1 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.6 mg/kg dwt

Difluoromethane (75-10-5)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	7035 mg/m³
DNEL/DMEL (General population)	
Long-term - systemic effects, inhalation	750 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0.142 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.534 mg/kg dwt

8.2. Exposure controls

Appropriate engineering controls:
Ensure good ventilation of the work station. Oxygen detectors should be used when asphyxiating gases may be released.

Hand protection:
In case of repeated or prolonged contact wear gloves. leather gloves. EN 374. Choosing the proper glove is a decision that depends not only on the type of material, but also on other quality features, which differ for each manufacturer. Please follow the instructions related to the permeability and the penetration time provided by the manufacturer. Gloves must be replaced after each use and whenever signs of wear or perforation appear

Eye protection:
Safety glasses. EN 166

Skin and body protection:
Wear suitable protective clothing. safety foot-wear. EN ISO 20345

Respiratory protection:
Not required under normal use. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Keep self contained breathing apparatus readily available for emergency use. Filter: AX/P3. Breathing equipment is only to be used in order to handle the residual risk of short term jobs if all other risk minimizing measures have been carried out e.g. retention and/or local exhaust

Personal protective equipment symbol(s):

Environmental exposure controls:
Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Gas
Appearance	:	Liquefied gas.
Molecular mass	:	59.15 g/mol
Colour	:	colourless.
Odour	:	odourless. ether-like odour.
Odour threshold	:	There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.
pH	:	No data available
Relative evaporation rate (butylacetate=1)	:	No data available
Melting point	:	No data available
Freezing point	:	-86 °C (Interpolation)
Boiling point	:	-76.78 °C (calculated value)
Flash point	:	No data available
Critical temperature	:	58.76 °C (calculated value)
Auto-ignition temperature	:	Not specifically applicable
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	Non flammable
Vapour pressure	:	3473.771 kPa (25°C; (calculated value))
Relative vapour density at 20 °C	:	1.886 (reference material air; (calculated value))
Relative density	:	1.38 (reference material water; (calculated value))
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	≈ 0 Pa·s (25 °C; (calculated value))
Explosive properties	:	Product is not explosive.
Oxidising properties	:	Non oxidizing.
Lower explosive limit (LEL)	:	Not applicable; (eq. EN 1839-B)
Upper explosive limit (UEL)	:	Not applicable; (eq. EN 1839-B)

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

heat.

10.5. Incompatible materials

alkali metals. Alkaline earth metals. Metallic powders.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal) : Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation) : Not classified (Based on available data, the classification criteria are not met)

Pentafluoroethane (354-33-6)	
LC50 inhalation rat (ppm)	> 800000 ppm/4h LCLo; (OECD 403 method)

Difluoromethane (75-10-5)	
LC50 inhalation rat (ppm)	> 520000 ppm/4h

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)
Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met)
Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)

STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)

Aspiration hazard : Not classified (Based on available data, the classification criteria are not met)

SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic) : Not classified (Based on available data, the classification criteria are not met)

Difluoromethane (75-10-5)	
LC50 fish 1	1507 mg/l (Q)SAR
EC50 Daphnia 1	652 mg/l (Q)SAR
EC50 96h algae (1)	142 mg/l (Q)SAR

12.2. Persistence and degradability

Pentafluoroethane (354-33-6)	
Persistence and degradability	Not readily biodegradable.
Biodegradation	≈ 5 % 28d; (OECD 301D method)

Difluoromethane (75-10-5)	
Persistence and degradability	Not readily biodegradable.
Biodegradation	5 % 28d;(OECD 301D method)

12.3. Bioaccumulative potential

WT69 (R-469A)	
Bioaccumulative potential	Bioaccumulation unlikely.

Pentafluoroethane (354-33-6)	
Partition coefficient n-octanol/water (Log Pow)	1.48 25 °C
Bioaccumulative potential	Bioaccumulation unlikely.

Difluoromethane (75-10-5)	
Partition coefficient n-octanol/water (Log Pow)	0.2
Bioaccumulative potential	Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

WT69 (R-469A)
PBT: not relevant – no registration required
vPvB: not relevant – no registration required

Component	
carbon dioxide (124-38-9)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
Pentafluoroethane (354-33-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
Difluoromethane (75-10-5)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

Other adverse effects : This product contains a fluorinated greenhouse gas.
Ozone depletion potential (ODP): 0. Global warming potential (GWP): 1.357.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Disposal must be done according to official regulations. European waste catalogue. Do not dispose of with domestic waste. Do not discharge into drains or the environment.

Product/Packaging disposal recommendations : Refer to supplier/manufacturer.

European List of Waste (LoW) code : 16 05 04* - gases in pressure containers (including halons) containing dangerous substances

SECTION 14: Transport information

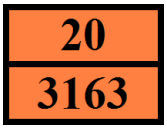
In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
UN 3163	UN 3163	UN 3163	UN 3163	UN 3163
14.2. UN proper shipping name				
LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide)	LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide)	Liquefied gas, n.o.s. (Pentafluoroethane, Difluoromethane, Carbon dioxide)	LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide)	LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide)
Transport document description				
UN 3163 LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide), 2.2, (C/E)	UN 3163 LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide), 2.2	UN 3163 Liquefied gas, n.o.s. (Pentafluoroethane, Difluoromethane, Carbon dioxide), 2.2	UN 3163 LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide), 2.2	UN 3163 LIQUEFIED GAS, N.O.S. (Pentafluoroethane, Difluoromethane, Carbon dioxide), 2.2
14.3. Transport hazard class(es)				
2.2	2.2	2.2	2.2	2.2
				
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

Overland transport

Classification code (ADR) : 2A
Special provisions (ADR) : 274, 662
Limited quantities (ADR) : 120ml
Excepted quantities (ADR) : E1
Transport category (ADR) : 3
Hazard identification number (Kemler No.) : 20
Orange plates :



Tunnel restriction code (ADR) : C/E
EAC code : 2TE

Transport by sea

Special provisions (IMDG) : 274
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-V

Air transport

PCA Excepted quantities (IATA) : E1
PCA Limited quantities (IATA) : Forbidden

PCA limited quantity max net quantity (IATA) : Forbidden
PCA packing instructions (IATA) : 200
PCA max net quantity (IATA) : 75kg
CAO max net quantity (IATA) : 150kg

Inland waterway transport

Classification code (ADN) : 2A
Special provisions (ADN) : 274, 662
Limited quantities (ADN) : 120 ml
Excepted quantities (ADN) : E1

Rail transport

Special provisions (RID) : 274, 662
Limited quantities (RID) : 120ml
Excepted quantities (RID) : E1
Transport category (RID) : 3
Hazard identification number (RID) : 20

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

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:	
Reference code	Applicable on
40.	Difluoromethane

Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances
Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.
Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Other information, restriction and prohibition regulations : Fluorinated greenhouse gases - (EC) No 517/2014.

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:			
Section	**Changed item**	**Change**	**Comments**
	Logo	Modified	
12.	Additional ecotoxicological information	Added	

Abbreviations and acronyms:	
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
ATE	Acute Toxicity Estimate

BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
DPD	Dangerous Preparations Directive 1999/45/EC
DSD	Dangerous Substances Directive 67/548/EEC
EC50	Median effective concentration
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
TLM	Median Tolerance Limit
vPvB	Very Persistent and Very Bioaccumulative

Data sources : MSDS of the supplier. ECHA (European Chemicals Agency).
Department issuing data specification sheet : KFT Chemieservice GmbH
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Phone: +49 6155-8981-400 Fax: +49 6155 8981-500
Safety Data Sheet Service: +49 6155 8981-522
Contact person : Angela Ersöz

Classification according to Regulation (EC) No. 1272/2008 [CLP]:	
Press. Gas (Liq.)	H280

Full text of H- and EUH-statements:	
Flam. Gas 1A	Flammable gases, Category 1A
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:		
Press. Gas (Liq.)	H280	

KFT SDS EU 00

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.