



Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Issue date: 10/02/2026 Revision date: 12/11/2025 Supersedes version of: 27/08/2024 Version: 1.3

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

1.1. Product identifier

Product name : Minus 45
UFI : FR7X-E8KH-N00Q-35TR
Product code : BDS002505AE
Vaporizer : Aerosol

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

Relevant identified uses

Use of the substance/mixture : Cooling agent

1.3. Details of the supplier of the safety data sheet

Supplier

CRC Industries Europe B.V.
Touwslagerstraat 1
9240 Zele
Belgium
T +32(0)52/45.60.11, F +32(0)52/45.00.34
hse@crcind.com, www.crcind.com

1.4. Emergency telephone number

Emergency number : +32(0)52/45.60.11
Office hours: 9-17h CET

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Aerosol, Category 3 H229
Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Contact with the liquid may cause frostbite and serious damage to eyes. Pressurised container: May burst if heated.

2.2. Label elements

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

Signal word (CLP) : Warning

Hazard statements (CLP) : H229 - Pressurised container: May burst if heated.

Precautionary statements (CLP) : P102 - Keep out of reach of children.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking.
P251 - Do not pierce or burn, even after use.
P261 - Avoid breathing vapours/spray.
P336 - Thaw frosted parts with lukewarm water. Do not rub affected area.
P410+P412 - Protect from sunlight. Do not expose to temperatures exceeding 50 °C.

Extra phrases : Avoid contact with skin and eyes, in case of contact with liquid product frostbite symptoms may occur.
This product contains a fluorinated greenhouse gas.

2.3. Other hazards

Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Trans-1,3,3,3-Tetrafluoroprop-1-ene	CAS-No.: 29118-24-9 EC-No.: 471-480-0 REACH-no: 01-0000019758-54	75 – 100	Press. Gas (Liq.), H280

Product subject to CLP Annex I, item 1.1.3.7. The disclosure rules of the components is modified in this case.

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. If signs/symptoms develop, get medical attention.
First-aid measures after skin contact	: Wash skin with plenty of water. Seek medical attention if irritation develops.
First-aid measures after eye contact	: Rinse eyes with water as a precaution. Seek medical attention if irritation develops.
First-aid measures after ingestion	: Call a poison center or a doctor if you feel unwell.

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

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Explosion hazard	: Pressurised container: May burst if heated.
Hazardous decomposition products in case of fire	: During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Firefighting instructions	: Move containers from fire area if it can be done without personal risk. Use standard firefighting procedures and consider the hazards of other involved materials.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

- Protective equipment : Wear appropriate protective equipment and clothing during clean-up.
Emergency procedures : Ventilate spillage area. No open flames, no sparks, and no smoking.

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".
Emergency procedures : Evacuate unnecessary personnel. Ventilate area.

6.2. Environmental precautions

Avoid release to the environment. Avoid the spillage or runoff entering drains, sewers or watercourses.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Mechanically recover the product. For large spills, confine the spill in a dike and charge it with wet sand or earth for subsequent safe disposal. Following product recovery, flush area with water. Take up small spills with dry chemical absorbent. Clean surface thoroughly to remove residual contamination.
Additional Regulatory Information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For disposal of contaminated materials refer to section 13 : "Disposal considerations".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wear personal protective equipment. Ensure good ventilation of the work station. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Pressurized container: Do not pierce or burn, even after use. Avoid prolonged exposure. Handle in accordance with good industrial hygiene and safety procedures.
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. Do not expose to temperatures exceeding 50 °C/ 122 °F. Store in a well-ventilated place. Keep cool. Keep container closed when not in use.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL and PNEC

Trans-1,3,3,3-Tetrafluoroprop-1-ene (29118-24-9)

DNEL/DMEL (Workers)

Long-term - systemic effects, inhalation	3902 mg/m³
--	------------

DNEL/DMEL (General population)

Long-term - systemic effects, inhalation	830 mg/m³
--	-----------

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Trans-1,3,3,3-Tetrafluoroprop-1-ene (29118-24-9)

PNEC (Water)

PNEC aqua (freshwater)	0,117 mg/l
PNEC aqua (intermittent, freshwater)	1,17 mg/l

8.2. Exposure controls

Appropriate engineering controls

Appropriate engineering controls:

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protection equipment

Personal protective equipment symbol(s):



Eye and face protection

Eye protection:

Use eye protection according to EN 166. Safety glasses with side shields.

Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

For incidental contact with the product wear chemical-resistant gloves (standard EN 374). The use of disposable gloves is acceptable provided that they are changed immediately after a splash or spill. VITON gloves. Layer thickness : > 0,30 mm.

Respiratory protection

Respiratory protection:

No respiratory protection needed under normal use conditions. In case of insufficient ventilation, wear suitable respiratory equipment. Compressed air/oxygen apparatus

Thermal hazards

Thermal hazard protection:

Wear appropriate thermal protective clothing, when necessary. Not expected to present a significant hazard under anticipated conditions of normal use.

Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colourless.
Appearance	: Liquified gas.
Molecular mass	: 114 g/mol
Odour	: Neutral.
Odour threshold	: Not available
Melting point	: Not applicable
Freezing point	: Not available
Boiling point	: -19 °C

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Flammability	: Non flammable
Explosive properties	: Pressurised container: May burst if heated.
Lower explosion limit	: No LEL was assigned at standard testing conditions(20°C). Exhibits flame limits at temperatures in excess of 28°C.
Upper explosion limit	: No UEL was assigned at standard testing conditions(20°C). Exhibits flame limits at temperatures in excess of 28°C.
Flash point	: Not applicable
Auto-ignition temperature	: 288 – 293 °C
Decomposition temperature	: Not available
pH	: Not applicable
Viscosity, kinematic	: Not available
Solubility	: Partly soluble in water.
Partition coefficient n-octanol/water (Log Kow)	: Not available
Partition coefficient n-octanol/water (Log Pow)	: 1,6
Vapour pressure	: 420 kPa at 20 °C
Vapour pressure at 50°C	: Not available
Density	: 1,18 g/cm³ at 20 °C
Relative density	: Not available
Relative vapour density at 20°C	: 4
Particle characteristics	: Not applicable

9.2. Additional Regulatory Information

Information with regard to physical hazard classes

% of flammable ingredients : 0 %

Other safety characteristics

VOC content : 1118 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity

Pressurised container: May burst if heated.

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

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Carbon oxides (CO, CO2).

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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)
Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met)
	pH: Not applicable

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Trans-1,3,3,3-Tetrafluoroprop-1-ene (29118-24-9)

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) pH: Not applicable
--------------------------------------	---

Trans-1,3,3,3-Tetrafluoroprop-1-ene (29118-24-9)

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)
--------------------------	---

Minus 45

Vaporizer	Aerosol
-----------	---------

11.2. Information on other hazards

Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties	: The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %
--	--

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
-------------------	---

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)
---	---

Trans-1,3,3,3-Tetrafluoroprop-1-ene (29118-24-9)

LC50 - Fish [1]	> 117 mg/l
-----------------	------------

EC50 - Crustacea [1]	> 160 mg/l
----------------------	------------

EC50 72h - Algae [1]	> 170 mg/l
----------------------	------------

12.2. Persistence and degradability

Minus 45

Persistence and degradability	Not established. No data is available on the degradability of this product.
-------------------------------	---

12.3. Bioaccumulative potential

Minus 45

Partition coefficient n-octanol/water (Log Pow)	1,6
---	-----

12.4. Mobility in soil

No additional information available

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

12.5. Results of PBT and vPvB assessment

Minus 45	
Results of PBT assessment	Contains no PBT and/or vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties	: The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %.
--	---

12.7. Other adverse effects

Minus 45	
Additional Regulatory Information	No other effects known
Global warming potential (GWP)	1.37 (Fluorinated greenhouse gases - (EC) No 2024/573)

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
European List of Waste (LoW, EC 2000/532)	: According to the European Waste Catalogue (EWC), Waste Codes are not product specific, but application specific Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 1950	UN 1950	UN 1950	UN 1950	UN 1950
14.2. UN proper shipping name				
AEROSOLS	AEROSOLS	Aerosols, non-flammable	AEROSOLS	AEROSOLS
Transport document description				
UN 1950 AEROSOLS, 2.2, (E)	UN 1950 AEROSOLS, 2.2	UN 1950 Aerosols, non-flammable, 2.2	UN 1950 AEROSOLS, 2.2	UN 1950 AEROSOLS, 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

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

ADR	IMDG	IATA	ADN	RID
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No EmS-No. (Fire): F-D EmS-No. (Spillage): S-U	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) : 5A
Special provisions (ADR) : 190, 327, 344, 625
Limited quantities (ADR) : 1I
Excepted quantities (ADR) : E0
Packing instructions (ADR) : P207, LP200
Special packing provisions (ADR) : PP87, RR6, L2
Mixed packing provisions (ADR) : MP9
Transport category (ADR) : 3
Special provisions for carriage - Packages (ADR) : V14
Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV12
Tunnel restriction code (ADR) : E

Transport by sea

Special provisions (IMDG) : 63, 190, 277, 327, 344, 381, 959
Limited quantities (IMDG) : SP277
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P207, LP200
Special packing provisions (IMDG) : PP87, L2
Stowage category (IMDG) : None
Stowage and handling (IMDG) : SW1, SW22
Segregation (IMDG) : SG69

Air transport

PCA Excepted quantities (IATA) : E0
PCA Limited quantities (IATA) : Y203
PCA limited quantity max net quantity (IATA) : 30kgG
PCA packing instructions (IATA) : 203
PCA max net quantity (IATA) : 75kg
CAO packing instructions (IATA) : 203
CAO max net quantity (IATA) : 150kg
Special provisions (IATA) : A98, A145, A167, A802
ERG code (IATA) : 2L

Inland waterway transport

Classification code (ADN) : 5A
Special provisions (ADN) : 190, 327, 344, 625
Limited quantities (ADN) : 1 L
Excepted quantities (ADN) : E0
Equipment required (ADN) : PP
Ventilation (ADN) : VE04
Number of blue cones/lights (ADN) : 0

Rail transport

Classification code (RID) : 5A
Special provisions (RID) : 190, 327, 344, 625
Limited quantities (RID) : 1L
Excepted quantities (RID) : E0
Packing instructions (RID) : P207, LP200

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Special packing provisions (RID)	: PP87, RR6, L2
Mixed packing provisions (RID)	: MP9
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W14
Special provisions for carriage - Loading, unloading and handling (RID)	: CW9, CW12
Colis express (express parcels) (RID)	: CE2
Hazard identification number (RID)	: 20

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

EU-Regulations

REACH Annex XVII (Restriction List)

Contains no substance(s) listed on REACH Annex XVII (Restriction Conditions)

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (2024/590)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 2024/590 on substances that deplete the ozone layer)

Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

VOC Directive (2004/42)

VOC content : 1118 g/l

Seveso Directive (Disaster Risk Reduction)

Seveso Additional information : Directive 2012/18/EU (SEVESO III)
Not subject to Annex I

Explosives Precursors Regulation (EU 2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (EC 273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 16: Other information

Indication of changes

Section	Changed item	Comments
8.2	Hand protection	Modified Thickness
9.2	VOC content	Modified
15	Seveso Additional information	Added
16	Data sources	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
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
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
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit

Minus 45

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Abbreviations and acronyms:

VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstracts Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disruptor

Data sources

: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Full text of H- and EUH-statements:

Aerosol 3	Aerosol, Category 3
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H229	Pressurised container: May burst if heated.
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]:

Aerosol 3	H229	On basis of test data
-----------	------	-----------------------

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. Apart from any fair dealing for purposes of study, research and review of health, safety and environmental risks, no part of these documents may be reproduced by any process without written permission from CRC. The products are governed by Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP); Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (in each case, as amended and replaced) and other applicable laws. It is an importers or downstream users responsibility to ensure compliance of product they import. An SDS provided in the official language(s) of a country is not a guarantee of compliance in that country.