Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

MX 200

Version number: 4.0
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name **MX 200**

Other names or synonyms HFC227ea charged with nitrogen

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

Relevant identified uses Fire extinguishing agent

1.3 Details of the supplier of the safety data sheet

Minimax GmbH
Industriestrasse 10/12
23840 Bad Oldesloe
Germany

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e-mail: mv_rd_spezial@mx-vk.eu
Website: www.minimax.de

e-mail (competent person) sdb@csb-compliance.com

Please do not use this e-mail address to ask for the latest safety data sheet. For this purpose contact Minimax GmbH.

1.4 Emergency telephone number

Emergency information Consultank GmbH +49 (0) 178 433 7434
This number is only for transport emergencies.

As above or nearest toxicological information centre.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Classification				
Section	**Hazard class**	**Category**	**Hazard class and category**	**Hazard state-ment**
2.5	gas under pressure	C	Press. Gas C	H280

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Contains gas under pressure; may explode if heated.

Additional information

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

2.2 Label elements

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

Signal word warning

Pictograms

GHS04

Hazard statements

H280 Contains gas under pressure; may explode if heated.

Precautionary statements

P410 Protect from sunlight.

Additional labelling requirements

EIGA-0783: Contains fluorinated greenhouse gases covered by the Kyoto protocol.
EIGA-As: Asphyxiant in high concentrations.

2.3 Other hazards

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

Endocrine disrupting properties

None of the ingredients are listed.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture).

3.2 Mixtures

Description of the mixture

Hazardous ingredients

Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes
1,1,1,2,3,3,3-hepta-fluoropropane	CAS No 431-89-0 EC No 207-079-2	80 – 99	Press. Gas L / H280		U(c)

Hazardous ingredients					
Name of substance	**Identifier**	**Wt%**	**Classification acc. to GHS**	**Pictograms**	**Notes**
nitrogen	CAS No 7727-37-9 EC No 231-783-9	< 20	Press. Gas C / H280		U(b)

Notes

U(b): The allocation to the group 'compressed gas' is based on the physical state in which the gas is packaged

U(c): The allocation to the group 'liquefied gas' is based on the physical state in which the gas is packaged

For full text of H-phrases: see SECTION 16

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Remove victim out of the danger area. In case of inadequate ventilation wear respiratory protection (Self-contained breathing apparatus (EN 133)).
Take off immediately all contaminated clothing.
In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Provide fresh air.
If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.
Mouth to mouth resuscitation should be avoided. Use alternative methods, preferably with oxygen or compressed air driven apparatus.

Following skin contact

Thaw frosted parts with lukewarm water. Do not rub affected area.

Following eye contact

Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.

Following ingestion

Get medical advice/attention if you feel unwell.

Notes for the doctor

None.

4.2 Most important symptoms and effects, both acute and delayed

Unconsciousness.
Disorientation.
Cardiac arrhythmias.
Vertigo.
Asphyxiant gas, may displace oxygen and cause rapid suffocation.

4.3 Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Co-ordinate firefighting measures to the fire surroundings

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.
Contact with the product can cause burns and/or frostbite.
Contains gas under pressure; may explode if heated.

Hazardous combustion products

hydrogen fluoride (HF)

5.3 Advice for firefighters

Non-combustible.
In case of fire and/or explosion do not breathe fumes.
Do not allow firefighting water to enter drains or water courses.
Collect contaminated firefighting water separately.
Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Use suitable breathing apparatus

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.
Ventilate affected area.
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.
Self-contained breathing apparatus (EN 133).

6.2 Environmental precautions

Keep away from drains, surface and ground water.
Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to clean up a spill

Not relevant.

Other information relating to spills and releases

Place in appropriate containers for disposal.
Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5.
Personal protective equipment: see section 8.
Incompatible materials: see section 10.
Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not breathe vapour/spray.

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.
Prevent from heating up above 50 °C/122 °F. Pressurized container: may burst if heated.

Specific notes/details

None.

Measures to protect the environment

Avoid release to the environment.

Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.

7.2 Conditions for safe storage, including any incompatibilities

Flammability hazards

Protect from sunlight.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat

Consideration of other advice

Keep away from food, drink and animal feeding stuffs.

Ventilation requirements

Provision of sufficient ventilation.

Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)

This information is not available

Relevant DNELs of components of the mixture

Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	DNEL	61,279 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects

Relevant PNECs of components of the mixture

Name of substance	CAS No	Endpoint	Threshold level	Environmental compartment
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	PNEC	0.1 $^{mg}/_{l}$	freshwater
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	PNEC	1 $^{mg}/_{l}$	water
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	PNEC	1.73 $^{mg}/_{l}$	sewage treatment plant (STP)
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	PNEC	1.3 $^{mg}/_{kg}$	freshwater sediment

8.2 Exposure controls

Appropriate engineering controls

Use local and general ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Use protective eyewear to guard against splash of liquids.

Hand protection

Protective gloves		
Material	**Material thickness**	**Breakthrough times of the glove material**
data are not available	data are not available	data are not available

Wear cold insulating gloves/face shield/eye protection.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.
Self-contained breathing apparatus (EN 133).

Environmental exposure controls

Use appropriate container to avoid environmental contamination.
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	colourless
Odour	like ether
Melting point/freezing point	-129.5 °C (data apply to the main component)
Boiling point or initial boiling point and boiling range	-18 – -16 °C (data apply to the main component)
Flammability	non-combustible
Lower and upper explosion limit	not applicable
Flash point	not applicable
Auto-ignition temperature	not applicable
Decomposition temperature	not relevant
pH (value)	not determined
Viscosity	not relevant (gaseous)
Solubility(ies)	
Water solubility	0.23 $^{g}/_{l}$ at 25 °C
Partition coefficient n-octanol/water (log value)	2.289
Vapour pressure	not determined

Density and/or relative density	
Density	1.4 – 1.5 $^{g}/_{cm^3}$ at 25 °C
Relative vapour density	this information is not available
Particle characteristics	not relevant (gaseous)

9.2 Other information

Information with regard to physical hazard classes	there is no additional information
Other safety characteristics	there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

If heated:

Gas under pressure. Danger of bursting container.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

Contains gas under pressure; may explode if heated.

10.5 Incompatible materials

oxidisers

10.6 Hazardous decomposition products

Carbon monoxide (CO).
Carbon dioxide (CO2).
Hydrogen fluoride (HF).

SECTION 11: Toxicological information

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

Classification procedure

If not otherwise specified the classification is based on:
Ingredients of the mixture (additivity formula).

Classification according to GHS (1272/2008/EC, CLP)

Asphyxiant gas, may displace oxygen and cause rapid suffocation.
Choking and suffocation risks.

Acute toxicity

Test data are not available for the complete mixture.

Skin corrosion/irritation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Serious eye damage/eye irritation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Respiratory or skin sensitisation
Skin sensitisation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Respiratory sensitisation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Germ cell mutagenicity

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Carcinogenicity

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Reproductive toxicity

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - single exposure

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - repeated exposure

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

Endocrine disrupting properties

None of the ingredients are listed.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

Test data are not available for the complete mixture.

Aquatic toxicity (acute) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Method	Exposure time
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	EC50	>200 $^{mg}/_{l}$	daphnia magna	-	48 h

Aquatic toxicity (chronic)

Test data are not available for the complete mixture.

12.2 Persistence and degradability

Biodegradation

No data available.

Degradability of components of the mixture

Name of substance	CAS No	Process	Degradation rate	Time	Method
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	oxygen depletion	1 %	28 d	-

Persistence

No data available.

12.3 Bioaccumulative potential

n-octanol/water (log KOW) 2.289

Bioaccumulative potential of components of the mixture

Name of substance	CAS No	Log KOW
1,1,1,2,3,3,3-heptafluoropropane	431-89-0	2.289
nitrogen	7727-37-9	0.67

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Endocrine disrupting properties

None of the ingredients are listed.

12.7 Other adverse effects

Global warming potential: 3,220 (Carbon dioxide (CO2) = 1)

Remarks

Wassergefährdungsklasse, WGK (water hazard class): 1

SECTION 13: Disposal considerations

13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste.
Dispose of contents/container to an authorized waste treatment facility.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

Completely emptied packages can be recycled.
Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1 UN number or ID number

ADR/RID/ADN	UN1058
IMDG-Code	UN1058
ICAO-TI	UN1058

14.2 UN proper shipping name

ADR/RID/ADN	LIQUEFIED GASES

IMDG-Code	LIQUEFIED GASES
ICAO-TI	Liquefied gases

14.3 Transport hazard class(es)

ADR/RID/ADN	2 (2.2)
IMDG-Code	2.2
ICAO-TI	2.2

14.4 Packing group -

14.5 Environmental hazards -

14.6 Special precautions for user -

There is no additional information.

14.7 Maritime transport in bulk according to IMO instruments -

14.8 Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) Additional information

Particulars in the transport document	UN1058, LIQUEFIED GASES, 2.2, (C/E)
Classification code	2A
Danger label(s)	2.2

Special provisions (SP)	662
Excepted quantities (EQ)	E1
Limited quantities (LQ)	120 ml
Transport category (TC)	3
Tunnel restriction code (TRC)	C/E
Hazard identification No	20

European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) Additional information

Number of cones/blue lights	0

International Maritime Dangerous Goods Code (IMDG) Additional information

Marine pollutant	-
Danger label(s)	2.2

Special provisions (SP)	-
Excepted quantities (EQ)	E1
Limited quantities (LQ)	120 mL
EmS	F-C, S-V
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) Additional information

Danger label(s)	2.2

Excepted quantities (EQ)	E1

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Restrictions according to REACH, Annex XVII

None of the ingredients are listed.

List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list

None of the ingredients are listed.

Seveso Directive

Not assigned.

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

None of the ingredients are listed.

Regulation on the marketing and use of explosives precursors

None of the ingredients are listed.

Regulation on drug precursors

None of the ingredients are listed.

Regulation on substances that deplete the ozone layer (ODS)

None of the ingredients are listed.

Regulation concerning the export and import of hazardous chemicals (PIC)

None of the ingredients are listed.

Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this mixture by the supplier.

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR/RID/ADN	Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008

Abbr.	Descriptions of used abbreviations
log KOW	n-Octanol/water
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
Press. Gas	Gas under pressure
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
SVHC	Substance of Very High Concern
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
Regulation (EC) No. 1907/2006 (REACH).

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN).
International Maritime Dangerous Goods Code (IMDG).
Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties.
Health hazards.
Environmental hazards.
The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H280	Contains gas under pressure; may explode if heated.

Responsible for the safety data sheet

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Disclaimer

This information is based upon the present state of our knowledge.
This SDS has been compiled and is solely intended for this product.
This safety data sheet is for information only and does not comply with the official language requirements of article 31 (5) of REACH.