	SAFETY DATASHEET	Page : 1/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

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

1.1. Product identifier

Trade name	Fluoromethane (R41)
Chemical description	Fluoromethane, Methyl fluoride
CAS N°	593-53-3
CE N°	209-796-6
Index N°	--
Registration n°	01-2120746661-53
Chemical formula	CH ₃ F

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

Relevant identified uses	Industrial and professional Test gas/Calibration gas Chemical reaction / Synthesis Use as refrigerant Laboratory use Polymer production. Contact supplier for more information on uses
Uses advised against	Consumer use not recommended

1.3. Details of the supplier of the safety data sheet

Company identification	MULTIGAS Route de l'Industrie 102 CH-1564 Domdidier
Phone number	+41 (0) 26 676 94 94
E-mail address	info@multigas.ch

1.4. Emergency telephone numbers


145 (Toxicology Centre Zurich) or +41 (0) 44 251 51 51
 +41 (0) 26 676 94 94 (Multigas)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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



Physical hazards	Flammable gases, Category 1	H220
	Gases under pressure : Liquefied gas	H280

	SAFETY DATASHEET	Page : 2/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

For the complete H-sentences texts mentioned in that chapter, refer to Section 16

2.2. Label elements

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

Hazard pictograms	 
	GHS02 GHS04
Signal word	Danger
Hazard statements	
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
Precautionary statements	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381	In case of leakage, eliminate all ignition sources
P410+403	Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards

Contact with liquid may cause cold burns/frostbite

SECTION 3: Composition/information on ingredients

3.1. Substances


Name	Product identifier	Concentration	Classification
Fluoromethane (R41)	(CAS-No.) 593-53-3 (EC-No.) 209-796-6 (EC Index-No.) --- (Registration-No.) 01-2120746661-53	<= 100%	Flam. Gas 1, H220 Press. Gas (Liq.), H280

For the complete H-sentences texts mentioned in that chapter, refer to Section 16

Contains no other components or impurities which will influence the classification of the product

3.2. Mixtures

Not established

	SAFETY DATASHEET	Page : 3/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	See a doctor. Show this safety data sheet to the attending physician
In case of inhalation	In case of inhalation, remove the person from the contaminated area. In case of respiratory arrest, give artificial respiration. See a doctor
In case of skin contact	No adverse effects expected
In case of eyes contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a doctor
In case of ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. See a doctor

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

Refer to section 11

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

None

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Water spray or water mist. Dry powder. Carbon dioxide. Foam
Unsuitable extinguishing media	Do not use water jet to extinguish

5.2. Special hazards arising from the substance or mixture

Specific hazards	In case of fire or excessive heat, hazardous combustion products may be produced Exposure to fire may cause containers to rupture/explode
Hazardous combustion products	In case of fire or excessive heat, hazardous combustion products may be produced such as : carbonyl fluoride, carbon monoxide, hydrogen fluoride


5.3. Additional information

Cool endangered receptacles with water spray jet from a protected position

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid breathing vapours, spray mists or gases
Provide adequate ventilation
Evacuate personnel to a safe place
Eliminate ignition sources

	SAFETY DATASHEET	Page : 4/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

Personal protective equipment, see section 8

6.2. Environmental precautions

Try to stop the leak

6.3. Methods and material for containment and cleaning up

Ventilate the area

Keep area evacuated and free from ignition sources until any spilled liquid has evaporated (ground free from frost)

6.4. Reference to other sections

See also sections 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes

Avoid breathing vapour or mist

Keep away from sources of ignition - No smoking

Take precautionary measures against static discharge

For precautions, see section 2.2

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool place. Keep container tightly closed in a dry and well-ventilated place

Content under pressure

7.3. Specific end use(s)


None

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components with occupational exposure limits

Component	CAS N°	Exposure value type	Control parameter	Source
Fluoromethane (R41)	593-53-3	TWA	-	No occupational exposure limit value
			-	
		OEL	-	
			-	

	SAFETY DATASHEET	Page : 5/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation
Gas detectors should be used when flammable / toxic gases / vapours are likely to be released

8.2.2. Individual protection measures, e.g. personal protective equipment

Eye/face protection

Wear goggles and a face shield when transfilling or breaking transfer connections. Standard EN 166

Skin / hand protection

Wear protective gloves when handling gas cylinders. Standard EN 388- Protective gloves against mechanical hazards
Wear cold insulating gloves when transferring or disconnecting transfer lines Standard EN 511 - Insulating gloves against cold
Wearing chemical resistant gloves Standard EN 374-Protective gloves against chemicals

For short-term use

Material: Fluoroelastomer
Penetration time:> 480 min
Glove thickness: 0.7 mm

For long-term use

Material: Fluoroelastomer
Penetration time:> 480 min
Glove thickness: 0.7 mm

Have appropriate, chemical-resistant protective clothing ready for use in emergencies

Respiratory protection

When the risk assessment shows that the use of respirable respirators is appropriate, use a full face mask with EN 14387 multipurpose cartridge. If the mask is the only means of protection, use a full face respirator. Use NIOSH (US) or CEN (EU) tested and approved equipment

8.2.3. Environmental exposure controls

-

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa Gas

- Colour Colourless

Odour No data available

Odour threshold No data available

pH No data available

Fluoromethane (R41)
MTG059

Melting point / Freezing point	-142°C
Boiling point	-78.4°C
Flash point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	Extremely flammable gas
Explosive limits	5.6%
Vapour pressure [20°C]	33 bar
Vapour pressure [50°C]	No data available
Vapour density	No data available
Relative density, liquid (water=1)	0.61
Relative density, gas (air=1)	1.2
Water solubility	2.3 g/l
Partition coefficient n-octanol/water (Log Kow)	0.51
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidising properties	No data available

9.2. Other information

Molar mass	34 g/mol
Critical temperature [°C]	44.5°C
Relative vapour density	Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level

SECTION 10: Stability and reactivity
10.1. Reactivity


No reactivity hazard other than the effects described in sub-sections below

10.2. Chemical stability

Stable under recommended storage conditions

10.3. Possibility of hazardous reactions

Can form explosive mixture with air
May react violently with oxidants

	SAFETY DATASHEET	Page : 7/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking

10.5. Incompatible materials

Strong oxidisers

For additional information on compatibility refer to ISO 11114

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. Chemical safety assessment

Acute toxicity	No known toxicological effects from this product
Skin corrosion/irritation	No data available
Serious eye damage/irritation	No data available
Respiratory or skin sensitisation	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
STOT-single exposure – Target organ(s)	No data available
STOT-repeated exposure	No data available
Ingestion hazard	No data available

SECTION 12: Ecological information

12.1. Toxicity

Assessment	Classification criteria are not met
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12.2. Persistence and degradability


No data available

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

	SAFETY DATASHEET	Page : 8/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

12.5. Results of PBT and vPvB assessment

PBT / vPvB assessment is not available because the chemical safety assessment is not required / is not conducted

12.6. Other adverse effects

Contains fluorinated greenhouse gases
When discharged in large quantities may contribute to the greenhouse effect

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product	Must not be released into the atmosphere Burn in a chemical incinerator equipped with an afterburner and scrubber Return to the supplier the product not consumed in its original container
Contaminated container	Eliminate as unused product Contact the supplier if instructions are needed
OMoD Code	16 05 04 Gases in pressure containers containing dangerous substances

SECTION 14: Transport information

14.1. UN number

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
2454	2454	2454

14.2. UN proper shipping name

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
Methyl fluoride (Refrigerant gas R 41)	Methyl fluoride (Refrigerant gas R 41)	Methyl fluoride (Refrigerant gas R 41)


14.3. Transport hazard class(es)

Labelling



ADR/RID
IMDG
IATA

2.1 : Flammable gases

	SAFETY DATASHEET	Page : 9/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

14.4. Packing group

ADR/RID	Not established
IMDG	
IATA	

14.5. Environmental hazards

ADR/RID	None
IMDG	None
ICAO-TI / IATA-DGR	None

14.6. Special precautions for user

No data available

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


This safety data sheet complies with the requirements of Regulation (CE) No. 1907/2006

15.2. Chemical safety assessment

A CSA has not yet been carried out

SECTION 16: Other information

Indication of changes	Revised safety data sheet in accordance with commission regulation (EU) No 2015/830
Abbreviations and acronyms	ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road CAS : Chemical Abstract Service number (USA) CLP : Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008 CSA : Chemical Safety Assessment EIGA : European Industrial Gases Association EINECS : European Inventory of Existing Commercial Chemical Substances EN : European Standard ATE : Acute Toxicity Estimate IATA : International Air Transport Association IMDG Code : International Maritime Dangerous Goods Code LC50 : Lethal Concentration to 50 % of a test population

	SAFETY DATASHEET	Page : 10/10
		Revised edition n° : 10.1
		Revision date : 06/2021
Fluoromethane (R41)		MTG059

OMoD :	Swiss Ordinance on the movement of waste
PBT :	Persistent, Bioaccumulative and Toxic
PPE:	Personal Protection Equipment
REACH :	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID :	Regulations concerning the international carriage of dangerous goods by rail
RMM :	Risk Management Measures
STOT-SE :	Specific Target Organ Toxicity - Single Exposure
UN :	United Nations
vPvB :	Very Persistent and Very Bioaccumulative
WGK:	Water Hazards Class

Full text of H, EUH and P statements used in sections 2 and 3

Hazard statements

H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated

Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381	In case of leakage, eliminate all ignition sources
P410+403	Protect from sunlight. Store in a well-ventilated place

Disclaimer of liability

Details given in this document have been prepared based on the most available reliable documents and are believed to be correct at the time of going to press

They do not claim to be exhaustive and should be considered as a guide