

Specific gravity	Not determined
Water solubility	430 mg/L (25 °C) (CAS#354-33-6)
Partition coefficient (LogPow)	1.34 (CAS#354-33-6) 0.2 (CAS#75-10-5)
Autoignition temperature	> 750 °C
Decomposition temperature	> 250 °C
Kinematic viscosity	Not determined
Dynamic viscosity	Not determined
Explosive properties	Not an explosive
Oxidizing properties	Not determined

Other information

No information available.

10. STABILITY AND REACTIVITY

Reactivity

No information available.

Chemical stability

Stable under normal conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Strong heating. Incompatible materials.

Incompatible materials

Strong bases. Alkali metals.

Hazardous Decomposition Products

Hydrogen fluoride, carbonyl fluoride.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Pentafluoroethane (CAS #: 354-33-6)	-	-	= 2910 g/m ³ (Rat) 4 h
Methylene fluoride (CAS #: 75-10-5)	-	-	= 1890 g/m ³ (Rat) 4 h

Skin corrosion/irritation

Non-irritating to the skin.

Serious eye damage/eye irritation

May cause skin irritation in susceptible persons.

Sensitization

No sensitization responses were observed.

Germ cell mutagenicity

No information available.

Carcinogenicity

No information available.

Reproductive toxicity

No information available.

STOT - single exposure

No information available.

STOT - repeated exposure

No information available.

Aspiration hazard

No information available.

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Pentafluoroethane

Fish: LC50 = 450 mg/L/ 48 h(Salmo gairdneri)

Aquatic invertebrates: EC50 > 200 mg/L/ 48 h(Daphnia magna)

Algae: EC50 = 142 mg/L/ 96 h(green algae)

Methylene fluoride

Fish: LC50 = 1507 mg/L/ 96 h(freshwater fish)

Aquatic invertebrates: EC50 = 652 mg/L/ 48 h(daphnid)

Algae: EC50 = 142 mg/L/ 96 h(green algae)

Persistence and degradability

Not readily biodegradable.

Bioaccumulation

No information available.

Mobility

No information available.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS**Waste treatment methods**

Waste from residues/unused products	Disposal should be in accordance with applicable regional, national and local laws and regulations.
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Contaminated packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations.
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14. TRANSPORT INFORMATION

UN Number	3163
Proper shipping name	LIQUEFIED GAS, N.O.S.(Difluoromethaneand Pentafluoroethane Mixture)
Hazard Class	2.2
Packing Group	III
Environmental hazards	Non-marine pollutant

Special precautions

No information available

Transport in bulk according to Annex II of MARPOL Not applicable
73/78 and the IBC Code

15. REGULATORY INFORMATION**International Inventories**

Component	AICS	DSL/NDSL	EINECS/ELI NCS	ENCS	IECSC	KECL	PICCS	TSCA
Pentafluoroethane 354-33-6 (50%)	X	-	X	X	X	X	X	X
Methylene fluoride 75-10-5 (50%)	X	-	X	X	X	X	X	X

"- " Not Listed

"X" Listed

16. OTHER INFORMATION**Revision Note**

Issue Date 27-Jul-2020
Revision date 27-Jul-2020
Revision Note Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet**TWA** - TWA (time-weighted average)**STEL** - STEL (Short Term Exposure Limit)**Ceiling** - Maximum limit value**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**IECSC** - China Inventory of Existing Chemical Substances**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances**ENCS** - Japan Existing and New Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**AICS** - Australian Inventory of Chemical Substances**Disclaimer**

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

----- End of Safety Data Sheet -----

SAFETY DATA SHEET

According to B.E. 2555 (2012)

Version 1
Product Name R410A

Issue Date 27-Jul-2020
Revision date 27-Jul-2020

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name R410A

Other means of identification

Synonyms Freon 410a, AZ-20(R-410A), Difluoromethaneand Pentafluoroethane Mixture

Recommended use of the chemical and restrictions on use

Recommended Use Refrigerants, temperature working fluid, etc.
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier
Address
Postal Code
Phone
FAX
E-mail

Emergency telephone number

2. HAZARDS IDENTIFICATION

GHS Classification

Gases under pressure Liquefied gas

Label elements

Symbols/Pictograms



Signal word

Warning

Hazard Statements

H280 - Contains gas under pressure; may explode if heated

Precautionary Statements

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

Other hazards

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description Mixture

Chemical Name	CAS No	Weight-%
Pentafluoroethane	354-33-6	50
Methylene fluoride	75-10-5	50

4. FIRST AID MEASURES

Description of first aid measures

General advice	Remove contaminated clothing and shoes. If symptoms persist, call a physician.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Not an expected route of exposure. Rinse mouth. Get medical attention. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES**Extinguishing media**

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors, such as hydrogen fluoride, carbonyl fluoride.

Protective equipment and precautions for firefighters

Evacuate personnel to safe areas. Move containers from fire area if you can do it without risk. Cool drums with water spray. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Stay upwind. Ensure adequate ventilation, especially in confined areas.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Evacuate personnel to safe areas

Ensure adequate ventilation, especially in confined areas

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area)

Avoid contact with skin, eyes or clothing

Contaminated work clothing should not be allowed out of the workplace

Do not breathe gas/vapors

Use personal protection recommended in Section 8

Wash thoroughly after handling

Environmental precautions

Local authorities should be advised if significant spillages cannot be contained

Prevent entry into waterways, sewers, basements or confined areas

Methods and material for containment and cleaning up

Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13)

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice
 Ensure adequate ventilation, especially in confined areas
 Avoid contact with skin, eyes or clothing
 Wash contaminated clothing before reuse
 Do not breathe gas/vapors
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking
 Do not eat, drink or smoke when using this product
 Use personal protection recommended in Section 8
 Wash thoroughly after handling

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place
 Keep away from heat, sparks, flame and other sources of ignition
 Keep locked up and out of reach of children
 Keep away from food, drink and animal feeding stuffs
 Store in accordance with local regulations

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters**

Chemical Name	Latvia	France	Finland	Germany	Italy
Pentafluoroethane (CAS #: 354-33-6)	TWA: 2 ppm TWA: 20 mg/m ³	-	-	-	-
Methylene fluoride (CAS #: 75-10-5)	TWA: 2 ppm TWA: 20 mg/m ³	-	-	-	-

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Showers. Eyewash stations. Remove all sources of ignition.

Individual protection measures, such as personal protective equipment

Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Hand Protection	Wear protective gloves.
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin and body protection	Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Appearance	Transparent liquid
Color	Colorless
Odor	Slightly sweet
Odor Threshold	Not determined
pH	ca. 7
Melting point/freezing point	-103 °C (CAS#354-33-6) -136 °C (CAS#75-10-5)
Boiling point / boiling range	-48.5 °C
Flash point	Not determined
Evaporation rate	Not determined
Flammability	Not flammable
Flammability Limit in Air	12.7 - 33.4 (CAS#75-10-5)
Vapor Pressure	1652 kPa (25 °C)
Vapor density	3.0
Density	1.08 (21.1 °C)
Relative density	Not determined
Bulk density	Not determined