R-455A

Safety Data Sheet

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Issue date: 8/21/2026 Version: 1.0

SECTION 1 Identification

1.1. Product identifier

Product form : Mixture
Trade name : R-455A

1.2. Other means of identification

Other means of identification : A2L

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Refrigerant
Restrictions on use : Reserved for industrial and professional use,Not for consumer sale or use,For use by trained, certified refrigeration technicians. (EPA Section 608)

1.4. Supplier's details

RGAS Refrigerants
2777 Allen Parkway
Suite 1185
Houston, Texas 77019
T 281-953-5550
info@rgasref.com

1.5. Emergency phone number

Emergency number : For Hazardous Materials or Dangerous Goods Incident Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night: 1-800-424-9300 (Toll Free, USA) / 703-527-3887 (Virginia, USA)
CCN 1024991
Back-up Emergency Number: +1 703-741-5970 (Washington, DC)

SECTION 2 Hazard identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable gas, Category 1B
Gas under pressure : Liquefied gas
Simple asphyxiant, Category 1
Full text of H-statements: see section 16

H221	Flammable gas.
H280	Contains gas under pressure; may explode if heated.
SIAS	May displace oxygen and cause rapid suffocation.

2.2. Label elements

GHS US labelling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger
Hazard statements (GHS US) : H221 - Flammable gas
H280 - Contains gas under pressure; may explode if heated
May displace oxygen and cause rapid suffocation
Precautionary statements (GHS US) : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
In case of leakage, eliminate all ignition sources.

Store in a well-ventilated place.
Protect from sunlight. Store in a well-ventilated place.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

Other hazards which do not result in classification : Rapid evaporation of the liquid may cause frostbite.

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
2,3,3,3-Tetrafluoropropene	CAS-No.: 754-12-1	75.5	Flam. Gas 1B, H221 Press. Gas (Liq.), H280 Simple Asphy. 1, SIAS
Difluoromethane	CAS-No.: 75-10-5	21.5	Flam. Gas 1B, H221 Press. Gas (Liq.), H280 Simple Asphy. 1, SIAS
Carbon dioxide	CAS-No.: 124-38-9	3	Press. Gas (Comp.), H280 Simple Asphy. 1, SIAS

Full text of hazard classes and H-statements : see section 16

SECTION 4 First-aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : Call a physician immediately. First aider: Pay attention to self-protection. Never give anything by mouth to an unconscious person. Give artificial respiration if necessary. Induce artificial respiration with mask fitted with one-way valve or other suitable device but, not mouth-to-mouth.

First-aid measures after inhalation : Call a physician immediately. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If the victim is unconscious: Lay in a stable manner on victim's side. Induce artificial respiration with mask fitted with one-way valve or other suitable device; not mouth-to-mouth.

First-aid measures after skin contact : Wash skin with plenty of water. Remove affected clothing and wash all exposed skin areas with mild soap and water, followed by warm water rinse. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before reuse.

First-aid measures after 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.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation : In high concentrations may cause asphyxiation. Headache. Mental confusion.

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

Symptoms/effects after eye contact : Contact with the liquefied gas may cause severe ocular lesions.

Symptoms/effects after ingestion : Ingestion is not a likely route of exposure.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment : IF exposed or concerned: Get medical advice/attention. If inhaled, remove to fresh air. If necessary, supply oxygen.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing agent suitable for surrounding fire. Dry chemical, CO2, or water spray or regular foam.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard : Extremely flammable gas.

Explosion hazard : Contains gas under pressure; may explode if heated. May form flammable/explosive vapour-air mixture. Prolonged exposure to fire may cause containers to rupture/explode.

Reactivity in case of fire : Toxic and corrosive vapours may be released.

Hazardous decomposition products in case of fire : Toxic fumes may be released. Carbon dioxide. Carbon monoxide. Carbonyl halides. Halogenated compounds.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Evacuate area. Fight fire from safe distance and protected location. Eliminate all ignition sources if safe to do so. Small fires: Do not extinguish a leaking gas flame unless absolutely necessary. Contain and let burn. If fire must be fought, water spray or fog is recommended. Move containers from fire area if it can be done without personal risk. Large fires: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. Do not direct water at source of leak or at safety devices as freezing could occur. Withdraw immediately in case of rising sound from venting devices or discolouration from tank. ALWAYS stay away from tanks engulfed in fire. Prevent fire fighting water from entering the environment.

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

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area. Do not enter without an appropriate protective equipment. Do not take actions involving personal risks. Avoid all personal contact including breathing in the gas, vapours. Absorb spillage to prevent material damage. Stop leak if safe to do so. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.

Emergency procedures : Evacuate the danger area. If outdoors, move to an area upwind of the danger area. Do not breathe fume, gas, vapours. If possible without taking personal risks, Remove ignition sources, ventilate area. Monitor concentration of released product. Prevent other non-emergency personnel from entering the danger area. Only qualified personnel equipped with suitable protective equipment may intervene.

For emergency responders

Protective equipment : Wear a self-contained breathing apparatus and appropriate personal protective equipment (PPE). 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. Stop leak if safe to do so. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Environmental precautions	:	Avoid release to the environment. Notify authorities if the product reaches soil, drains, sewers, surface waters or groundwater.

6.2. Methods and materials for containment and cleaning up

For containment	:	Stop leak without risks if possible. If the leak cannot be stopped, allow the gas to release in place or remove to a safe, well-ventilated area and allow the release. For large spills, use water spray to disperse vapors, flush spill area.
Methods for cleaning up	:	Ventilate spillage area. Do not touch or walk on the spilled product.
Other information	:	Damaged cylinders should be handled by specialists only. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

See section 8 of the SDS for more information on personal protective equipment,For further information refer to section 13

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Keep valves and fittings free from oil and grease. Do not breathe fume, gas, vapours. Use only outdoors or in a well-ventilated area. Wear personal protective equipment. Avoid contact with skin, eyes and clothing.
Hygiene measures	:	Always wash hands after handling the product. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.
Handling temperature	:	≤ 50 °C / 122 °F
Additional hazards when processed	:	Containers should be stored in the vertical position and properly secured to prevent toppling. 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. Use self-contained breathing apparatus and chemically protective clothing.

7.2. Conditions for safe storage, including incompatibilities

Technical measures	:	Ground/bond container and receiving equipment. Use explosion-proof electrical, lighting, ventilating equipment. Use only non-sparking tools.
Storage conditions	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Store in a cool, dry and well-ventilated area away from incompatible substances. Store carefully closed containers upright to prevent any leaks.
Incompatible materials	:	Strong acids, strong bases and strong oxidants. Organic peroxides. Flammable or combustible materials.
Maximum storage period	:	The product has an indefinite shelf life when stored properly.
Storage temperature	:	≤ 50 °C / 122 °F
Packaging materials	:	Always store product in container of same material as original container.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

Carbon dioxide (124-38-9)

USA - ACGIH® - Threshold Limit Values

Local name	Carbon dioxide
ACGIH® TLV® TWA	9000 mg/m³
	5000 ppm

Carbon dioxide (124-38-9)	
ACGIH® TLV® STEL	54000 mg/m³
	30000 ppm
Remark (ACGIH®)	TLV® Basis: Asphyxia
Regulatory reference	ACGIH 2026
USA - OSHA - Occupational Exposure Limits	
Local name	Carbon dioxide
OSHA PEL TWA	9000 mg/m³
	5000 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Carbon dioxide
NIOSH REL 10h TWA	5000 ppm
NIOSH REL STEL	30000 ppm
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Gas detectors should be used when flammable gases/vapors may be released. Handle in accordance with good industrial hygiene and safety procedures. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Environmental exposure controls : Avoid release to the environment. Take measures to reduce or limit air emissions and releases to soil and the aquatic environment.

8.3. Individual protection measures, such as personal protective equipment

Personal protective equipment:
Personal protective equipment should be chosen according to national standards and in discussion with the supplier of the protective equipment. Wear recommended personal protective equipment.

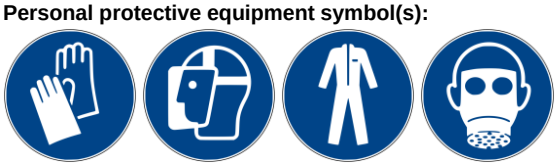
Hand protection:
Protective gloves. Wear suitable gloves resistant to chemical penetration

Eye protection:
Chemical goggles or face shield

Skin and body protection:
Wear fire/flame resistant/retardant clothing.

Respiratory protection:
Use NIOSH approved respirator if ventilation is inadequate. SCBA for emergency responders. Must be used in accordance with an OSHA compliant respiratory protection program.

Personal protective equipment symbol(s):



SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	:	Gas
Appearance	:	Liquefied compressed gas.
Colour	:	Colorless
Odour	:	No data available
Odour threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Flammability (solid, gas)	:	Extremely flammable gas.
Vapour pressure	:	No data available
Relative vapour density at 20°C	:	No data available
Relative density	:	No data available
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Explosive limits	:	No data available
Particle characteristics	:	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

SECTION 10 Stability and reactivity

10.1. Reactivity

Extremely flammable gas.

10.2. Chemical stability

Stable in sealed cylinders stored under a dry inert atmosphere.

10.3. Possibility of hazardous reactions

Vapours may form flammable and explosive mixture with air.

10.4. Conditions to avoid

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

10.5. Incompatible materials

Strong acids, strong bases and strong oxidants.

10.6. Hazardous decomposition products

Thermal decomposition generates: Carbon dioxide. Carbon monoxide. Carbonyl halides. Halogenated compounds. Hydrofluoric Acid.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Difluoromethane	
LC50 Inhalation - Rat [ppm]	100000 ppm/1h

2,3,3,3-Tetrafluoropropene	
LC50 Inhalation - Rat [ppm]	> 405800 ppm/4h

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not applicable
Symptoms/effects after inhalation : In high concentrations may cause asphyxiation. Headache. Mental confusion.
Symptoms/effects after skin contact : Contact with the liquefied gas may cause frostbite.
Symptoms/effects after eye contact : Contact with the liquefied gas may cause severe ocular lesions.
Symptoms/effects after ingestion : Ingestion is not a likely route of exposure.

SECTION 12 Ecological information

12.1. Ecotoxicity

Hazardous to the aquatic environment, short–term (acute) : Not classified
Hazardous to the aquatic environment, long–term (chronic) : Not classified

Difluoromethane	
LC50 - Fish [1]	> 81.8 mg/l
EC50 - Crustacea [1]	> 97.9 mg/l
EC50 72h - Algae [1]	> 118 mg/l
EC50 72h - Algae [2]	> 114 mg/l

2,3,3,3-Tetrafluoropropene	
LC50 - Fish [1]	> 197 mg/l
EC50 - Crustacea [1]	> 100 mg/l
LC50 - Fish [2]	33 mg/l
EC50 - Crustacea [2]	65 mg/l
EC50 72h - Algae [1]	> 100 mg/l

2,3,3,3-Tetrafluoropropene	
EC50 72h - Algae [2]	> 2.5 mg/l
LOEC (chronic)	> 15.2 mg/l
NOEC (chronic)	15.2 mg/l
NOEC chronic fish	2.7 mg/l

12.2. Persistence and degradability

R-455A	
Persistence and degradability	Not rapidly degradable

Difluoromethane	
Persistence and degradability	Not readily biodegradable, 5% % biodegradation 28 days.

2,3,3,3-Tetrafluoropropene	
Persistence and degradability	Not rapidly degradable

Carbon dioxide	
Persistence and degradability	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Difluoromethane	
Partition coefficient n-octanol/water (Log Pow)	0.2177 25 °C / 77 °F
Bioaccumulative potential	Bioaccumulation unlikely.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Ozone : Not classified
Effect on global warming : Contains fluorinated greenhouse gases covered by the Kyoto protocol.
Calculated GWP of mixture : 677
For quantities refer to cylinder label.
Fluorinated greenhouse gases : No
GWPmix (fluorinated gas) : 677

SECTION 13 Disposal considerations

Regional waste regulation : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector’s sorting instructions.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Dispose of this material and its container at hazardous or special waste collection point. Refer to all applicable national, international and local regulations or provisions. U.S. - RCRA (Resource Conservation Recovery Act) - D Waste- Characteristic Waste Codes. D001: IGNITABLE WASTE.
Additional information : Do not re-use empty containers.
Ecological waste information : Avoid release to the environment.

SECTION 14 Transport information

In accordance with DOT / IMDG / IATA

DOT	IMDG	IATA
14.1. UN number		
UN3161	3161	3161
14.2. Proper Shipping Name		
Liquefied gas, flammable, n.o.s. (2,3,3,3-Tetrafluoropropene ; Difluoromethane)	LIQUEFIED GAS, FLAMMABLE, N.O.S. (2,3,3,3-Tetrafluoropropene ; Difluoromethane)	Liquefied gas, flammable, n.o.s. (2,3,3,3-Tetrafluoropropene ; Difluoromethane)
14.3. Transport hazard class(es)		
2.1	2.1	2.1
14.4. Packing group		
Not applicable	Not applicable	Not applicable
14.5. Environmental hazards		
	Dangerous for the environment: No Marine pollutant: No	
No supplementary information available		

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT

UN-No. (DOT)	:	UN3161
DOT Packaging Exceptions (49 CFR 173.xxx)	:	306
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	304
DOT Packaging Bulk (49 CFR 173.xxx)	:	314, 315
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	150 kg
DOT Vessel Stowage Location	:	D - The material must be stowed ‘‘on deck only’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.
DOT Vessel Stowage Other	:	40 - Stow ‘‘clear of living quarters’’

IMDG

Special provisions (IMDG)	:	274
Limited quantities (IMDG)	:	0
Excepted quantities (IMDG)	:	E0
Packing instructions (IMDG)	:	P200
Tank instructions (IMDG)	:	T50
EmS-No. (Fire)	:	F-D - FIRE SCHEDULE Delta - FLAMMABLE GASES
EmS-No. (Spillage)	:	S-U - SPILLAGE SCHEDULE Uniform - GASES (FLAMMABLE, TOXIC OR CORROSIVE)
Stowage category (IMDG)	:	D
Stowage and handling (IMDG)	:	SW2

IATA

PCA Excepted quantities (IATA)	:	E0
PCA Limited quantities (IATA)	:	Forbidden

PCA limited quantity max net quantity (IATA)	:	Forbidden
PCA packing instructions (IATA)	:	Forbidden
PCA max net quantity (IATA)	:	Forbidden
CAO packing instructions (IATA)	:	200
CAO max net quantity (IATA)	:	150kg
ERG code (IATA)	:	10L

SECTION 15 Regulatory information

15.1. Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

Contains chemical(s) subject to TSCA 12b export notification if product is shipped outside the U.S

2,3,3,3-Tetrafluoropropene	CAS-No. 754-12-1	75.5%

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Difluoromethane (75-10-5)

Listed on the Canadian DSL (Domestic Substances List)

2,3,3,3-Tetrafluoropropene (754-12-1)

Listed on the Canadian DSL (Domestic Substances List)

Carbon dioxide (124-38-9)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Difluoromethane (75-10-5)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Carbon dioxide (124-38-9)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
Carbon dioxide(124-38-9)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16 Other Information

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Issue date : 8/21/2026

Full text of hazard classes and H-statements	
H221	Flammable gas
H280	Contains gas under pressure; may explode if heated
SIAS	May displace oxygen and cause rapid suffocation

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.