

SAFETY DATA SHEET

R32

Infosafe No.: HYJ1Z
ISSUED Date : 01/11/2019
ISSUED by: A-Gas (Australia) Pty Ltd

1. Identification

GHS Product Identifier

R32

Company name

A-Gas (Australia) Pty Ltd

Address

9-11 Oxford Rd Laverton North
Victoria 3026 Australia

Telephone/Fax Number

Tel: 93689208

Emergency phone number

TOLL CHEMICAL LOGISTICS: 1800024973

Recommended use of the chemical and restrictions on use

Relevant identified uses

Refrigerant.

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

Other Names

Name
DIFLUOROMETHANE

Additional Information

Chemical Name : Not Applicable

2. Hazard Identification

GHS classification of the substance/mixture

[1]: Flammable Gas Category 1, Gas under Pressure (Liquefied gas)

Signal Word (s)

DANGER

Hazard Statement (s)

AUH044 Risk of explosion if heated under confinement.

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

Precautionary statement – General

P101 If medical advice is needed, have product container or label at hand.

P102 Keep out of reach of children.

P103 Read label before use.

Pictogram (s)

Flame, Gas cylinder



Precautionary statement – Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Precautionary statement – Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so.

Precautionary statement – Storage

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

Precautionary statement – Disposal

Not Applicable

Other Information

Legend: 1. Classified by ; 2. Classification drawn from HSIS; 3. Classification drawn from EC Directive 1272/2008 - Annex VI

3. Composition/information on ingredients

Ingredients

Name	CAS	Proportion
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R32

75- 10- 5

> 60 %weight

Other Information

Substances:

See section below for composition of Mixtures

4. First-aid measures**Inhalation**

Following exposure to gas, remove the patient from the gas source or contaminated area.

NOTE: Personal Protective Equipment (PPE), including positive pressure self-contained breathing apparatus may be required to assure the safety of the rescuer.

Prostheses such as false teeth, which may block the airway, should be removed, where possible, prior to initiating first aid procedures.

If the patient is not breathing spontaneously, administer rescue breathing.

If the patient does not have a pulse, administer CPR.

If medical oxygen and appropriately trained personnel are available, administer 100% oxygen.

Summon an emergency ambulance. If an ambulance is not available, contact a physician, hospital, or Poison Control Centre for further instruction.

Keep the patient warm, comfortable and at rest while awaiting medical care.

MONITOR THE BREATHING AND PULSE, CONTINUOUSLY.

Administer rescue breathing (preferably with a demand-valve resuscitator, bag-valve mask-device, or pocket mask as trained) or CPR if necessary.

Ingestion

Not considered a normal route of entry.

For advice, contact a Poisons Information Centre or a doctor.

Avoid giving milk or oils.

Avoid giving alcohol.

Skin

If skin contact occurs:

Immediately remove all contaminated clothing, including footwear.

Flush skin and hair with running water (and soap if available).

Seek medical attention in event of irritation.

In case of cold burns (frost-bite):

Move casualty into warmth before thawing the affected part; if feet are affected carry if possible

Bathe the affected area immediately in luke-warm water (not more than 35 °C) for 10 to 15 minutes, immersing if possible and without rubbing

DO NOT apply hot water or radiant heat.

Apply a clean, dry, light dressing of "fluffed-up" dry gauze bandage

If a limb is involved, raise and support this to reduce swelling

If an adult is involved and where intense pain occurs provide pain killers such as paracetamol

Transport to hospital, or doctor

Subsequent blackening of the exposed tissue indicates potential of necrosis, which may require amputation.

Eye contact

If product comes in contact with eyes remove the patient from gas source or contaminated area.

Take the patient to the nearest eye wash, shower or other source of clean water.

Open the eyelid(s) wide to allow the material to evaporate.

Gently rinse the affected eye(s) with clean, cool water for at least 15 minutes. Have the patient lie or sit down and tilt the head back. Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners.

The patient may be in great pain and wish to keep the eyes closed. It is important that the material is rinsed from the eyes to prevent further damage.

Ensure that the patient looks up, and side to side as the eye is rinsed in order to better reach all parts of the eye(s)

Transport to hospital or doctor.

Even when no pain persists and vision is good, a doctor should examine the eye as delayed damage may occur.

If the patient cannot tolerate light, protect the eyes with a clean, loosely tied bandage.

Ensure verbal communication and physical contact with the patient.

DO NOT allow the patient to rub the eyes

DO NOT allow the patient to tightly shut the eyes

DO NOT introduce oil or ointment into the eye(s) without medical advice

DO NOT use hot or tepid water.

Indication of immediate medical attention and special treatment needed if necessary

For intoxication due to Freons/ Halons;

A: Emergency and Supportive Measures

Maintain an open airway and assist ventilation if necessary

Treat coma and arrhythmias if they occur. Avoid (adrenaline) epinephrine or other sympathomimetic amines that may precipitate ventricular arrhythmias.

Tachyarrhythmias caused by increased myocardial sensitisation may be treated with propranolol, 1-2 mg IV or esmolol 25-100 microgm/kg/min IV.

Monitor the ECG for 4-6 hours

B: Specific drugs and antidotes:

There is no specific antidote

C: Decontamination

Inhalation; remove victim from exposure, and give supplemental oxygen if available.

Ingestion; (a) Prehospital: Administer activated charcoal, if available. DO NOT induce vomiting because of rapid absorption and the risk of abrupt onset CNS depression. (b) Hospital: Administer activated charcoal, although the efficacy of charcoal is unknown. Perform gastric lavage only if the ingestion was very large and recent (less than 30 minutes)

D: Enhanced elimination:

There is no documented efficacy for diuresis, haemodialysis, haemoperfusion, or repeat-dose charcoal.

POISONING and DRUG OVERDOSE, Californian Poison Control System Ed. Kent R Olson; 3rd Edition

Do not administer sympathomimetic drugs unless absolutely necessary as material may increase myocardial irritability.

No specific antidote.

Because rapid absorption may occur through lungs if aspirated and cause systematic effects, the decision of whether to induce vomiting or not should be made by an attending physician.

If lavage is performed, suggest endotracheal and/or esophageal control.

Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.

Treatment based on judgment of the physician in response to reactions of the patient

For frost-bite caused by liquefied petroleum gas:

If part has not thawed, place in warm water bath (41-46 C) for 15-20 minutes, until the skin turns pink or red.

Analgesia may be necessary while thawing.

If there has been a massive exposure, the general body temperature must be depressed, and the patient must be immediately rewarmed by whole-body immersion, in a bath at the above temperature.

Shock may occur during rewarming.

Administer tetanus toxoid booster after hospitalization.

Prophylactic antibiotics may be useful.

The patient may require anticoagulants and oxygen.

[Shell Australia 22/12/87]

For gas exposures:

BASIC TREATMENT

Establish a patent airway with suction where necessary.

Watch for signs of respiratory insufficiency and assist ventilation as necessary.

Administer oxygen by non-rebreather mask at 10 to 15 l/min.

Monitor and treat, where necessary, for pulmonary oedema.

Monitor and treat, where necessary, for shock.

Anticipate seizures.

ADVANCED TREATMENT

Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.

Positive-pressure ventilation using a bag-valve mask might be of use.

Monitor and treat, where necessary, for arrhythmias.

Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.

Drug therapy should be considered for pulmonary oedema.

Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.

Treat seizures with diazepam.

Proparacaine hydrochloride should be used to assist eye irrigation.

BRONSTEIN, A.C. and CURRANCE, P.L.

EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

5. Fire-fighting measures

Suitable Extinguishing Media

DO NOT EXTINGUISH BURNING GAS UNLESS LEAK CAN BE STOPPED SAFELY.

OTHERWISE: LEAVE GAS TO BURN.

Unsuitable Extinguishing Media

DO NOT use water jets.

Specific Methods

FOR FIRES INVOLVING MANY GAS CYLINDERS:

To stop the flow of gas, specifically trained personnel may inert the atmosphere to reduce oxygen levels thus allowing the capping of leaking container(s).

Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback.

DO NOT extinguish the fire until the supply is shut off otherwise an explosive re-ignition may occur.

If the fire is extinguished and the flow of gas continues, used increased ventilation to prevent build-up, of explosive atmosphere.

GENERAL

Alert Fire Brigade and tell them location and nature of hazard.

May be violently or explosively reactive.

Wear breathing apparatus plus protective gloves.

Consider evacuation

Fight fire from a safe distance, with adequate cover.

Specific Hazards Arising From The Chemical

Fire Incompatibility:

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Fire/Explosion Hazard:

HIGHLY FLAMMABLE: will be easily ignited by heat, sparks or flames.

Will form explosive mixtures with air

Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration.

Vapours may travel to source of ignition and flash back.

Containers may explode when heated - Ruptured cylinders may rocket

Fire may produce irritating, poisonous or corrosive gases.

Combustion products include:

carbon monoxide (CO)

carbon dioxide (CO₂)

hydrogen fluoride

other pyrolysis products typical of burning organic material.

Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

Vented gas is more dense than air and may collect in pits, basements.

Hazchem Code

2YE

Decomposition Temperature

Not Available

Extinguishing Media - Small Fires

Dry chemical, CO₂ or water spray to extinguish gas (only if absolutely necessary and safe to do so).

Extinguishing Media - Large Fires

Cool cylinder by direct flooding quantities of water onto upper surface until well after fire is out.

6. Accidental release measures

Emergency Procedures

See section 8

Clean-up Methods - Small Spillages

Avoid breathing vapour and any contact with liquid or gas. Protective equipment including respirator should be used.

DO NOT enter confined spaces where gas may have accumulated.

Shut off all sources of possible ignition and increase ventilation.

Clean-up Methods - Large Spillages

Clear area of all unprotected personnel and move upwind.

Alert Emergency Authority and advise them of the location and nature of hazard.

May be violently or explosively reactive.

Wear full body clothing with breathing apparatus.

Remove leaking cylinders to a safe place.

Fit vent pipes. Release pressure under safe, controlled conditions

Burn issuing gas at vent pipes.

DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.

Environmental Precautions

See section 12

Other Information

Personal Protective Equipment advice is contained in Section 8 of the SDS.

7. Handling and storage

Precautions for Safe Handling

Safe handling:

Consider use in closed pressurised systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature

The tubing network design connecting gas cylinders to the delivery system should include appropriate pressure indicators and vacuum or suction lines.

Fully-welded types of pressure gauges, where the bourdon tube sensing element is welded to the gauge body, are recommended.

Before connecting gas cylinders, ensure manifold is mechanically secure and does not contain another gas.

Avoid generation of static electricity. Earth all lines and equipment.

DO NOT transfer gas from one cylinder to another.

Other information:

Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open.

Such compounds should be sited and built in accordance with statutory requirements.

The storage compound should be kept clear and access restricted to authorised personnel only.

Cylinders stored in the open should be protected against rust and extremes of weather.

Store below 45 deg. C.

Conditions for safe storage, including any incompatibilities

Suitable container:

DO NOT use aluminium or galvanised containers

Cylinder:

Ensure the use of equipment rated for cylinder pressure.

Ensure the use of compatible materials of construction.

Valve protection cap to be in place until cylinder is secured, connected.

Cylinder must be properly secured either in use or in storage.

Storage incompatibility:

Compressed gases may contain a large amount of kinetic energy over and above that potentially available from the energy of reaction produced by the gas in chemical reaction with other substances

Presence of heat source and direct sunlight

Avoid magnesium, aluminium and their alloys, brass and steel.

8. Exposure controls/personal protection

Occupational exposure limit values

Control parameters:

OCCUPATIONAL EXPOSURE LIMITS (OEL):

INGREDIENT DATA:

Not Available

EMERGENCY LIMITS:

Ingredient: R32

Material name: Methylene fluoride; (Difluoromethane; HFC-32)

TEEL-1: 3,000 ppm

TEEL-2: 6,500 ppm

TEEL-3: 39,000 ppm

Ingredient: R32

Original IDLH: Not Available

Revised IDLH: Not Available

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

Respiratory Protection

Type AX Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required minimum protection factor: up to 10

Maximum gas/vapour concentration present in air p.p.m. (by volume): 1000

Half-face Respirator: AX-AUS / Class1

Full-Face Respirator: -

Required minimum protection factor: up to 50

Maximum gas/vapour concentration present in air p.p.m. (by volume): 1000

Half-face Respirator: -

Full-Face Respirator: AX-AUS / Class 1

Required minimum protection factor: up to 50

Maximum gas/vapour concentration present in air p.p.m. (by volume): 5000

Half-face Respirator: Airline *

Full-Face Respirator: -

Required minimum protection factor: up to 100

Maximum gas/vapour concentration present in air p.p.m. (by volume): 5000

Half-face Respirator: -

Full-Face Respirator: AX-2

Required minimum protection factor: up to 100

Maximum gas/vapour concentration present in air p.p.m. (by volume): 10000

Half-face Respirator: -

Full-Face Respirator: AX-3

Required minimum protection factor: 100+

Full-Face Respirator: Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand

A (All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide (HCN), B3 = Acid gas or hydrogen cyanide (HCN), E = Sulfur dioxide (SO₂), G = Agricultural chemicals, K = Ammonia (NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds (below 65 degC)

Eye Protection

Safety glasses with side shields.

Chemical goggles.

Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.

Hand Protection

When handling sealed and suitably insulated cylinders wear cloth or leather gloves.

Insulated gloves:

NOTE: Insulated gloves should be loose fitting so that may be removed quickly if liquid is spilled upon them. Insulated gloves are not made to permit hands to be placed in the liquid; they provide only short-term protection from accidental contact with the liquid.

Body Protection

Other protection

The clothing worn by process operators insulated from earth may develop static charges far higher (up to 100 times) than the minimum ignition energies for various flammable gas-air mixtures. This holds true for a wide range of clothing materials including cotton.

Avoid dangerous levels of charge by ensuring a low resistivity of the surface material worn outermost.

BREThERICK: Handbook of Reactive Chemical Hazards.

Protective overalls, closely fitted at neck and wrist.

Eye-wash unit.

IN CONFINED SPACES:

Non-sparking protective boots

Static-free clothing.

Ensure availability of lifeline.

· Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.

· For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).

· Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot and shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds.

9. Physical and chemical properties

Properties	Description	Properties	Description
Form	Liquefied Gas	Appearance	Clear colourless compressed liquefied gas with a slight ethereal odour; insoluble in water.
Odour	Not Available	Decomposition Temperature	Not Available
Boiling Point	-51.7°C	Solubility in Water	Immiscible
pH	Not Available (as supplied) Not Available (as a solution (1%))	Vapour Pressure	1700 kPa @ 25 deg C
Vapour Density (Air=1)	1.86	Evaporation Rate	Not Available
Physical State	Liquified Gas	Odour Threshold	Not Available
Viscosity	Not Available	Volatile Component	100%vol
Partition Coefficient: n-octanol/water	Not Available	Surface Tension	Not Available

Flash Point	Not Available	Flammability	Not Available
Auto-Ignition Temperature	Not Available	Explosion Limit - Upper	31%
Explosion Limit - Lower	14%	Explosion Properties	Not Available
Molecular Weight	52 g/mol	Oxidising Properties	Not Available
Initial boiling point and boiling range	-51.7°C	Relative density	1.1
Melting/Freezing Point	-136°C (freezing point)		

Other Information

Taste: Not Available

Gas group: Not Available

VOC g/L: Not Available

10. Stability and reactivity**Reactivity**

See section 7

Chemical Stability

Unstable in the presence of incompatible materials.

Product is considered stable.

Hazardous polymerisation will not occur.

Conditions to Avoid

See section 7

Incompatible materials

See section 7

Hazardous Decomposition Products

See section 5

Possibility of hazardous reactions

See section 7

11. Toxicological Information**Toxicology Information**

R32

TOXICITY: Not Available

IRRITATION: Not Available

R32

TOXICITY:

Inhalation(Rat) LC50 >759132.84 mg/l/4h*[2]

Inhalation(Rat) LC50 1890 mg/l/4H[2]

Oral(Rat) LD50 1890 mg/kg[2]

IRRITATION: Not Available

Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

Acute Toxicity: Data either not available or does not fill the criteria for classification

Ingestion

Not normally a hazard due to physical form of product.

Considered an unlikely route of entry in commercial/industrial environments

Inhalation

Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

Limited evidence or practical experience suggests that the material may produce irritation of the respiratory system, in a significant number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.

Depression of the central nervous system is the most outstanding effect of most halogenated aliphatic hydrocarbons. Inebriation and excitation, passing into narcosis, is a typical reaction. In severe acute exposures there is always a danger of death from respiratory failure or cardiac arrest due to a tendency to make the heart more susceptible to catecholamines (adrenalin)

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

Symptoms of asphyxia (suffocation) may include headache, dizziness, shortness of breath, muscular weakness, drowsiness and ringing in the ears. If the asphyxia is allowed to progress, there may be nausea and vomiting, further physical weakness and unconsciousness and, finally, convulsions, coma and death. Significant concentrations of the non-toxic gas reduce the oxygen level in the air. As the amount of oxygen is reduced from 21 to 14 volume %, the pulse rate accelerates and the rate and volume of breathing increase.

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

Exposure to high concentrations of fluorocarbons may produce cardiac arrhythmias or cardiac arrest due sensitisation of the heart to adrenalin or noradrenalin. Deaths associated with exposures to fluorocarbons (specifically halogenated aliphatics) have occurred in occupational settings and in inhalation of bronchodilator drugs.

Bronchospasm consistently occurs in human subjects inhaling fluorocarbons. At a measured concentration of 1700 ppm of one of the commercially available aerosols there is a biphasic change in ventilatory capacity, the first reduction occurring within a few minutes and the second delayed up to 30 minutes.

Skin

Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.

Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this

may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Vapourising liquid causes rapid cooling and contact may cause cold burns, frostbite, even through normal gloves. Frozen skin tissues are painless and appear waxy and yellow. Signs and symptoms of frost-bite may include "pins and needles", paleness followed by numbness, a hardening and stiffening of the skin, a progression of colour changes in the affected area, (first white, then mottled and blue and eventually black; on recovery, red, hot, painful and blistered).

In common with other halogenated aliphatics, fluorocarbons may cause dermal problems due to a tendency to remove natural oils from the skin causing irritation and the development of dry, sensitive skin. They do not appear to be appreciably absorbed.

Eye

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

Direct contact with the eye may not cause irritation because of the extreme volatility of the gas; however concentrated atmospheres may produce irritation after brief exposures..

Skin corrosion/irritation

Data either not available or does not fill the criteria for classification

Serious eye damage/irritation

Data either not available or does not fill the criteria for classification

Mutagenicity

Data either not available or does not fill the criteria for classification

Respiratory sensitisation

Data either not available or does not fill the criteria for classification

Skin Sensitisation

Data either not available or does not fill the criteria for classification

Carcinogenicity

Data either not available or does not fill the criteria for classification

Reproductive Toxicity

Data either not available or does not fill the criteria for classification

STOT-single exposure

Data either not available or does not fill the criteria for classification

STOT-repeated exposure

Data either not available or does not fill the criteria for classification

Aspiration Hazard

Data either not available or does not fill the criteria for classification

Chronic Effects

Principal route of occupational exposure to the gas is by inhalation.

It is generally accepted that the fluorocarbons are less toxic than the corresponding halogenated aliphatic based on chlorine. Repeated inhalation exposure to the fluorocarbon FC-11 does not produce pathologic lesions of the liver and other visceral organs in experimental animals. There has been conjecture in non-scientific publications that fluorocarbons may cause leukemia, cancer, sterility and birth defects; these have not been verified by current research. The high incidence of cancer, spontaneous abortion and congenital anomalies amongst hospital personnel, repeatedly exposed to fluorine-containing general anaesthetics, has caused some scientists to call for a lowering of the fluorocarbon exposure standard to 5 ppm since some are mutagens.

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

12. Ecological information

Ecological information

Toxicity

R32

Endpoint: Not Available

Test Duration (hr): Not Available

Species: Not Available

Value: Not Available

Source: Not Available

R32

Endpoint: LC50

Test Duration (hr): 96

Species: Fish

Value: >81.8mg/L

Source: 2

Endpoint: EC50

Test Duration (hr): 48

Species: Crustacea

Value: >97.9mg/L

Source: 2

Endpoint: EC50

Test Duration (hr): 72

Species: Algae or other aquatic plants

Value: >114mg/L

Source: 2

Endpoint: NOEC

Test Duration (hr): 96

Species: Fish

Value: 10mg/L

Source: 2

Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient: R32

Persistence: Water/Soil: LOW

Persistence: Air: LOW

Mobility

Ingredient: R32

Mobility: LOW (KOC = 23.74)

Bioaccumulative Potential

Ingredient: R32

Bioaccumulation: LOW (LogKOW = 0.2)

13. Disposal considerations

Waste Disposal

Product / Packaging disposal:

Evaporate or incinerate residue at an approved site.

Return empty containers to supplier.

Ensure damaged or non-returnable cylinders are gas-free before disposal.

14. Transport information

U.N. Number

3252

UN proper shipping name

DIFLUOROMETHANE (REFRIGERANT GAS R 32)

Transport hazard class(es)

2.1

Hazchem Code

2YE

IERG Number

04

UN Number (Air Transport, ICAO)

3252

IATA/ICAO Proper Shipping Name

Refrigerant gas R 32; Difluoromethane

IATA/ICAO Hazard Class

2.1

IMDG UN No

3252

IMDG Proper Shipping Name

DIFLUOROMETHANE(REFRIGERANT GAS R 32)

IMDG Hazard Class

2.1

Other Information

Labels Required:

Marine Pollutant: NO

HAZCHEM: 2YE

Land transport (ADG)

UN number: 3252

UN proper shipping name: DIFLUOROMETHANE (REFRIGERANT GAS R 32)

Transport hazard class(es):

Class: 2.1

Subrisk: Not Applicable

Packing group: Not Applicable

Environmental hazard: Not Applicable

Special precautions for user:

Special provisions: Not Applicable

Limited quantity: 0

Air transport (ICAO-IATA / DGR)

UN number: 3252

UN proper shipping name: Difluoromethane; Refrigerant gas R 32

Transport hazard class(es):

ICAO/IATA Class: 2.1

ICAO / IATA Subrisk: Not Applicable

ERG Code: 10L

Packing group: Not Applicable

Environmental hazard: Not Applicable

Special precautions for user

Special provisions: A1

Cargo Only Packing Instructions: 200

Cargo Only Maximum Qty / Pack: 150 kg

Passenger and Cargo Packing Instructions: Forbidden
Passenger and Cargo Maximum Qty / Pack: Forbidden
Passenger and Cargo Limited Quantity Packing Instructions: Forbidden
Passenger and Cargo Limited Maximum Qty / Pack: Forbidden
Sea transport (IMDG-Code / GGVSee)
UN number: 3252
UN proper shipping name: DIFLUOROMETHANE (REFRIGERANT GAS R 32)
Transport hazard class(es):
IMDG Class: 2.1
IMDG Subrisk: Not Applicable
Packing group: Not Applicable
Environmental hazard: Not Applicable
EMS Number: F-D , S-U
Special precautions for user:
Special provisions: Not Applicable
Limited Quantities: 0
Transport in bulk according to Annex II of MARPOL and the IBC code:
Not Applicable

15. Regulatory information

Regulatory information

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

R32 is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

National Inventory: Canada - NDSL

Status: One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) (R32)

National Inventory: China - IECSC

Status: One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) (R32)

National Inventory: Europe - EINEC / ELINCS / NLP

Status: All CAS declared ingredients are on the inventory

National Inventory: Japan - ENCS

Status: All CAS declared ingredients are on the inventory

National Inventory: Korea - KECI

Status: All CAS declared ingredients are on the inventory

National Inventory: New Zealand - NZIoC

Status: All CAS declared ingredients are on the inventory

National Inventory: Taiwan - TCSI

Status: All CAS declared ingredients are on the inventory

National Inventory: Mexico - INSQ

Status: All CAS declared ingredients are on the inventory

National Inventory: Vietnam - NCI

Status: All CAS declared ingredients are on the inventory

National Inventory: Russia - ARIPS

Status: All CAS declared ingredients are on the inventory

Poisons Schedule

N/A

Australia (AICS)

All CAS declared ingredients are on the inventory

Canada (DSL/NDSL)

All CAS declared ingredients are on the inventory

Philippines (PICCS)

All CAS declared ingredients are on the inventory

USA (TSCA)

All CAS declared ingredients are on the inventory

16. Other Information

Empirical Formula & Structural Formula

Not Applicable

Other Information

Version No: 6.1.1.1

Safety Data Sheet according to WHS and ADG requirements

Hazard Alert Code: 4

L.GHS.AUS.EN

Other means of identification: Not Available

SDS Version Summary

Version: 5.1.1.1

Issue Date: 16/03/2017

Sections Updated: Acute Health (eye), Acute Health (inhaled), Acute Health (skin), Chronic Health, Classification, Ingredients, Personal Protection (eye), Storage (storage incompatibility)

Version: 6.1.1.1

Issue Date: 01/11/2019

Sections Updated: One-off system update. NOTE: This may or may not change the GHS classification

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available

engineering controls must be considered.

Definitions and abbreviations

PC-TWA: Permissible Concentration-Time Weighted Average

PC-STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index

This SDS has been transcribed into Infosafe GHS format from an original, issued by the manufacturer on the date shown. Any disclaimer by the manufacturer may not be included in the transcription.

END OF SDS

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