



## Material Safety Data Sheet

**R -402B**

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### CHEMICAL PRODUCT/COMPANY IDENTIFICATION

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#### Material Identification

Corporate MSDS Number : TAB-00118

#### Product Use

Refrigerant

#### Trade names and Synonyms

R-402B

#### Company Identification

TABRIGAS EGYPT – PACKAGER / DISTRIBUTOR

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### COMPOSITION/INFORMATION ON INGREDIENTS

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#### Components

Material	CAS Number	%
Chlorodifluoromethane (HCFC-22)	75-45-6	60 %
Pentafluoroethane (HFC-125)	354-33-6	38 %
Propane	74-98-6	2 %

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### HAZARDS IDENTIFICATION

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#### Emergency Overview

Misuse or intentional inhalation abuse may lead to death without warning.

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Rapid evaporation of the liquid may cause frostbite

#### Potential Health Effects

##### Skin

Contact with liquid or refrigerated gas can cause cold burns and frostbite.

##### Eyes

Contact with liquid or refrigerated gas can cause cold burns and frostbite.

##### Inhalation

Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.

Other symptoms potentially related to misuse or inhalation abuse is:

Anesthetic effects, Light-headedness, dizziness, confusion, in coordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness.

Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

### Carcinogenicity

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

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### FIRST AID MEASURES

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#### First Aid

##### Skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Consult a physician. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.

##### Eye contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician if necessary.

##### Inhalation

Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.

##### Ingestion

Is not considered a potential route of exposure

##### General advice

Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.

##### Notes to physician

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

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### FIRE FIGHTING MEASURES

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#### Flammable Properties

Flash Point	: does not flash
Lower explosion limit	: Method: None per ASTM E681
Upper explosion limit	: Method: None per ASTM E681

#### Fire and Explosion Hazard :

Cylinders are equipped with pressure and temperature relief devices, but may still rupture under fire conditions. Decomposition may occur. Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of the torch flame. This flame effect will only occur in concentrations of product well above the recommended exposure limit. Therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames. This substance is not flammable in air at temperatures up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of this substance with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. This substance can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing this substance and air, or this substance in an oxygen enriched atmosphere become combustible depends on the inter-relationship

of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, this substance should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example this substance should NOT be mixed with air under pressure for leak testing or other purposes. Experimental data have also been reported which indicate combustibility of this substance in the presence of certain concentrations of chlorine.

#### Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding Environment.

#### Firefighting Instructions

Use water spray or fog to protect the fire fighters and to cool container. Self-contained breathing apparatus (SCBA) is required if containers rupture and contents are released under fire conditions. Water runoff should be contained and neutralized prior to release.

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### ACCIDENTAL RELEASE MEASURES

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NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

#### Accidental Release Measures

Ventilate area, especially low or enclosed places where heavy vapors might collect. Self-contained breathing apparatus (SCBA) is required if a large release occurs. Avoid open flames and high temperatures.

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### HANDLING AND STORAGE

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#### Handling (Personnel)

Avoid breathing vapors or mist. Avoid skin or eye contact with liquid. Use sufficient ventilation to keep employee exposure below recommended limits. Wash hands thoroughly after handling.

#### Storage

Store in a clean, dry place. Do not heat above 52° C (125° F).

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### EXPOSURE CONTROLS/PERSONAL PROTECTION

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#### Engineering Controls

Refrigerant concentration monitors may be necessary to determine vapour concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas. Use sufficient ventilation to keep employee exposure below recommended limits. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

#### Personal Protective Equipment

#### Respiratory protection

Under normal manufacturing conditions, no respiratory protection is required when using this Product.



Hand protection

Additional protection: Impervious gloves

Eye protection

Wear safety glasses with side shields. Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Protective measures

Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limit Values

Chlorodifluoromethane			
TLV	(ACGIH)	1,000 ppm	.TWA
Pentafluoroethane			
AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA
Propane			
TLV	(ACGIH)	1,000 ppm	.TWA

\* AEL is DuPont’s Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

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PHYSICAL AND CHEMICAL PROPERTIES  
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PHYSICAL AND CHEMICAL PROPERTIES

Form	: Liquefied gas
Color	: clear, colorless
Odor	: slight, ether-like
pH	: neutral
Boiling point	: -47.0 °C (-52.6 °F)
% Volatile	: 100 %
Vapor Pressure	: 12,591 hPa at 25 °C (77 °F)
Specific gravity	: 1.15 at 25 °C (77 °F)
Water solubility	: not determined
Vapor density	: 3.3 at 25°C (77°F) and 1013 hPa (Air=1.0)
Evaporation rate	: > 1 (CCL4=1.0)

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STABILITY AND REACTIVITY  
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Conditions to Avoid

Material is stable. Avoid open flames and high temperatures.

Incompatibility

Alkali metals Alkaline earth metals, Powdered metals, Powdered metal salts

#### Hazardous decomposition products

Decomposition products are hazardous., The exact nature of the decomposition products will depend upon exposure conditions - temperature, access to oxygen, high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides., These materials are toxic and irritating., Avoid contact with decomposition products

#### Hazardous reactions

Polymerization will not occur.

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### TOXICOLOGICAL INFORMATION

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#### Chlorodifluoromethane (HCFC-22)

##### Dermal:

Not applicable

##### Oral:

Not applicable

##### Inhalation 4 h LC50:

220000 ppm , rat

##### Inhalation:

Dog Cardiac sensitization

##### Skin irritation:

No skin irritation, rabbit

Not expected to cause skin irritation based on expert review of the properties of the substance.

##### Eye irritation:

No eye irritation, rabbit

Not expected to cause eye irritation based on expert review of the properties of the substance.

##### Skin sensitization:

Did not cause sensitization on laboratory animals. guinea pig

Not expected to cause sensitization based on expert review of the properties of the substance.

##### Repeated dose toxicity:

Inhalation

Mouse

No toxicologically significant effects were found.

##### Carcinogenicity:

An increased incidence of tumors was observed in some laboratory animals but not in others.

Overall weight of evidence indicates that the substance is not carcinogenic.

##### Mutagenicity:

Did not cause genetic damage in animals.

Did not cause genetic damage in cultured mammalian cells.

Experiments showed mutagenic effects in cultured bacterial cells.

**Reproductive toxicity:**

Evidence suggests the substance is not a reproductive toxin in animals.

**Teratogenicity:**

Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

**Further information:**

Cardiac sensitization threshold limit : 175000 mg/m<sup>3</sup>

**Pentafluoroethane (HFC-125)****Dermal:**

not applicable

**Oral:**

not applicable

**Inhalation 4 h LC50:**

> 800000 ppm , rat

**Inhalation:**

Dog Cardiac sensitization

**Skin irritation:**

No skin irritation, Not tested on animals

Not expected to cause skin irritation based on expert review of the properties of the substance.

**Eye irritation:**

No eye irritation, Not tested on animals

Not expected to cause eye irritation based on expert review of the properties of the substance.

**Skin sensitization:**

Does not cause skin sensitization. Not tested on animals

Not expected to cause sensitization based on expert review of the properties of the substance.

There are no reports of human respiratory sensitization.

**Repeated dose toxicity:**

Inhalation rat

No toxicologically significant effects were found.

**Carcinogenicity:**

Overall weight of evidence indicates that the substance is not carcinogenic.

**Mutagenicity:**

Did not cause genetic damage in animals.

Did not cause genetic damage in cultured mammalian cells.

Did not cause genetic damage in cultured bacterial cells.



Reproductive toxicity:

Evidence suggests the substance is not a reproductive toxin in animals.  
Information given is based on data obtained from similar substances.

Teratogenicity:

Animal testing showed no developmental toxicity.

Further information:

Cardiac sensitization threshold limit : 490000 mg/m3

Propane

Dermal:

Not applicable

Oral:

Not applicable

Inhalation 4 h LC50:

> 200000 ppm , rat

Inhalation:

Dog Cardiac sensitization

Skin irritation:

Not applicable

Eye irritation:

Not applicable

Skin sensitization:

Not applicable

Repeated dose toxicity:

Inhalation

Rat

No toxicologically significant effects were found.

Mutagenicity:

Did not cause genetic damage in cultured bacterial cells.

Further information:

Cardiac sensitization threshold limit : 180369 mg/m3

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ECOLOGICAL INFORMATION

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Aquatic Toxicity

Chlorodifluoromethane (HCFC-22)

96 h LC50	: Zebra fish 777 mg/l
96 h EC50	: Algae 250 mg/l
48 h EC50	: Daphnia magna (Water flea) 433 mg/l

Pentafluoroethane (HFC-125)

96 h LC50:

Oncorhynchus mykiss (rainbow trout) > 81.8 mg/l  
Information given is based on data obtained from similar substances.

96 h LC50:

Danio rerio (zebra fish) > 200 mg/l  
Information given is based on data obtained from similar substances.

96 h LC50:

Oncorhynchus mykiss (rainbow trout) 450 mg/l  
Information given is based on data obtained from similar substances.

72 h EC50:

Pseudokirchneriella subcapitata (green algae) > 118 mg/l  
Information given is based on data obtained from similar substances.

72 h EC50:

Pseudokirchneriella subcapitata (green algae) > 114 mg/l  
Information given is based on data obtained from similar substances.

96 h EC50:

Algae 142 mg/l  
Information given is based on data obtained from similar substances.

48 h EC50:

Daphnia magna (Water flea) > 200 mg/l  
Information given is based on data obtained from similar substances.

48 h EC50:

Daphnia magna (Water flea) > 97.9 mg/l  
Information given is based on data obtained from similar substances.

Environmental Fate

Chlorodifluoromethane (HCFC-22) Biodegradability

: According to the results of tests of biodegradability this product is not readily biodegradable.

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DISPOSAL CONSIDERATIONS

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Waste Disposal:

Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with applicable Federal, State/Provincial and Local Regulations.

Environmental Hazards:

Empty pressure vessels should be returned to the supplier.



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 TRANSPORTATION INFORMATION  
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TDG_ROAD	UN number	: 3163
	Proper shipping name	Liquefied gas, n.o.s. (Chlorodifluoromethane, Pentafluoroethane)
	Class	: 2.2
	Labeling No.	: 2.2
TDG_RAIL	UN number	: 3163
	Proper shipping name	Liquefied gas, n.o.s. (Chlorodifluoromethane, Pentafluoroethane)
	Class	: 2.2
	Labeling No.	: 2.2
IATA_C	UN number	: 3163
	Proper shipping name	Liquefied gas, n.o.s. (Chlorodifluoromethane, Pentafluoroethane)
	Class	: 2.2
	Labeling No.	: 2.2
IMDG	UN number	: 3163
	Proper shipping name	Liquefied gas, n.o.s. (Chlorodifluoromethane, Pentafluoroethane)
	Class	: 2.2
	Labeling No.	: 2.2

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 REGULATORY INFORMATION  
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DSL Status:  
 On the inventory, or in compliance with the inventory

WHMIS Classification:  
 A - Compressed Gas

Remarks:  
 One or more components of this product are subject to a Significant New Activity (SNAc) restriction under the Canadian Environmental Protection Act (CEPA).