



Material Safety Data Sheet

R -406A

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Corporate MSDS Number : TAB-00119

Product Use

Refrigerant

Trade names and Synonyms

R-406A

Company Identification

TABRIGAS EGYPT – PACKAGER / DISTRIBUTOR

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Chlor-1,1-difluoroethane (R-142b)	75-68-3	41%
Chlorodifluoromethane (R22)	75-45-6	55%
Isobutene (R600a)	75-28-5	4%

HAZARDS IDENTIFICATION

Presents an insignificant hazard to human health.

In case of decomposition, releases dangerous products

FIRST AID MEASURES

Eye contact

On the advice of the ophthalmologist

Skin contact

Usual treatment of burns

Ingestion

None

FIRE FIGHTING MEASURES

Common extinguishing methods

In case of fire in close proximity, all means of extinguishing are acceptable.



Inappropriate extinguishing methods

No restriction.

Specific hazards

Non-flammable.

Formation of dangerous gas/vapors in case of decomposition.

Gas/vapors combustion possible in presence of air in very particular conditions.

Protective measures in case of intervention

Evacuate all non-essential personnel

In all cases wear self-contained breathing apparatus when in close proximity or intervention wear acid resistant suit

After intervention proceed to clean the equipment (take a shower, remove clothing carefully, clean and check).

Intervention only by capable personnel who are trained and aware of the hazards of the product.

Other precautions

If safe to do so, remove the exposed containers, or cool with large quantities of water.

After the fire, ventilate and clean the rooms before re-entry.

ACCIDENTAL RELEASE MEASURES

Precautions

Respect the protection measures given in Section (fire fighting measures)

Local ventilation.

If safe to do so, without exposing the personnel, try to stop the spillage.

Avoid materials and products which are incompatible with the product.

Clean up methods

Let the product evaporate.

Prevent the product from entering sewers or confined places.

Precautions for protection of the environment

Avoid discharges into the environment (atmosphere, etc.)

HANDLING AND STORAGE

Handling

Operate in a well-ventilated area.

Prevent any product decomposition vapors from contacting hot spots.

Prevent any product decomposition vapors from electric arc action (post welding).

Use only containers which are compatible with the substance.

Keep away from sources of ignition and heat.

Keep away from reactive substances.

Storage

In a ventilated, cool area.

Keep away from heat sources.

Keep away from reactive substances

Other precautions

Warn personnel of the dangers of the product

Packaging

Steel

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Local ventilation.

Respect the measures given in section (handling and storage)

Install apparatus with respect to the limit values.

EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont)

Authorized limit values

SAEL	1994-1995
TWA	1000 ppm
Chlorodifluoromethane	
TLV (ACGIH-USA)	1994-1995
TWA	1000 ppm
TWA	3540 mg/m ³

Respiratory protection

None if the local exhaust ventilation is adequate.

Self-contained breathing apparatus if risk of decomposition.

Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions / in all circumstances when the mask and cartridge do not give adequate protection.

Use only respiratory protection that confirms to inter/national standards.

Hand protection

Protective gloves - chemical resistant

Recommended materials: Polyvinyl alcohol

Eye protection

Wear protective goggles for all industrial operations.

Chemical proof goggles/face shield, if risk of splashing.

Skin protection

Apron/boots of neoprene if risk of splashing.

Other precautions

Shower and eye wash stations.

Gloves, overalls and boots have to be double layered (protection against cold temperature).

Consult your Occupational Health and Safety Officer for the selection of personal protective equipment suitable for the working conditions.

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Pressurized liquefied gas
Color	: Colorless
Odor	: Odorless
Freezing point	: No data
Boiling point/range (1013mbars):	: Between -32 to -23°C
Flash point	: No data
Flammability	: No flammability limit in air.
	Remark: Non flammable mixture, but in case of leak of liquefied gas, the liquid phase can ignite if the concentration > 60% in weight of R142b.
Auto-flammability	: - 632 to 635° C.
Vapor Pressure	: 5.62 bar temperature 20° C. 12.45 bar temperature 50° C.
Specific gravity	: (D25/4) = 1.13
Vapor Density (air = 1)	: > 3 temperature 20° C.
Solubility Water	: 4.9 g/l. Soluble in most organic solvents
pH	: Neutral
Partition coefficient P (n-octanol/water):	1.08 Test Substance: Data relative to R22
Decomposition temperature	: 96° C. Test Substance: Data relative to R22
Oxidizing properties	: Not applicable
Critical temperature	: 114° C.
Critical pressure	: 45.8 bar.

STABILITY AND REACTIVITY

Stability

Stable under certain conditions (see below).
Decomposition produces dangerous gases, upon contact with flames or hot metallic surfaces.

Conditions to Avoid

Heat / sources of heat.

Materials to avoid

Metallic powders.
Alkaline-earth metals.
Alkaline metals and their alloys

Hazardous decomposition products

Hydrogen fluoride.
Hydrochloric acid.
Phosgene.
Fluor phosgene.

Other Information

Contact with strong bases or alkaline materials may provoke violent reactions or explosions.
The vapor is heavier than air, disperses at ground level.

TOXICOLOGICAL INFORMATION

Acute Toxicity

Oral route, LD50,	: not applicable.
Dermal route, LD50	: not applicable.
Inhalation, LC50, 4 hour(s), rat	: >= 21.9% v/v air.
Test Substance	: Data relative to R22 / R142b

Irritation

Rabbit, slightly irritant (skin).
 Test Substance Data relative to R22.
 Rabbit, slightly irritant (eyes).
 Test Substance Data relative to R22.

Sensitization

Guinea Pig, non sensitizing (skin).
 Test Substance Data relative to R22.

TOXICOLOGICAL INFORMATION (Cont)

Chronic toxicity

Inhalation, after single exposure, dog, cardiac sensitisation following adrenergic stimulation.
 Test Substance: Data relative to R22 / R142b.

Inhalation, after prolonged exposure, rat, no toxic effect.
 Test Substance: Data relative to R142b.

Inhalation, after prolonged exposure, rat, target organ: salivary glands, 5% v/v air, carcinogenic Effect.
 Test Substance: Data relative to R22.

Inhalation, after prolonged exposure, mouse, no carcinogenic effect.
 Test Substance: Data relative to R22

No carcinogenic, teratogenic effects.
 Test Substance: Data relative to R142b.

Inhalation, rat, Target organ: eyes, 5% v/v air, teratogenic effect
 Test Substance: Data relative to R22.

In vitro, ambiguous mutagenic effect.
 Test Substance: Data relative to R142b.

In vivo, no mutagenic effect.
 Test Substance: Data relative to R142b.

No mutagenic effect.
 Test Substance:
 Data relative to R22
 Data relative to R22 / R142b.

Comments

Not hazardous in normal conditions of handling and use

ECOLOGICAL INFORMATION

Acute Ecotoxicity

Fishes, peculiar reticulate, LC50, 96 hour(s), 220 mg/l

Test substance: Data relative to R142b

Crustaceans, daphnia magna, EC 50 48 hour(s), 160 mg/l

Test substance: Data relative to R142b

Chronic ecotoxicity

Result: no data

ECOLOGICAL INFORMATION (cont)

Mobility

Air, Henry's law constant (H) between 15 to 26 kPa.m³/mol

Result: considerable volatility.

Conditions: 20° C / calculated value.

Test Substance: Data relative to the mixture R22 / R142b

Water, evaporation, t (100%) = 3 day (s)

Conditions: 20° C/saturated solution

Test Substance: Data relative to R22

Water, evaporation, t 1/2 = 3 hour(s)

Conditions: calculated value from mathematical model/river

Test Substance: Data relative to R142b.

Soil / sediments, absorption, log KOC between 1.25 to 2

Conditions: calculated value.

Test Substance: Data relative to R22/R42b.

Abiotic degradation

Air, indirect photo-oxidation, t 1/2 between 10 to 15 year(s).

Conditions: sensitizer, OH radical.

Degradation's products: carbon dioxide/hydrochloric acid/hydrogen fluoride.

Test Substance: Data relative to the mixture R22/R142b

Air, photolysis, ODP between 0.055 to 0.065.

Result: limited effect on stratospheric ozone.

Reference value for CFC 11: ODP = 1.

Test Substance: Data relative to the mixture R22/R142b.

Air, greenhouse effect, GWP between 0.36 and 0.42.

Reference value for CFC 11: GWP = 1

Test Substance: Data relative to the mixture R22/R142b.

Water / soil, hydrolysis, t 1/2 between 25 to 40 year (s).

Result: non-significant hydrolysis.

Conditions: pH 8/25° C.

Test Substance: Data relative to R22

Water / soil, hydrolysis, t 1/2 > 10000 year(s).

Result: non-significant hydrolysis.

Conditions: calculated value

Test Substance: Data relative to R142b.

Biotic degradation

Aerobic, test: ready biodegradability/closed bottle, degradation = 0% 28 day (s).

Result: non-readily biodegradable.

Test Substance: Data relative to R22

ECOLOGICAL INFORMATION (cont)

Biotic degradation (cont)

Aerobic, test: ready biodegradability/modified STURM, degradation = 5% 28 day(s).

Result: non-readily biodegradable.

Test Substance: Data relative to R142b

Potential for bioaccumulation

Bioconcentration: log Po/w - 1.08.

Result: non-bioaccumulable.

Test Substance: Data relative to R22

Bioconcentration: Aquatic organisms, BCF = 42

Result: non-bioaccumulable.

Conditions: calculated value.

Test Substance: Data relative to R142b

Comments

Product is persistent in air (atmospheric lifetime: 14 years).

Product is not significantly hazardous for the aquatic environment as: considerable volatility no bioaccumulation

DISPOSAL CONSIDERATIONS

Waste treatment:

Comply with local and national regulations.

Contact A-Gas Australia for information regarding recycling.

Packaging treatment:

To avoid treatments, as far as possible, use dedicated containers.

TRANSPORTATION INFORMATION

UN Number	: 1078
Dangerous Goods Class & Subsidiary Risk	: 2.2 NON FLAMMABLE GAS
Hazchem Code	: 2RE
Poisons Schedule	: None allocated
Transport EPG Card	: 2C2 Emergency Guide