

ORAFON HCFC – 141b

REV_001-2011

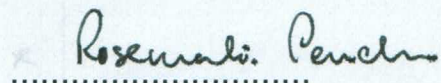
DATE_21022011

Product Name : ORAFON HCFC – 141b
Packaging Size : 250 kgs/drum, 20 kgs/pail (Repacked)

TEST ITEM	REPORTING UNITS	SPECIFICATION
Appearance	N.A.	Odorless, Colorless &Transparent
Purity	% by weight	99.8 % min.
Liquid Phase Contaminations: Water Content	ppm by weight	50 ppm max.
Evaporating Residue	% by volume	0.01 % max.
Acidity as in HCL	% by volume	0.0001% max.

Reference: GB/T 18827-2002

ORANOSS CO., LTD


.....

ORANOSS CO., LD

127/24 Panjathani Tower, 19th Fl. Non-si., Chong non-si, Yannawa, Bangkok 10120 Thailand. Tel : 0-2681-1466 Fax : 0-2681-1469



ORAFON HCFC-141b

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Refrigerant Gas (R141b)
Synonyms: HCFC-141b

Supplier: ORANOSS CO., LTD.
Address: 127/24 Panjathani Tower, 19th Floor, Non-si Rd., Chong non-si, Yannawa, Bangkok 10120 Thailand.

Emergency Phone: Tel : 0-2105-0499 Fax : 0-2105-0490 (Office Hours)

Chemical Name: 1, 1-dichloro-1-fluoroethane
Chemical Family: Hydrochlorofluorocarbons
Chemical Formula: CH₃CCl₂F

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Material Name</u>	<u>CAS No.</u>	<u>Typical Wt %</u>
1,1-dichloro-1-fluoroethane	1717-00-6	100

3. HAZARDS IDENTIFICATION

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on single exposure animal tests, this material is considered to be practically non-toxic if swallowed or inhaled, no more than slightly toxic if absorbed through skin, severely irritating to eyes and slightly irritating to non-irritating to skin. Prolonged or repeated contact removes oils from the skin and may dry skin causing irritation, redness and rash. High vapour concentration are irritating to the eyes and respiratory tract and may result in central nervous system (CNS) effects such as headache, dizziness, drowsiness and, in severe exposure, loss of consciousness and death. The dense vapour of this material may reduce the available oxygen for breathing. Prolonged exposure to an oxygen deficient atmosphere may be fatal. Inhalation may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats. Transient liver effects have been reported in workers overexposed to mixture of this material and another fluorocarbon. Medical conditions aggravated by exposure to this material include heart or liver disease or compromised heart or liver function.

ORANOSS CO.,LTD.

127/24 Panjathani Tower, 19th Floor, Non-si Rd., Chong Non-si, Yannawa, Bangkok 10120 Thailand
Tel : +66 (0) 2105 0499 (Auto) Fax : +66 (0) 2105 0490



ORAFON HCFC-141b

4. FIRST AID MEASURES

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, flush area with lukewarm water. Do not use hot water. Call a physician.

Inhalation: If inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: Not a probable route, however in case of accidental ingestion, call a physician.

Notes to Physicians: This material may make heart more susceptible to Arrhythmias. Catecholamines such as adrenaline and other compounds having similar effects should be reserved for emergencies and use only with special caution.

5. FIRE-FIGHTING MEASURES**Flammable Properties:**

Upper, Flammable Limits in Air (% by volume):	15.5
Lower, Flammable Limits in Air (% by volume):	7.4
Flash point:	Will not burn
Auto-ignition Temperature:	550°C (1022°F)

Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and colour of torch flames. 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 vapours from the work area before using any open flames.

Potential Combustibility:

R141b is not flammable at temperatures up to 100°C (212 °F) at atmospheric pressure. However, mixtures of R141b with high concentrations of air at elevated pressure can become combustible at ambient temperature. As the temperature of the mixture is increased, lower pressure (but still greater than atmospheric pressure) can create the same effect. Therefore, R141b should not be mixed with air under pressure for leak testing or other purposes. In general, R141b should not be used or allowed to exist with high concentrations of air above atmospheric pressure.

Unusual Fire and Explosion Hazards:

Containers may rupture under fire conditions. Decomposition may occur.

Extinguishing Media:

Use extinguishing media appropriate to surrounding fire conditions.

Fire Fighting Instructions:

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

**ORAFON HCFC-141b****6. ACCIDENTAL RELEASE MEASURES****Safeguards (Personnel):**

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 vapours might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) for large spills or releases.

7. HANDLING AND STORAGE**Handling (Personnel):**

Avoid breathing vapors. Avoid liquid contact with eyes and skin. Use sufficient ventilation to keep employee exposure below recommended limits. R141b should not be mixed with air for leak testing. In general it should not be allowed to for material to be present with high concentrations of air above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.

Storage: Keep in a clean, dry area. Do not heat above 52°C (125°F).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Engineering Controls:**

Avoid breathing vapours. Avoid contact with skin or eyes. Use with sufficient ventilation to keep employee exposure below recommended exposure limit. Local exhaust should be used if large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Personal Protective Equipment:

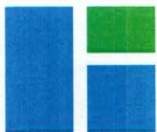
Impervious gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. Under normal manufacturing conditions, no respiratory protection is required when using this product. Self contained breathing apparatus (SCBA) is required if large release occurs.

Exposures Guidelines:

1, 1-dichloro-1-fluoroethane

WEEL/TWA

500 ppm



ORAFON HCFC-141b

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Appearance	Clear, Colourless liquid and vapour
Odor	Slightly ethereal
pH	Neutral
Boiling Point	32.05°C (89.6°F) @ 760mmHg
Freezing Point	-103.5°C (-154°F)
Vapour Pressure	11.4 psia @ 25°C (77°F), Saturated
Vapour Density	3.94 (Air=1)
Specific Gravity	1.24 @ 25°C (77°F) (H ₂ O=1)
Solubility in Water	Slight
Molecular Weight	116.95

10. STABILITY AND REACTIVITY

Chemical Stability:

This material is chemically stable under specific conditions, storage shipment and/or use. However avoid open flames and high temperatures.

Incompatibility with other materials:

In compatible with alkali or alkaline earth metals - powdered Al, Zn, Be, etc

Decomposition:

This material can be decomposed in high temperatures (open flames, glowing metal surfaces, etc) thus, forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides. These materials are toxic and irritating. Contact should be avoided.

Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Single exposure (acute) studies indicate:

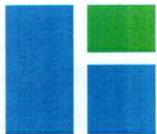
Oral - Practically Non-toxic to Rats (LD50 9,000 mg/kg)

Dermal - No More Than Slightly Toxic to Rabbits (LD50 > 2,000 mg/kg) Inhalation - Practically Non-Toxic to Rats (4hr LC50 32,000 ppm)

Eye Irritation - Severely Irritating to Rabbits

Skin Irritation - Non-Irritating to Slightly Irritating to Rabbits (4 hr occluded exposure)

No skin allergy was observed in guinea pigs following repeated skin application of a 50% solution of this material in propylene glycol. Acute inhalation of high concentration of this material (generally exceeding 5000 ppm) produces anesthetic-like effects, such as weakness, loss of coordination and unresponsiveness to sound in experimental animals. As with many other halogenated hydrocarbons, inhalation of high concentrations of this material (20,000 ppm),



ORAFON HCFC-141b

followed by intravenous injection of epinephrine to stimulate human stress re-action, resulted in heart sensitization. No adverse effects were reported in rats following inhalation Exposure to 10,000 ppm for 2 weeks. With longer-term inhalation (4-13 weeks) of 5,000 to 10,000 ppm, laboratory animals exhibited anesthetic-like effects, including lethargy, reductions in activity and responsiveness to sound, liver effects (10,000 ppm only), changes in heart, kidney and body weights, and increased urine fluoride levels. Based on a battery of functional tests and post-mortem examination of tissues, there was no evidence of any neurotoxic effect caused by inhalation exposure for 13 weeks at levels up to 5000 ppm. Lifetime (2 year) inhalation at levels of 300-5000 ppm resulted in an increased incidence of benign tumors of the liver, pancreas and testes in rats; no malignant tumors due to this material were reported. No birth defects were noted in rats and rabbits exposed to this material by inhalation during pregnancy, even at levels (5000 ppm in rabbits and 10,000 ppm in rats) which produced toxic effects in the mothers. Preliminary results from another study also show no birth defects in pregnant rabbits exposed to levels of 10,000 and 20,000 ppm during pregnancy. These concentrations produced toxic effects in the mothers and their offspring. Following inhalation exposure to this material at 30-100 ppm for 2 successive generations, reduced weight gains were observed in the adult rats exposed at the 100ppm level and in the offspring at the 30 ppm level. Decreased implantation counts at 1000 ppm and effects on the liver and on some clinical chemistry parameters were also reported. This material has produced no genetic changes in a variety of standard tests using animal, animals, and bacterial or yeast cells. A positive response was reported in one test using human white blood cells. Following inhalation exposure, this material is oxidatively metabolized with trifluoroacetic acid and fluorides occurring in the urine of rats.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

48-hr LC50 Daphnia magna (static):	17.3 - 22.8 mg/l, Slightly Toxic
48-hr EC50 Selenastrum capricornutum (biomass reduction):	67.8 mg/l, Slightly Toxic
48-hr EC50 Selenastrum capricornutum (growth rate reduction):	96.6 mg/l, Slightly Toxic
96-hr LC50 Rainbow trout (static):	65.4 mg/l, Slightly Toxic

Chemical Fate Information:

The 28-day biological oxygen demand (BOD) in a closed bottle test was 24%. This material has a chemical oxygen demand (COD) of 4%.

13. DISPOSABLE CONSIDERATIONS

Waste Disposal:

Comply with local regulations. Reclaim by distillation or remove to a permitted waste facility.

ORANOSS CO.,LTD.

127/24 Panjathani Tower, 19th Floor, Non-si Rd., Chong Non-si, Yannawa, Bangkok 10120 Thailand
Tel : +66 (0) 2105 0499 (Auto) Fax : +66 (0) 2105 0490



ORAFON HCFC-141b

14. TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO

Proper Shipping Name : Refrigerant Gas R141b (1, 1-dichloro-1-fluoroethane)

DOT Name : Not Applicable

IMO Class (Hazard Class) : Not Applicable

UN no. : Not Applicable

DOT/IMO Label : Not Applicable

15. REGULATORY INFORMATION

Hazard Categories under SARA Title III Rules (40CFR Part 370)

Acute : Yes

Chronic : No

Reactivity : No

Pressure : No

16. OTHER INFORMATION

The information in this Material Safety Data Sheet only concerns the above-mentioned product and does not relate to use with other product(s) or in any process. This information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user's own responsibility to ensure that the information is appropriate and correct for his special use of this product.

ORANOSS CO., LTD.

Rosemali. Pench

ORANOSS CO., LTD.

127/24 Panjathani Tower, 19th Floor, Non-si Rd., Chong Non-si, Yannawa, Bangkok 10120 Thailand
Tel : +66 (0) 2105 0499 (Auto) Fax : +66 (0) 2105 0490