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Material Safety Data Sheet

(REFRIGERANT R141B)

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R141B

PRODUCT AND COMPANY IDENTIFICATION

Material Identification

Corporate MSDS Number: YH000909 CAS Number: 1717-00-6
Product Name Ice Loong (R) 141b
Chemical Family Hydrochlorofluorocarbons
Chemical Formula CH₃CCl₂F
Chemical Name 1,1-dichloro-1-fluoroethane (HCFC-141b)
Product Use Foam blowing agent, solvent, aerosol

Company Identification

MANUFACTURER/DISTRIBUTOR: Zhejiang Yonghe Refrigerant Co., Ltd.
PHONE NUMBERS
Product Information: 86-570-8886807
Transport Emergency: 86-570-3832797
Medical Emergency: 86-570-3832776

COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name	CAS No.	Typical Wt. %
1,1-Dichloro-1-fluoroethane (HCFC-141b)	1717-00-6	100%

HAZARDS IDENTIFICATION

Emergency Overview

Clear, colorless liquid and vapor with faint ether odor.

WARNING!

VAPOR REDUCES OXYGEN AVAILABLE FOR BREATHING.

HARMFUL IF INHALED AND MAY CAUSE HEART IRREGULARITIES, UNCONSCIOUSNESS OR DEATH. NON-FLAMMABLE VOLATILE LIQUID WHICH MAY CAUSE EYE IRRITATION

OR DRYING OF THE SKIN. MAY DECOMPOSE ON CONTACT WITH FLAMES OR EXTREMELY HOT METAL SURFACES TO PRODUCE TOXIC AND CORROSIVE PRODUCTS.

Potential Health Effects

Skin contact and inhalation are expected to be the primary routes of occupational exposure to this material. Prolonged or repeated contact removes oils from the skin and may dry skin causing irritation, redness and rash. High vapor concentrations 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 vapor 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. Medical conditions aggravated by exposure to this material include heart disease or compromised heart function.

FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Get medical attention.

IF ON SKIN, flush the area with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if. Irritation develops and persists.

IF SWALLOWED, do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. Do not give adrenaline, epinephrine or similar drugs following exposure to this product.

FIRE FIGHTING MEASURES

Fire and Explosive Properties

Auto-Ignition Temperature	1022F/550C		
Flash Point	none	Flash Point Method	TCC
Flammable Limits-Upper	15.5		
Lower	7.4		

Extinguishing Media

Use water spray, water fog, carbon dioxide, or dry chemical.

Fire Fighting Instructions

Cool fire exposed containers well after the fire is out to prevent possible explosions. Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NOISH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products. Some mixtures of HCFCs and/or HFCs, and air or oxygen may be combustible if pressurized and exposed to extreme heat or flame. Container may explode if heated due to resulting pressure rise.

ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Use Halogen leak detector or other suitable means to locate leaks or check atmosphere. Keep upwind. Evacuate enclosed spaces and disperse gas with floor-level forced-air ventilation. Exhaust vapors outdoors. Do not smoke or operate internal combustion engines. Remove flames and heating elements.

HANDLING AND STORAGE

Handling

Do not get in eyes, on skin or clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Keep away from heat, sparks and flame. Emptied container retains vapor and product residues. Observe all labeled safeguards until container is destroyed. Do not reuse container. Do not cut or weld on or near this container.

Storage

Although this material is stable in long-term storage in carbon steel containers, it may gradually decompose in the presence of ferric chloride. The presence of excess levels of moisture, especially as a separate layer, should be avoided since it may lead to corrosion of carbon steel and formation of ferric chloride. It is recommended that containers be raised above floor or ground during extended storage periods to prevent container corrosion due to standing water. Prior to putting a storage system into service for this product. Or after maintenance, ensure that the system is dry and oxygen-free. Purging the system with dry nitrogen is recommended. In addition, containers previously exposed to hydrogen chloride (for example, from impurities in chlorinated blowing agents or solvents), should be thoroughly cleaned first.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Eye/Face Protection

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

Skin Protection

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear face shield and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing vapor or mist. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR §1910.134.

Airborne Exposure Guideline for Ingredients

Exposure Limit	Value
1,1-DiChloro-1-fluoroethane (HCFC-141b)	
WEEL TWA	500ppm,
- Only those components with exposure limits are printed in this section.	

PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Clear, colorless liquid and vapor with faint ether odor
pH	NA
Specific Gravity	1.25@50F/10 C
Vapor Pressure	10 psia @68F/20C
Vapor Density	4.0
Melting Point	NA
Freezing Point	-154F/-103.5C
Boiling Point	89.6F/32C
Solubility In Water	Slight
Percent Volatile	100

STABILITY AND REACTIVITY

Stability

This material is chemically stable under specified conditions or storage, shipment and/or use. See HANDLING AND STORAGE section of this MSDS for specified conditions.

Incompatibility

Avoid contact with hydrochloric acid, alkali or alkaline earth metals, finely powdered metals (aluminum, magnesium or zinc) and strong oxidizers, since they may react or accelerate decomposition.

Hazardous Decomposition Products

Thermal decomposition products include hydrogen fluoride, hydrogen chloride, carbon monoxide, carbon dioxide, chlorine and carbonyl halides. FOR ADDITIONAL IMPORTANT INFORMATION SEE SECTION 16.

TOXICOLOGICAL INFORMATION

Toxicological Information

No allergic skin response was observed in guinea pigs following repeated skin exposure to this material using the maximization procedure. Inhalation of high concentrations of this material (generally exceeding 10000ppm) produces a transient anesthetic effect in rodents. As with many other halogenated hydrocarbons, inhalation of this material, followed by intravenous injection of epinephrine to simulate human stress reactions, resulted in heart sensitization at levels above 5000-10000ppm in dogs and monkeys. Longer term inhalation studies of up to 13-weeks duration at concentrations of this material up to 20000ppm resulted in minor changes in body weight and slight changes in blood chemistry in rats. Repeated inhalation of this material vapors at levels up to 15000ppm for 16-weeks did not produce evidence of nervous system toxicity or behavioral effects in rats. Long-term inhalation (2-years) of high concentrations of this material (5000 and 20000ppm) caused an increase in the incidence of benign, not life-threatening tumors of the testes in rats. No exposure-related effects or tumors were observed at 1500 ppm in this study. No birth defects were noted in rats exposed to this material by inhalation during pregnancy at levels up to 12500 ppm; signs of maternal toxicity were

noted at 4200ppm or above. No birth defects were noted in rats exposed to this material by inhalation during pregnancy at levels up to 20000 ppm; toxic effects were noted in the mothers and their offspring. In a reproduction study, reductions in litter size, total litter weight and growth rate were observed in rats exposed by inhalation to 20000 ppm of this material for 2-generations. Delayed sexual maturity of male offspring from parents exposed to 8000 and 20000 ppm may have been related to the lower growth rate. This material has generally produced no genetic changes in standard tests using animals (in vivo tests) and animal or bacterial cells. Metabolism studies in rats exposed by inhalation show that this material is not metabolized or accumulated in the body to any significant extent. Single exposure (acute) studies indicate:

Oral-Practically Non-toxic to Rats (LD50>5.000mg/kg)
Dermal-No More Than Slightly Toxic to Rats (LD50>2,000mg/kg)
Inhalation – Practically Non-toxic to Rats (4-hr LC50 61,647ppm)
Eye Irritation-Non-irritating to Slightly Irritating to Rabbits
Skin Irritation- Non-irritating to Rabbits (4-hr and 24-hr exposures)

ECOLOGICAL INFORMATION

Ecotoxicological Information

48-hr EC50 Daphnia magna: 31.2 mg/l , Slightly Toxic
96-hr Zebra fish (static): 126mg/l, Practically Non-toxic

Chemical Fate Information

Based on its low n-octanol/water partition coefficient (log Pow 2.3), bioaccumulation of this material is considered unlikely.

DISPOSAL CONSIDERATIONS

Waste Disposal

Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

TRANSPORTATION INFORMATION

DOT Name	Refrigerants or Dispersants No1, Liquid or Gas
DOT Technical Name	
DOT Hazard Class	
UN Number	
DOT Packing Group	PG
RQ	
DOT Special Information	Not regulated when shipped by ground, water, or air.
Transportation	Seaworthy

REGULATORY INFORMATION

Hazard Categories under Criteria of SAVA Title III Rules (40 CFR Part 370)

Immediate (Acute) Health: Yes
Delayed (Chronic) Health: No
Sudden Release of Pressure: No

Fire: No
Reactivity: No

OTHER INFORMATION

Revision Information

Revision Data	19 JUN 2006	Revision Number 3
Supersedes Revision Dated	16-JUN-2006	

Revision Summary

Revised section 9.

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark

Miscellaneous

HCFC-141b may gradually decompose in the presence of ferric chloride. Decomposition products include hydrogen chloride which has a corrosive effect on steel, and vinylidene chloride and 1-chloro-1-fluoroethylene which can form carbonyl halides (including phosgene) in the presence of oxygen.

Use a high quality or inhibited HCFC-141b, avoid moisture, store in a clean container.

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End of MSDS