Material Safety Data Sheet

R141b

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SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	R141b
Product Use Description	:	Foam blowing agent, Solvent
Company	:	Zhejiang NOF Chemical Co.,Ltd. New Youth Mansion,Wucheng Area,Jinhua City,Zhejiang,China
For more information call	:	0086-15088239500 (Monday-Friday, 9:00am-5:00pm)
In case of emergency call	:	**Medical (PROSAR):0086-579-82025658**
	:	**Transportation (CHEMTREC): 0086-579-82025658**
	:	(24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Form	: liquid, clear
Color	: colorless
Odor	: very faint sweet slightly ether-like
Hazard Summary	: This product is not flammable at ambient temperatures and atmospheric pressure. May cause cardiac arrhythmia. Inhalation may cause central nervous system effects. May cause drowsiness and dizziness. Do not breathe vapour. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Avoid contact with skin, eyes and clothing. At higher temperatures, (>250°C), decomposition products may include hydrochloric acid (HCl), hydrofluoric acid (HF) and carbonyl halides. The ACGIH

Threshold Limit Values (2007) for Hydrogen Fluoride are TLV-TWA 0.5 ppm and Ceiling Exposure Limit 2 ppm.

Potential Health Effects

Skin : Irritating to skin.
Repeated exposure may cause skin dryness or cracking.

Eyes : Irritating to eyes.

Ingestion : Effects due to ingestion may include:
Gastrointestinal discomfort

Inhalation : Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating.
Inhalation may cause central nervous system effects.
Inhalation of high vapour concentrations can cause CNS-depression and narcosis.
Vapours may cause drowsiness and dizziness.
May cause cardiac arrhythmia.
Irritating to respiratory system.

Chronic Exposure : None known.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C2H3Cl2F

Chemical Name	CAS-No.	Concentration
1,1-dichloro-1-fluoroethane	1717-00-6	100 %

SECTION 4. FIRST AID MEASURES

Inhalation : Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Use oxygen as required, provided a qualified operator is present. Call a physician. Do not give drugs from adrenaline-ephedrine group.

Skin contact : After contact with skin, wash immediately with plenty of water. If symptoms persist, call a physician. Remove contaminated clothing immediately Wash contaminated clothing before re-use.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

Ingestion : Do not induce vomiting without medical advice. Call a physician immediately.

Notes to physician

Treatment : Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : The product is not flammable.
ASTM D-1310-67
ASTM D 56-82
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific hazards during firefighting : This product is not flammable at ambient temperatures and atmospheric pressure.
However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources.
Container may rupture on heating.

Cool closed containers exposed to fire with water spray.
Do not allow run-off from fire fighting to enter drains or water courses.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Exposure to decomposition products may be a hazard to health.
In case of fire hazardous decomposition products may be produced such as:
Hydrogen fluoride
Gaseous hydrogen chloride (HCl).
Carbon monoxide
Carbon dioxide (CO2)
Carbonyl halides

Special protective equipment for firefighters : In the event of fire and/or explosion do not breathe fumes.
Wear self-contained breathing apparatus and protective suit.
No unprotected exposed skin areas.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Wear personal protective equipment. Unprotected persons must be kept away.
Remove all sources of ignition.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Ensure adequate ventilation.

Environmental precautions : Should not be released into the environment.
Do not flush into surface water or sanitary sewer system.
Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g. by containment or oil barriers).

Methods for cleaning up : Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Handling : Handle with care.
Do not get in eyes, on skin, or on clothing.
Do not use in areas without adequate ventilation.
Perform filling operations only at stations with exhaust ventilation facilities.
Open drum carefully as content may be under pressure.
Do not breathe vapours or spray mist.

Advice on protection against fire and explosion : Can form a combustible mixture with air at pressures above atmospheric pressure.
Keep product and empty container away from heat and sources of ignition.

Storage

Requirements for storage areas and containers : Store away from incompatible substances.
Keep away from direct sunlight.
Storage rooms must be properly ventilated.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Store in original container.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.

Engineering measures : Use with local exhaust ventilation.
Perform filling operations only at stations with exhaust ventilation facilities.

Eye protection : Do not wear contact lenses.
Wear as appropriate:
Safety glasses with side-shields
If splashes are likely to occur, wear:

Goggles or face shield, giving complete protection to eyes

Hand protection : Impervious butyl rubber gloves
Gloves must be inspected prior to use.
Replace when worn.

Skin and body protection : Wear as appropriate:
Solvent-resistant gloves
Solvent-resistant apron and boots
If splashes are likely to occur, wear:
Protective suit

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.
Wear a positive-pressure supplied-air respirator.
For rescue and maintenance work in storage tanks use self-contained breathing apparatus.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Avoid contact with skin, eyes and clothing.
Ensure adequate ventilation, especially in confined areas.
Remove and wash contaminated clothing before re-use.
Contaminated work clothing should not be allowed out of the workplace.
Keep working clothes separately.
Wash hands before breaks and immediately after handling the product.

Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update
1,1-dichloro-1-fluoroethane	1717-00-6	TWA : time weighted average	2,370 mg/m3 (500 ppm)	2009
1,1-dichloro-1-fluoroethane	1717-00-6	TWA : Time Weighted Average (TWA):	(500 ppm)	1991

1,1-dichloro-1-fluoroethane	1717-00-6	STEL : Short term exposure limit	14,220 mg/m3 (3,000 ppm)	2010
	79-01-6	STEL : Short term exposure limit	(25 ppm)	2008
	79-01-6	TWA : time weighted average	(10 ppm)	2008
	79-01-6	REL : Recommended exposure limit (REL):	(25 ppm)	2005
	79-01-6	STEL : Short term exposure limit	1,080 mg/m3 (200 ppm)	1989
	79-01-6	TWA : time weighted average	270 mg/m3 (50 ppm)	1989
	79-01-6	MAX. CONC : Maximum concentration:	(300 ppm)	2006

	79-01-6	Ceiling : Ceiling Limit Value:	(200 ppm)	02 2006	OSHA/Z2:US. OSHA Table Z-2 (29 CFR 1910.1000)
	79-01-6	TWA : time weighted average	(100 ppm)	02 2006	OSHA/Z2:US. OSHA Table Z-2 (29 CFR 1910.1000)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid, clear
Color	: Colorless
Odor	: very faint sweet slightly ether-like
pH	: Note: neutral
Melting point/freezing point	: -103.5 °C
Boiling point/boiling range	: 32 °C
Flash point	: Note: not applicable
Evaporation rate	: > 1 Method: Compared to Ether (anhydrous).
Flammability	: not applicable
Lower explosion limit	: 7 %(V)
Upper explosion limit	: 17.7 %(V)

Vapor pressure	:	0.67983 kPa at 20 °C(68 °F)
Vapor density	:	4.1 Note: (Air = 1.0)
Density	:	1.24 g/cm3 at 21.1 °C
Water solubility	:	1.7 g/l
Partition coefficient: n-octanol/water	:	log Pow: 2.3 The product is more soluble in octanol.
Ignition temperature	:	550 °C
Autoignition temperature	:	550 °C
Decomposition temperature	:	> 250 °C
Molecular Weight	:	116.92 g/mol
Global warming potential (GWP)	:	600
Ozone depletion potential (ODP)	:	0.11

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Hazardous polymerisation does not occur.
Conditions to avoid	: Protect from heat/overheating. Keep away from direct sunlight. Heat, flames and sparks.

Incompatible materials to avoid	: Calcium Magnesium Aluminium Zinc Strong oxidizing agents Strong acids and strong bases Potassium Finely divided aluminium
Hazardous decomposition products	: In case of fire hazardous decomposition products may be produced such as: Carbon monoxide Carbon dioxide (CO_2) Carbonyl halides Gaseous hydrogen chloride (HCl). Gaseous hydrogen fluoride (HF).

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: LD50: > 5,000 mg/kg Species: rat
Acute inhalation toxicity	: LC50: 62000 ppm Exposure time: 4 h Species: rat
Acute dermal toxicity	: LD50: > 2,000 mg/kg Species: rabbit
Repeated dose toxicity	: Species: rat NOEL: 8000 ppm
Further information	: Note: Acute Health Hazard Cardiac sensitisation threshold (dog): 10000 ppm. May cause cardiac arrhythmia. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. May cause eye and skin

irritation. Chronic Health Hazard Not mutagenic in Ames Test.
In vivo tests did not show mutagenic effects

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to daphnia and other aquatic invertebrates	: EC50: 31.2 - 126 mg/l Exposure time: 48 h Species: Daphnia
Toxicity to algae	: IC50: > 44 mg/l Exposure time: 96 h Species: not specified

Further information on ecology

Additional ecological information	: May cause long-term adverse effects in the aquatic environment. Harmful to aquatic organisms. Warning: Contains Dichlorofluoroethane (HCFC-141b), a substance which harms public health and environment by destroying ozone in the upper atmosphere. Refer to sections 610 and 612 for list of acceptable and unacceptable uses for this product.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	: Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT Not dangerous goods

TDG Not dangerous goods

IATA Not dangerous goods

IMDG Not dangerous goods

SECTION 15. REGULATORY INFORMATION

Inventories

US. Toxic Substances Control Act	: On TSCA Inventory
Australia. Industrial Chemical (Notification and Assessment) Act	: On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	: All components of this product are on the Canadian DSL list.
Japan. Kashin-Hou Law List	: On the inventory, or in compliance with the inventory
Korea. Existing Chemicals Inventory (KECI)	: On the inventory, or in compliance with the inventory
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	: On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances	: On the inventory, or in compliance with the inventory
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	: On the inventory, or in compliance with the inventory

National regulatory information

Hazards : Acute Health Hazard

Chronic Health Hazard

WHMIS Classification : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

Global warming potential : 600

Ozone depletion potential (ODP) : 0.11

Spill or releases resulting in the loss of any ingredient at or about its RQ require immediate notification to the National Response Center and your local Emergence Planning Committee

SECTION 16. OTHER INFORMATION

	HMIS III	**NFPA**
Health hazard	: 1	2
Flammability	: 1	1
Physical Hazard	: 0	
Instability	:	0

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

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