BOC Limited
ABN 95 000 029 729
10 Julius Avenue
NORTH RYDE NSW 2113
Tel +61 131 262
Fax +61 1300 728 990

MATERIAL SAFETY DATA SHEET

Product Name **BOC R11**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	BOC LIMITED (AUSTRALIA)
Address	10 Julius Avenue, North Ryde NSW, 2113, AUSTRALIA
Telephone	+61 131 262, (02) 8874 4400
Fax	+61 132 427 (24 hours)
Emergency	1800 658 278 (A/H) (Australia only)
Synonyms	CFC11, FORANE 11 (FORMERLY), PRODUCT CODES: 161, 811, R11, TRICHLOROFLUOROMETHANE.
Uses	AIR CONDITIONING, REFRIGERATION SYSTEMS.

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO NOHSC CRITERIA
CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	Formula	Conc.	CAS No.
TRICHLOROFLUOROMETHANE (CFC-11)	C-F-3Cl	>99.9%	75-69-4

4. FIRST AID MEASURES

Eye Hold eyelids apart and flush continuously with water. Continue until advised to stop by the Poisons Information Centre, a doctor, or for at least 15 minutes. Keep patient calm.

Inhalation Remove from area of exposure immediately. If assisting a victim avoid becoming a casualty, wear an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. If victim is not breathing apply artificial respiration and seek urgent medical attention. Give oxygen if available. Keep warm and rested.

Skin Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30 C) for 15 minutes. Apply sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor. If swallowed, do not induce vomiting. Ingestion is considered unlikely due to product form.

Advice To Doctor Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammability Non flammable. May evolve toxic gases (eg: chlorides, fluorides, carbon oxides, hydrogen chloride/fluoride, phosgene) when heated to decomposition.

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5. FIRE FIGHTING MEASURES cont.

Fire and Explosion Non flammable. Temperatures in a fire may cause cylinders to rupture. Call fire brigade. Cool cylinders exposed to fire by applying water from a protected location. Do not approach cylinders suspected of being hot. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool.

Extinguishing Non flammable. Use water fog to cool containers from protected area.

Hazchem Code 2RE

6. ACCIDENTAL RELEASE MEASURES

Spillage GAS CYLINDERS: If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Inform manufacturer/supplier of leak. Wear appropriate PPE and carefully move it to a well ventilated remote area, then allow to discharge. Do not attempt to repair leaking valve or cylinder safety devices.

7. HANDLING AND STORAGE

Handling Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas (eg. if container is damaged).

Storage Do not store near incompatible materials. Cylinders should be stored below 45 C in a secure area and upright to prevented cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation Do not inhale vapours. Use in well ventilated areas. In poorly ventilated areas, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

Exposure Standards TRICHLOROFLUOROMETHANE (CFC-11) (75-69-4)
ES-TWA : 1000 ppm (5620 mg/m3) Peak
WES-TWA : 1000 ppm (5620 mg/m3)

PPE Wear safety glasses and leather gloves. Where an inhalation risk exists, wear an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Use nitrile gloves when moving, connecting and operating cylinders.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: CLEAR COLOURLESS LIQUID
Odour: SLIGHT ETHEREAL ODOUR
pH: NOT AVAILABLE
Vapour Pressure: 110 kPa @ 25 C
Vapour Density: 4.9 (Air = 1)
Boiling Point: 23.8 C
Melting Point: NOT AVAILABLE
Evaporation Rate: NOT AVAILABLE
Solubility (water): 0.145 cm3/cm3
Specific Gravity: NOT AVAILABLE
% Volatiles: NOT AVAILABLE
Flammability: NON FLAMMABLE
Flash Point: NOT RELEVANT
Upper Explosion Limit: NOT RELEVANT
Lower Explosion Limit: NOT RELEVANT
Autoignition Temperature: NOT AVAILABLE
Critical Temperature: 198 C
Critical Pressure: 4410 kPa

10. STABILITY AND REACTIVITY

Reactivity May react violently with sodium, potassium, barium and other alkali or alkaline earth metals and finely divided metals. Compounding ingredients in natural rubber can be extracted during rapid liquid withdrawal and will swell.

Decomposition Products May evolve toxic gases (eg: chlorides, fluorides, carbon oxides, hydrogen chloride/fluoride, phosgene) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Asphyxiant. Symptoms of exposure are directly related to displacement of oxygen from air. As the amount of oxygen inhaled is reduced from 21-14% volume, the pulse rate will accelerate and the rate and volume of breathing will increase. The ability to maintain attention and think clearly is diminished, muscular co-ordination is somewhat disturbed. As oxygen decreases from 14-10% volume, judgement becomes faulty, severe injuries may cause no pain. Muscular effort lead to rapid fatigue. Further reduction to 6% may cause nausea and vomiting. Ability to move may be lost. Permanent brain damage may result even after resuscitation from exposure to this low level of oxygen. Below 6% breathing is in gasps and convulsions may occur. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death will follow in minutes.

Eye Irritating vapour. Low temperature evaporating liquid can cause cold burns.

Inhalation Asphyxiant. Effects are proportional to oxygen displacement.

Skin Irritant. Low temperature evaporating liquid can cause cold burns.

Ingestion Due to product form, ingestion is considered highly unlikely.

Toxicity Data TRICHLOROFLUOROMETHANE (CFC-11) (75-69-4)
LC50 (Inhalation) : 10 pph/30M (mouse)

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12. ECOLOGICAL INFORMATION

Environment OZONE DEPLETING SUBSTANCE. Chloroflurocarbons (CFCs) diffuse slowly into the stratosphere where they will be destroyed by photolysis, resulting in the release of chlorine and fluorine atoms in the stratosphere. Release of CFCs into the environment should therefore be minimised and where possible, recycling of CFCs is recommended.

13. DISPOSAL CONSIDERATIONS

Waste Disposal OZONE DEPLETING SUBSTANCE. Do not send to landfill. Do not puncture or incinerate aerosol cans. Contact your state EPA or the manufacturer for additional information. Prevent contamination of drains and waterways as environmental damage may result. If container is damaged, notify the manufacturer that you will be returning a faulty cylinder. Residual product will be disposed of when the cylinder is returned.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

Transport Refer to Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport. Keep locked up and out of reach of children.

UN Number 1078
Shipping Name REFRIGERANT GAS, N.O.S.
DG Class 2.2
Subsidiary Risk(s) None Allocated
Packing Group None Allocated
Hazchem Code 2RE

15. REGULATORY INFORMATION

AICS All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

Poison Schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

16. OTHER INFORMATION

Additional Information Application method: Transferred as a liquid in and out of refrigeration equipment by controlled pressure decanting through flexible pipework.

ABBREVIATIONS:
mg/m3 - Milligrams per cubic metre
ppm - Parts Per Million
TWA/ES - Time Weighted Average or Exposure Standard.
CNS - Central Nervous System
NOS - Not Otherwise Specified
pH - relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline.

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16. OTHER INFORMATION cont.

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.
M - moles per litre, a unit of concentration.
IARC - International Agency for Research on Cancer.
PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this Chem Alert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.
COLOUR RATING SYSTEM: Chem Alert reports are assigned a colour rating of Green, Amber or Red for the purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

Report Reviewed 1st January 2006

Date Printed 20th July 2006

Report Status Chem Alert reports are compiled as an independent source of information by RMT's scientific department. The information is based on the latest chemical and toxicological research, and in compliance with relevant standards, guidance notes and legislation (where applicable). The Chem Alert report is not intended as a replacement to the manufacturer's original MSDS that is provided to Chem Alert subscribers for convenience. In many instances, Chem Alert reports are compiled on behalf of manufacturers, in which case they serve as the "Manufacturer's MSDS" and are clearly identified as such on the relevant reports.

Prepared By Risk Management Technologies
5 Ventnor Avenue, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Web: www.rmt.com.au

Colour Rating AMBER