

1. IDENTIFICATION

Product Name	4-chlorobenzotrifluoride
Other Names	4-chloro-a,a,a-trifluorotoluene; PCBTF; P-chlorobenzotrifluoride
Uses	Solvent for coatings.
Chemical Family	No Data Available
Chemical Formula	C7H4ClF3
Chemical Name	Benzene, 1-chloro-4-(trifluoromethyl)-
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.


Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Not Scheduled

Globally Harmonised System

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
Hazard Categories	Flammable Liquids - Category 3 Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 2A Sensitisation (Skin) - Category 1 Specific Target Organ Toxicity (Single Exposure) - Category 3 Acute Hazard To The Aquatic Environment - Category 2 Long-term Hazard To The Aquatic Environment - Category 2	
Pictograms		
Signal Word	Warning	
Hazard Statements	H226	Flammable liquid and vapour.
	H315	Causes skin irritation.
	H317	May cause an allergic skin reaction.
	H319	Causes serious eye irritation.
	H335	May cause respiratory irritation.
	H411	Toxic to aquatic life with long lasting effects.
Precautionary Statements	Prevention	P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking. P261 Avoid breathing mist/vapours/spray. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof electrical/ventilating/lighting and all other equipment. P242 Use non-sparking tools. P243 Take action to prevent static discharges. P235 Keep cool. P271 Use only outdoors or in a well-ventilated area. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear protective gloves/protective clothing/eye protection/face protection. P273 Avoid release to the environment.
	Response	P370 + P378 In case of fire: Use carbon dioxide (CO2), dry chemical, regular foam extinguishing agent or water spray for extinction. P337 + P313 If eye irritation persists: Get medical advice. P312 Call a POISON CENTER or doctor if you feel unwell. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P363 Wash contaminated clothing before reuse. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P304 + P340 IF INHALED: Remove victim to fresh air and keep comfortable for breathing. P333 + P313 If skin irritation or rash occurs: Get medical advice. P391 Collect spillage.
	Storage	P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

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	P405	Store locked up.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
4-chlorobenzotrifluoride	C7H4ClF3	98-56-6	>=99 - 100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink plenty of water. Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. Call a Poison Centre or doctor/physician for advice. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention; Consult an ophthalmologist.
Skin	IF ON SKIN (or hair): Remove contaminated clothing and shoes immediately. Flush skin and hair with running water for at least 15 minutes. In case of gross contamination, drench contaminated clothing and skin with plenty of water before removing clothes. If skin irritation occurs, get medical advice/attention.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Centre or doctor/physician for advice. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.
Advice to Doctor	Keep victim calm and warm. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. Show this safety data sheet (SDS) to the doctor in attendance. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Medical Conditions Aggravated by Exposure	May cause an allergic skin reaction.

5. FIRE FIGHTING MEASURES

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General Measures	If safe to do so, move undamaged containers from fire area. Cool container with flooding quantities of water until well after fire is out. Avoid getting water inside containers.
Flammability Conditions	FLAMMABLE LIQUID & VAPOUR: Will be easily ignited by heat, sparks or flame.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), alcohol-resistant foam or water spray for extinction - Do not use water jets. *Low flash point: Use of water spray when fighting fire may be inefficient.
Fire and Explosion Hazard	Risk of violent reaction or explosion! Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Most vapours are heavier than air and will collect in low or confined areas. Containers may explode when heated. Vapor explosion hazard indoors, outdoors or in sewers.
Hazardous Products of Combustion	Fire will produce irritating, toxic and/or corrosive gases, including Hydrogen chloride, Hydrogen fluoride, Carbon monoxide and Carbon dioxide.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways; Vapours from runoff may create an explosion hazard.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	43 °C [Closed cup]
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	600 °C
Hazchem Code	2Y

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources; All equipment used when handling the product must be earthed. Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect material and place it in suitable containers for disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Dike far ahead of large spill for later disposal. *Beware of vapours accumulating to form explosive concentrations! Vapour-suppressing foam may be used to control vapours. Water spray may reduce vapour, but may not prevent ignition in closed spaces.
Decontamination	Clean contaminated surface thoroughly.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground.
Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated area. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing mist/vapours/spray and contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). FLAMMABLE LIQUID & VAPOUR: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Take precautionary measures against static discharge. Ground/bond container and receiving equipment. Use explosion-proof equipment and non-sparking tools.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Keep away from incompatible materials (see SECTION 10). Store locked up.

Container	Keep in the original container. *Empty containers retain product residue (liquid and/or vapour) and can be hazardous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, sparks or open flames.
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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or vapour/aerosol formation. Recommended: Where risk assessment shows air-purifying respirators are appropriate, use a full-face respirator with multi-purpose combination or type ABEK respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Use safety glasses with side shields or safety goggles. Use equipment for eye protection tested and approved under appropriate government standards. - Hand protection: Wear protective gloves. Recommended: Wear appropriate chemical-resistant gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Flame retardant antistatic protective clothing. Choose body protection according to the amount and concentration of the hazardous substance(s) at the work place.
Special Hazards Precautions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of workday. Remove contaminated clothing and shoes immediately and wash before reuse. Contaminated work clothing should not be allowed out of the workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear liquid
Odour	Aromatic, fish-like
Colour	Colourless
pH	No Data Available
Vapour Pressure	10.47 hPa (@ 25 °C)
Relative Vapour Density	6.24 Air = 1
Boiling Point	136 - 138 °C
Melting Point	-36 °C
Freezing Point	No Data Available
Solubility	Slightly soluble in water - Soluble in some organic solvents
Specific Gravity	1.34
Flash Point	43 °C [Closed cup]
Auto Ignition Temp	600 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available

Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	180.55 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	log P(o/w): 3.7
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	Risk of violent reaction or explosion!
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	Low flash point: Use of water spray when fighting fire may be inefficient.
Properties That May Initiate or Contribute to Fire Intensity	FLAMMABLE LIQUID & VAPOUR: Will be easily ignited by heat, sparks or flame.
Reactions That Release Gases or Vapours	Fire/decomposition will produce irritating, toxic and/or corrosive gases, including Hydrogen chloride, Hydrogen fluoride, Carbon monoxide and Carbon dioxide.
Release of Invisible Flammable Vapours and Gases	Vapours may form explosive mixtures with air.

10. STABILITY AND REACTIVITY

General Information	Can evolve hydrogen fluoride on contact with water.
Chemical Stability	Product is stable under normal storage conditions.
Conditions to Avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Take action to prevent static discharges. Avoid contact with water/moisture.
Materials to Avoid	Incompatible/reactive with strong oxidising agents, strong bases, water.
Hazardous Decomposition Products	Fire/decomposition will produce irritating, toxic and/or corrosive gases, including Hydrogen chloride, Hydrogen fluoride, Carbon monoxide and Carbon dioxide.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none"> - Acute toxicity: Not classified. PCBTF shows no toxic effects after oral, inhalation and dermal short-term exposure. - Skin corrosion/irritation: Causes skin irritation. - Eye damage/irritation: Causes serious eye irritation. - Respiratory/skin sensitisation: May cause an allergic skin reaction. - Germ cell mutagenicity: Not classified. No adverse effect observed (negative). - Carcinogenicity: Not classified.
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- Reproductive toxicity: Not classified.
- STOT (single exposure): May cause respiratory irritation.
- STOT (repeated exposure): Not classified.
- Aspiration toxicity: Not classified.

Acute

Other	Acute toxicity (Dermal): - LD50, Rabbit: >3,300 mg/kg bw.
Inhalation	Acute toxicity (Inhalation): - LC50, Rat: >32.03 mg/l (4 h)
Ingestion	Acute toxicity (Oral): - LD50, Rat: 5,546 mg/kg
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (Danio rerio): 3 mg/l (96 h) [semi-static test; OECD Test Guideline 203]. - EC50, Crustacea (Daphnia magna): 2 mg/l (48 h) [OECD Test Guideline 202]. - NOEC, Algae (Pseudokirchneriella subcapitata): 0.41 mg/l (72 h) [OECD Test Guideline 201].
Persistence/Degradability	Product is not readily biodegradable [OECD Test Guideline 301D].
Mobility	No information available.
Environmental Fate	Toxic to aquatic life with long lasting effects. Avoid release to the environment.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations. Contact a qualified professional waste disposal service to dispose of this material.
Special Precautions for Land Fill	Do not mix with other wastes. Handle contaminated packages in the same way as the substance itself.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code	
Proper Shipping Name	CHLOROBENZOTRIFLUORIDES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	19 Liquids - Flammable , Toxic And/Or Corrosive
UN Number	2234
Hazchem	2Y
Pack Group	III
Special Provision	No Data Available

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	CHLOROBENZOTRIFLUORIDES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	19 Liquids - Flammable , Toxic And/Or Corrosive
UN Number	2234
Hazchem	2Y
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	CHLOROBENZOTRIFLUORIDES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	19 Liquids - Flammable , Toxic And/Or Corrosive
UN Number	2234
Hazchem	2Y
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	CHLOROBENZOTRIFLUORIDES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
ERG	130 Flammable Liquids (Non-Polar / Water-Immiscible / Noxious)
UN Number	2234
Hazchem	2Y
Pack Group	III
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	CHLOROBENZOTRIFLUORIDES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	2234
Hazchem	2Y
Pack Group	III
Special Provision	No Data Available
EMS	F-E, S-D
Marine Pollutant	Yes

Air Transport

IATA DGR

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Proper Shipping Name	CHLOROBENZOTRIFLUORIDES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	2234
Hazchem	2Y
Pack Group	III
Special Provision	No Data Available

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002650 - Solvents (Flammable) Group Standard 2020
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National/Regional Inventories

Australia (AIIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	202-681-1
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined

Taiwan (NCSR) Not Determined

USA (TSCA) Not Determined

16. OTHER INFORMATION

Related Product Codes	PACHBE1000, PACHBE1001, PACHBE2000, PACHBE2001, PACHBE2200, PACHBE2300, PACHBE2301, PACHBE2310, PACHBE2311, PACHBE2320, PACHBE2333, PACHBE2500, PACHBE3000, PACHBE3010, PACHBE3020, PACHBE3021, PACHBE3030, PACHBE3031, PACHBE4000, PACHBE4001, PACHBE5000, PACHBE5001, PACHBE6000, PACHBE6005, PACHBE9900, PACHBE9905, PACHBE9906
Revision	4
Revision Date	08 Apr 2022
Key/Legend	<p>< Less Than > Greater Than</p> <p>AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (°C) Degrees Celcius EPA (New Zealand) Environmental Protection Authority of New Zealand deg F (°F) Degrees Fahrenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury inH₂O Inch of Water K Kelvin kg Kilogram kg/m³ Kilograms per Cubic Metre lb Pound LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. ltr or L Litre m³ Cubic Metre mbar Millibar mg Milligram mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram mg/m³ Milligrams per Cubic Metre Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present. mm Millimetre mmH₂O Millimetres of Water mPa.s Millipascals per Second N/A Not Applicable NIOSH National Institute for Occupational Safety and Health NOHSC National Occupational Health and Safety Commission OECD Organisation for Economic Co-operation and Development Oz Ounce PEL Permissible Exposure Limit Pa Pascal ppb Parts per Billion ppm Parts per Million</p>

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ppm/2h Parts per Million per 2 Hours

ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

R Rankine

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight