Infosafe No™	1CHKG	Issue Date : January 2016	RE-ISSUED by CHEMSUPP

Product Name : **CHLOROBENZENE**

Classified as hazardous

1. Identification

GHS Product Identifier CHLOROBENZENE

Company Name CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)

Address 38 - 50 Bedford Street GILLMAN
SA 5013 Australia

Telephone/Fax Number Tel: (08) 8440-2000
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Recommended use of the chemical and restrictions on use Synthesis of organochlorine pesticides, including DDT, as well as phenol, chloronitrobenzene, aniline, picric acid and dyes. It is now used primarily as a degreasing solvent, paint solvent, solvent carrier for methylene diisocyanate, as a chemical intermediate in the synthesis of nitrochlorobenzenes, in the dry cleaning industry, in the manufacture of resins, dyes, perfumes and pesticides, heat transfer medium and laboratory reagent.

Other Names

Name	Product Code
Mono Chlorobenzene AR	CA127
CHLOROBENZENE Technical grade	CT127
Monochlorobenzene, Benzene Chloride	
CHLOROBENZENE LR	CL127

Other Information EMERGENCY CONTACT NUMBER: +61 08 8440 2000
Business hours: 8:30am to 5:00pm, Monday to Friday.

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture
Hazardous to the Aquatic Environment - Long-Term Hazard: Category 2
Flammable Liquids: Category 3
Acute Toxicity - Inhalation: Category 4
Specific target organ toxicity - Single Exposure Category 3
Skin Corrosion/Irritation: Category 2

Signal Word (s) WARNING

Hazard Statement (s)
H226 Flammable liquid and vapour.
H315 Causes skin irritation.
H332 Harmful if inhaled.
H336 May cause drowsiness or dizziness.
H411 Toxic to aquatic life with long lasting effects.

Pictogram (s) Flame, Corrosion, Exclamation mark

Precautionary statement – Prevention
P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/.../equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.

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Precautionary statement – Response	P280 Wear protective gloves/protective clothing/eye protection/face protection. P273 Avoid release to the environment. Skin P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P332+P313 If skin irritation occurs: Get medical advice/attention. P362 Take off contaminated clothing and wash before reuse. Inhaled P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312 Call a POISON CENTER or doctor/physician if you feel unwell. Fire P370+P378 In case of fire: Use foam, dry chemical, carbon dioxide or water spray for extinction.
Precautionary statement – Storage	P403+P235 Store in a well-ventilated place. Keep cool.
Precautionary statement – Disposal	P501 Dispose of contents/container to an approved waste disposal plant.
Other Information	Persons with pre-existing skin, eye or central nervous system disorders, or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this substance.

3. Composition/information on ingredients

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Chlorobenzene	108-90-7	100 %

4. First-aid measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately, avoid becoming a casualty. Make patient comfortable, keep warm and at rest until fully recovered. If breathing is difficult (or develops a bluish skin discolouration), supply oxygen by a qualified person. Apply artificial respiration with a respiratory medical device if not breathing. Do not use mouth to mouth resuscitation. Seek medical attention if effects persist.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
Skin	Wash affected areas with copious quantities of water and soap. Remove contaminated clothing and wash before re-use. Seek medical attention if irritation develops or persists.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical attention.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products	May liberate toxic fumes in fire including carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition.
Specific Methods	Small fire: Use foam, dry chemical, CO2 or water spray. Large fire: Use foam, fog or water spray - Do not use water jets. If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after the fire is out. Avoid getting water inside containers.
Specific hazards arising from the chemical	HIGHLY FLAMMABLE: Has a low flashpoint - Will be easily ignited by heat, sparks or flame. Vapours will form explosive mixtures Containers may explode when heated. Fire will produce irritating, poisonous and/or corrosive gases. Vapours from runoff may create explosion hazard.
Hazchem Code	2Y
Precautions in connection with Fire	Wear SCBA and fully-encapsulating, gas-tight suit when handling these substances. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Spills & Disposal	ELIMINATE all ignition sources (no smoking, flares, sparks or flames) within at least 25m - All equipment

	used when handling the product must be earthed. Do not touch or walk through spilled material. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours - Water spray may be used to knock down or divert vapour clouds. Absorb with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material and place it into loosely-covered metal or plastic containers for later disposal. SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.
Personal Precautions	Evacuate the area of all non-essential personnel. Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Environmental Precautions	Prevent from entering into drains, ditches, rivers or the sea.

7. Handling and storage

Precautions for Safe Handling	Do not breathe vapour. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Contaminated clothing should be removed and washed before reuse. Application of skin-protective barrier cream is recommended. Wash hands and face thoroughly after working with material.
Conditions for safe storage, including any incompatabilities	Keep container tightly closed and dry, away from direct sunlight. Store at room temperature (15 - 25 °C). Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Store away from oxidizing agents. Areas where a build up of flammable vapours may occur must be designated no smoking areas. Containers should be bonded and grounded for transfers to avoid static sparks. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid).
Storage Regulations	Refer Australian Standard AS/NZS 2243.10:2004 'Safety in laboratories - Storage of chemicals'. Refer Australian Standard AS 1940-2004 'The storage and handling of flammable and combustible liquids'.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Chlorobenzene			46	10	

Other Exposure Information	A time weighted average (TWA) has been established for Chlorobenzene [108-90-7] (Safe Work Australia) of 46 mg/m³, (10 ppm). The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.
Appropriate engineering controls	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. 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. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Flame retardant protective clothing. Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection

	Against Hazardous Chemicals. Polyethylene; polyurethane and Viton offer the best chemical resistance.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Liquid
Appearance	Clear, colourless, volatile, mobile liquid.
Odour	Almond-like or benzene-like odour.
Melting Point	-45 °C
Boiling Point	132 °C
Solubility in Water	Immiscible or insoluble.
Solubility in Organic Solvents	Very soluble in carbon disulfide and benzene. Soluble in alcohol, ether, chloroform, carbon tetrachloride.
Specific Gravity	1.11
Vapour Pressure	12 hPa (@ 20 °C).
Vapour Density (Air=1)	3.88
Evaporation Rate	1.07 (BuAc=1)
Coefficient Water/Oil Distr.	Log P(o/w): 2.84.
Odour Threshold	~ 0.21 ppm (0.98 mg/m³). 5.9 mg/m³ (detection) WARNING PROPERTY - chlorobenzene is perceptible below TWA level.
Flash Point	28 °C (OC)
Flammability	Flammable.
Auto-Ignition Temperature	590 °C
Flammable Limits - Lower	1.3%
Flammable Limits - Upper	11%
Molecular Weight	112.56

10. Stability and reactivity

Chemical Stability	Stable under ordinary conditions of use and storage.
Conditions to Avoid	Heat, flames and sparks.
Incompatible Materials	Strong oxidizing materials (e.g. silver perchlorate) (increases risk of fire and explosion), alkali metals, alkaline earth metals. Dimethyl sulfoxide decomposes violently on contact with chlorobenzene. Liquid chlorobenzene will attack some forms of plastics, rubber, and coatings.
Hazardous Decomposition Products	May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Toxicology Information	No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. If mishandled or overexposed to this product the following symptonm or effects may occur.
Acute Toxicity - Oral	LD50 (rat): 1100mg/kg.
Acute Toxicity - Inhalation	LD50 (rat): 13.9mg/l/6h.
Ingestion	Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Toxic! May cause systemic poisoning with symptoms paralleling those of inhalation. Has caused severe

	liver damage. Has caused methemoglobinemia after ingestion. The earliest symptoms of this are headache and a bluish coloration of the lips and skin (cyanosis). Other symptoms include headache, shortness of breath, nausea, vomiting, dizziness, weakness, drowsiness and irregular heartbeat. Onset of symptoms may be delayed 2 to 4 hours after exposure. Symptoms usually disappear within 24 hours after exposure stops. Chlorobenzene may be aspirated, based on its physical properties. Severe lung irritation, damage to the lung tissues and death may result.
Inhalation	Chlorobenzene very easily forms vapour concentrations at room temperature posing a significant inhalation hazard, especially in poorly ventilated areas and confined spaces. The main effect is depression of the central nervous system (CNS) (lowered perception), with symptoms such as headache, nausea, dizziness, drowsiness, confusion, incoordination and unconsciousness. High concentrations may cause loss of consciousness and possibly death. Irritation of the nose, throat and respiratory tract also occurs, with symptoms such as coughing, dyspnoea and sore throat. In general, dose-effect information is not available.
Skin	Causes irritation to skin. Symptoms include redness, itching, and pain. May be slowly absorbed through the skin with possible systemic effects, but is not expected to cause significant harmful effects by this route of exposure. Danger of skin absorption. Degrasing effect on the skin, possibly followed by secondary inflammation.
Eye	Vapors cause eye irritation. Splashes cause severe irritation, possible corneal burns and eye damage.
Carcinogenicity	Not listed in the IARC Monographs. Has been found to cause cancer in laboratory animals.
Chronic Effects	Prolonged or repeated skin exposure may cause dermatitis or skin burns. Prolonged or repeated exposure may cause liver, kidney, or lung damage.
Mutagenicity	No evidence of mutagenic properties.

12. Ecological information

Ecotoxicity	Toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment.
Persistence and degradability	Biodegradation: 15%/28d. Biological degradability: poor.
Mobility	Distribution: log P(o/w): 2.84. Will evaporate from all surfaces easily. Water soluble hence may spread in water systems and soil.
Bioaccumulative Potential	No bioaccumulation is to be expected (log P(o/w) <1.0).
Information on Ecological Effects	Environmental Fate: When released into the soil, this material may evaporate to a moderate extent. When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life of less than 1 day. When released into water, this material is not expected to biodegrade. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days. Environmental Toxicity: The LC50/96-hour values for fish are between 10 and 100 mg/l. This material is expected to be slightly toxic to aquatic life.
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	LC100 (Leuciscus idus): 0.03 - 28mg/l - 48hrs: LC50 (Lepomis macrochirus): 4.5 - 7.4 mg/l - 766hrs.
Acute Toxicity - Daphnia	EC50 (Daphnia magna): 0.59 mg/l 48h. LC50 (Daphnia magna): 10.7 mg/l 48h.
Acute Toxicity - Algae	IC50 (Selenastrum capricornutum): 12.5 mg/l/96h; EC50 (green algae - Pseudokirchneriella subcapitata): 12.5 mg/l/96 h.
Other Information	BOD5: 0.03 g/g; COD: 0.41 g/g; THOD: 2.06 g/g.

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.
Waste Disposal	Burn in a chemical incinerator with an afterburner and scrubber.

14. Transport information

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Transport Information	Dangerous goods of Class 3 (Flammable Liquid) are incompatible in a placard load with any of the following: Class 1, Class 2.1, if both the Class 3 and Class 2.1 dangerous goods are in bulk, Class 2.3, Class 4.2, Class 5, Class 6, if the Class 3 dangerous goods are nitromethane, Class 7.
U.N. Number	1134
UN proper shipping name	CHLOROBENZENE
Transport hazard class(es)	3
Hazchem Code	2Y
Packaging Method	3.8.3RT1
Packing Group	III
EPG Number	3A1
IERG Number	17
IMDG Marine pollutant	Yes

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	Not Scheduled

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons No. 15', Commonwealth of Australia, November 2016. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'. Safe Work Australia, 'Hazardous Substances Information System, 2005'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Chem-Supply accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.
Empirical Formula & Structural Formula	Molecular formula: C6-H5-Cl Structural formula: C6H5-Cl Chemical family: Halogenated aromatic hydrocarbon ...End Of MSDS...