

MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT INFORMATION

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| Product Identifier: | chlorobutanol |
| Product Use: | For research purposes. Not for use in-vivo. |
| Supplier: | Synharise Chemical Inc. |
| Emergency Contact: | 3E Company |
| Emergency Telephone: | 1-(800)360-3220 |

SECTION 2 — HAZARDOUS INGREDIENTS

| Hazardous Ingredients | % | CAS Number | LD50 of Ingredient | LC50 of Ingredient |
|--|------|------------|---------------------|---|
| Chlorobutanol, 1,1,1-Trichloro-2-methyl-2-propanol | ≥98% | 57-15-8 | oral, rat: 510mg/Kg | fish (Pimephales promelas): 135mg/L, 96Hr |

SECTION 3 — PHYSICAL DATA

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| Physical State : | Solid |
| Odour & Appearance : | Off-white crystalline powder |
| Molecular Weight: | 177.457 g/mol |
| Molecular Formula: | C4H7Cl3O |
| Odour Threshold (ppm): | N/A |
| Specific Gravity: | N/A |
| Vapour Density (air = 1) : | N/A |
| Vapour Pressure (mmHg) : | N/A |
| Evaporation Rate: | N/A |
| Boiling Point (°C) : | N/A |
| Freezing Point (°C): | N/A |
| pH Coefficient of Water/Oil Distribution: | N/A |

SECTION 4 — FIRE AND EXPLOSION DATA

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| Means of Extinction: | water spray, carbon dioxide, dry chemical powder or foam |
| Flashpoint (°C) and Method : | N/A |
| Upper Flammable Limit (% by volume) : | N/A |
| Lower Flammable Limit (% by volume): | N/A |
| Autoignition Temperature (°C): | N/A |
| Explosion Data — Sensitivity to Impact: | No |
| Explosion Data — Sensitivity to Static Discharge: | No |
| Hazardous Combustion Products: | Thermal decomposition may produce toxic gases such as carbon monoxide, carbon dioxide, and nitrogen oxides. |

SECTION 5 — REACTIVITY DATA

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| Chemically Stable | Yes |
| Incompatibility: | Strong Oxidizers |
| Thermal Decomposition/Conditions to be avoided: | Protect from light and heat. |
| Hazardous Decomposition Products: | Thermal decomposition may produce toxic gases such as carbon monoxide, carbon dioxide, and nitrogen oxides. |

SECTION 6 — TOXICOLOGICAL PROPERTIES

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| Acute Exposure: | May be harmful by inhalation, ingestion or eye and/or skin absorption. |
| Chronic Exposure: | not available |
| Exposure Limits: (value, source, date) | not available |
| Irritancy: | May cause irritation to eye, mucous membranes, upper respiratory system, and/or skin. |
| Sensitization: | not available |
| Carcinogenicity: | not available |
| Reproductive Toxicity: | not available |
| Teratogenicity: | not available |

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| Mutagenicity : | not available |
| Synergistic Products: | not available |

SECTION 7 — PREVENTIVE MEASURES

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| Personal Protective Equipment: | Particulate respirators, chemical resistant gloves, chemical safety glasses/goggles, lab coat |
| Handling: | Avoid inhalation and contact with skin, eyes and clothing. |
| Leak and Spill Procedure: | Use appropriate tools to put the spilled solid in a convenient waste disposal container. Wipe contaminated surface. |
| Waste Disposal: | Dispose of according to local and regional authority requirements. |
| Engineering Controls: | If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. |
| Storage Requirements: | Tightly sealed in a cool, dry place. |
| Special Shipping Information: | N/A |
| PIN/UN#: | not available |

SECTION 8 — FIRST AID MEASURES

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| Inhalation: | If inhaled, remove to fresh air; if breathing is difficult, give oxygen; if breathing stops, give artificial respiration. |
| Ingestion: | If swallowed, wash out mouth with copious amounts of water; call a physician |
| Skin Contact: | Flush with copious amounts of water; remove contaminated clothing and shoes; call a physician. |
| Eye Contact: | check for and remove contact lenses and flush with copious amounts of water; assure adequate flushing by separating the eyelids with fingers; call a physician |

SECTION 9 — PREPARATION INFORMATION

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| Prepared by: | Syntharise Chemical Inc. |
| Telephone Number: | 1(647)766-1657 |
| Preparation Date: | Nov 5 th , 2015 |

The above information is believed to be correct but does not purport to be complete and should be used only as a guide. The burden of safe use of this material rests entirely with the user.