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MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1: Identification

1.1 Product identifiers

Product Name : 4-Chlorobutyryl chloride, 4-CBC
Cat No.: AC108900000; AC108900010; AC108900050; AC108902500
CAS No. : 4635-59-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended uses : Laboratory chemicals.
Uses advised against: Food, drug, pesticide or biocidal product use.

1.3 Details of the supplier of the safety data sheet

Company : Krishna Solvechem Ltd.
B/503, Shayog, S. V. Road,
Kandivali (West), Mumbai – 400067. India.

Telephone : +91-22-6123 0222

Email : atul@kscl.co.in

1.4 Emergency telephone number

Emergency Phone : +91-22-6123 0222 (10.00am - 7.00pm) [Office hours]

SECTION 2: Hazards identification

2.1 Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/Irritation	(Category 1 A)
Serious Eye Damage/Eye Irritation	(Category 1)
Flammable liquids	(Category 4)
Corrosive to metals	(Category 1)
Acute oral toxicity	(Category 4)
Acute Inhalation Toxicity - Vapors	(Category 2)
Specific target organ toxicity (single exposure)	(Category 3)
Target Organs - Respiratory system.	

2.2 Label elements

Pictogram :



Corrosive to metals

Signal word

Danger

Hazard statement (s)

Combustible liquid



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Precautionary statement (s)

May be corrosive to metals
Harmful if swallowed
Causes severe skin burns and eye damage
May cause respiratory irritation
Fatal if inhaled

Prevention

Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep only in original container
Keep cool

RESPONSE:

Immediately call a POISON CENTER or doctor/physician

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

IF INHALED:

Remove victim to fresh air and keep at rest in a position comfortable for breathing

IF ON SKIN (or hair):

Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse

Fire

In case of fire: Use CO₂, dry chemical, or foam for extinction

Ingestion

Rinse mouth
DO NOT induce vomiting

Spills

Absorb spillage to prevent material damage

Storage:

Store in a well-ventilated place. Keep container tightly closed



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Store locked up
 Store in corrosive resistant polypropylene container with a resistant liner
 Store in a dry place

Disposal:
 Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Contact with water liberates toxic gas

Other hazards

Stench

SECTION 3: Composition / information on ingredients

Component	CAS-No	Weight %
Butanoyl chloride, 4-chloro	4635-59-0	>95

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhalation :	Remove to fresh air. Immediate medical attention is required. 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. If not breathing, give artificial respiration.
In case of skin contact :	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
In case of eye contact :	Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Ingestion :	Do NOT induce vomiting. Call a physician or poison control center immediately.

4.2 Most important symptoms and effects :

Difficulty in breathing. Causes burns by all exposure routes. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation



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4.3 Notes to Physician : Treat symptomatically

SECTION 5: Firefigh effects

5.1 Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO₂). Dry chemical. Water mist may be used to cool closed containers

Unsuitable Extinguishing Media: : No information available

5.2 Flash Point : 85 °C / 185 °F
Method : No information available
Autoignition Temperature: 440 °C / 824 °F
Explosion Limits: No data available
Upper 11.70%
Lower 5.50%
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available
Specific Hazards Arising from the Chemical : Combustible material. Contact with water liberates toxic gas. Water reactive. Containers may explode when heated.
Hazardous Combustion Products : Carbon monoxide (CO). Carbon dioxide (CO₂). Phosgene. Hydrogen chloride gas.

5.4 Protective Equipment and Precautions for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA:

Health	Flammability	Instability	Physical hazards
4	2	2	W

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Avoid contact



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with skin, eyes or clothing. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Take precautionary measures against static discharges. Remove all sources of ignition.

6.2 Environmental precautions

See Section 12 for additional Ecological Information.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Wear self-contained breathing apparatus and protective suit. Provide adequate ventilation. Do not expose spill to water. Remove all sources of ignition.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Ensure adequate ventilation. Wear personal protective equipment/face protection. Do not allow contact with water because of violent reaction. Keep under nitrogen. Avoid contact with skin, eyes or clothing. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition.

7.2 Conditions for safe storage

Corrosives area. Keep away from heat, sparks and flame. Protect from direct sunlight. Protect from moisture. Keep containers tightly closed in a dry, cool and well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1 Exposure Guidelines

This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

8.2 Exposure controls

Personal protective equipment -

Eye / Face protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin protection and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.



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Respiratory protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	Clear, Form: Liquid
b) Odour	Stench
c) Odour Threshold	No data available
d) pH	No information available
e) Melting point / freezing point	-47 °C / -52.6 °F
f) Initial boiling point and boiling range	173 - 174 °C / 343.4 - 345.2 °F @ 760 mmHg
g) Flash point	85 °C / 185 °F
h) Evaporation rate	No data available
i) Flammability (solid, gas)	Not applicable
j) Upper/lower flammability or explosive limits	Upper: 11.70% Lower: 5.50%
k) Vapour pressure	4 hPa @ 20 °C
l) Vapour density	4.86
m) Specific Gravity	1.250
n) Solubility	Reacts with water
o) Partition coefficient: n octanol/water	No data available
p) Auto-ignition temperature	440 °C / 824 °F
q) Decomposition temperature	> 120°C
r) Viscosity	No data available
s) Molecular formula	C4 H6 Cl2 O
t) Molecular Weight	141

SECTION 10: Stability and Reactivity



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10.1 Reactive Hazard :	Yes
10.2 Chemical stability :	Moisture sensitive. Contact with water liberates toxic gas.
10.3 Possibility of hazardous reactions :	None under normal processing.
10.4 Conditions to avoid :	Exposure to light. Incompatible products. Exposure to moist air or water. Keep away from open flames, hot surfaces and sources of ignition.
10.5 Incompatible materials:	Water, Strong bases, Alcohols, Amines
10.6 Hazardous decomposition products :	Carbon monoxide (CO), Carbon dioxide (CO ₂), Phosgene, Hydrogen chloride gas
10.7 Hazardous Polymerization	Hazardous polymerization does not occur.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute Toxicity

Product Information

Oral LD50

Category 4. ATE = 300 - 2000 mg/kg.

Dermal LD50

Based on ATE data, the classification criteria are not met.

ATE >

2000 mg/kg.

Vapor LC50

Category 2. ATE = 0.5 - 2 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Butanoyl chloride, 4-chloro	1350 mg/L (Rat)	Not listed	LC50 = 650 mg/m ³ (Rat) 4 h

Toxicologically Synergistic Products

No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation :

Causes burns by all exposure routes

Sensitization:

No information available

Carcinogenicity :

as a

The table below indicates whether each agency has classified the component as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Butanoyl chloride	4635-59-0	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects:

Not mutagenic in AMES Test

Reproductive Effects:

No information available.



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Developmental Effects :	No information available.
Teratogenicity:	No information available.
STOT - single exposure :	Respiratory system
STOT - repeated exposure:	None known
Aspiration hazard :	No information available
Symptoms / effects, both acute and delayed:	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Endocrine Disruptor Information :	No information available
Other Adverse Effects :	The toxicological properties have not been fully investigated.

SECTION 12: Ecological information

12.1

Ecotoxicity

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Reacts with water so no ecotoxicity data for the substance is available.

Persistence and Degradability Persistence is unlikely based on information available

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

SECTION 14: Transport information

14.1 UN number : ADR/RID: 2922
IMDG: 2922
IATA: 2922

14.2 UN proper shipping name



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ADR/RID :	Corrosive liquid, toxic, n.o.s.		
IMDG :	Corrosive liquid, toxic, n.o.s.		
IATA :	Corrosive liquid, toxic, n.o.s.		
14.3 Transport hazard class(es)	ADR/RID: 8	IMDG: 8	IATA: 8
Subsidiary Hazard Class(es)	ADR/RID: 6.1	IMDG: 6.1	IATA: 6.1
14.4 Packaging group:	ADR/RID: I	IMDG: I	IATA: I

SECTION 15: Regulatory information

15.1 United states of America Inventory:

Component	CAS-No	TSCA	TSCA Inventory notification Active/Inactive	TSCA - EPA Regulatory Flags
Butanoyl chloride, 4-chloro-	4635-59-0	X	ACTIVE	-

Legend:

TSCA - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TSCA 12(b) -Notices of Export:- Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Butanoyl chloride, 4-chloro-	4635-59-0	-	X	225-059-1	X	X	X	-	-

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Not applicable



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Health Administration

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations: Not applicable

15.2 U.S. State Right-to-Know Regulations:

U.S. Department of Transportation

Reportable Quantity (RQ): N

DOT Marine Pollutant N

DOT Severe Marine Pollutant N

U.S. Department of Homeland Security - This product does not contain the following DHS Chemicals.

Other International Regulations

Mexico – Grade No information available.

SECTION 16: Other information

16.1 Prepared By: Regulatory Affairs
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Creation Date: 22-Sep-2009
Revision Date: 23-Jan-2018
Print Date: 23-Jan-2018
Revision Summary: This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

16.2 Disclaimer:

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