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MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1: Identification

1.1 Product identifiers

Product Name : Isobutyryl chloride; 2-Methylpropanoyl chloride

Cat No.: B24472

CAS No. : 79-30-1

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)

Flammable liquids	(Category 2)
Corrosive to metals	(Category 1)
Acute oral toxicity	(Category 4)
Acute Inhalation Toxicity - Vapors	(Category 2)
Skin Corrosion/Irritation	(Category 1 A)
Serious Eye Damage/Eye Irritation	(Category 1)

2.2 Label elements

Pictogram :



Corrosive to metals

Signal word

Danger

Hazard statement (s)

Highly flammable liquid and vapor
Harmful if swallowed



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Precautionary statement (s)

Prevention

May be corrosive to metals
Causes severe skin burns and eye damage
Fatal if inhaled

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 container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
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

Ingestion

IF SWALLOWED: Rinse mouth.
DO NOT induce vomiting

Fire

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

Storage:



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Store in a well-ventilated place. Keep container tightly closed
Store locked up Store in corrosive resistant polypropylene
container with a resistant inliner Store in a dry place

Disposal:

Dispose of contents/container to an approved waste disposal
plant

Hazards not otherwise classified (HNOC)

Other hazards Stench.

SECTION 3: Composition / information on ingredients

Component	CAS-No	Weight %
Isobutyryl chloride by GC%	79-30-1	NLT 99.00%

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice :	Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If inhalation :	Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Immediate medical attention is required.
In case of skin contact :	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.
In case of eye contact :	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
Ingestion :	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Drink plenty of water. Call a physician immediately. Clean mouth with water. If possible drink milk afterwards.

4.2 Most important symptoms and effects :	Difficulty in breathing. Causes burns by all exposure routes. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or
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	esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
4.3 Notes to Physician :	Treat symptomatically

SECTION 5: Firefigh effects

5.1 Extinguishing media	
Suitable extinguishing media :	Carbon dioxide (CO ₂). Dry chemical. Chemical foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media: :	No information available
5.2 Flash Point :	1 °C / 33.8 °F
Method :	No information available
Autoignition Temperature:	No information available
Explosion Limits:	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available
Specific Hazards Arising from the Chemical :	Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.
Hazardous Combustion Products :	Carbon monoxide (CO). Carbon dioxide (CO ₂). 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.			
<u>NFPA:</u>	Health	Flammability	Instability	Physical hazards
	4	3	0	W

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
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Remove all sources of ignition. Take precautionary measures against static discharges.

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). Prevent product from entering drains. Keep in suitable, closed containers for disposal. Do not flush into surface water or sanitary sewer system. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Handle product only in closed system or provide appropriate exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep away from open flames, hot surfaces and sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

7.2 Conditions for safe storage

Keep in a dry, cool and well-ventilated place. Refer product specification and/or product label for specific storage temperature requirement. Keep container tightly closed. Keep away from heat, sparks and flame. Flammables area. Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

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



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EN166.

Skin protection and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

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	Colorless, Form: Liquid
b) Odour	Stench
c) Odour Threshold	No information available
d) pH	No information available
e) Melting point / freezing point	-90 °C / -130 °F
f) Initial boiling point and boiling range	91 - 93 °C / 195.8 - 199.4 °F
g) Flash point	1 °C / 33.8 °F
h) Evaporation rate	No information available
i) Flammability (solid, gas)	Not applicable
j) Upper/lower flammability or explosive limits	No data available
k) Vapour pressure	.07 atm @ 20 °C
l) Vapour density	3..7
m) Specific Gravity	1.017
n) Solubility	Reacts with water
o) Partition coefficient: n octanol/water	No data available
p) Auto-ignition temperature	No information available
q) Decomposition temperature	No information available
r) Viscosity	No information available



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s) Molecular formula	C4 H7 Cl O
t) Molecular Weight	106.55

SECTION 10: Stability and Reactivity

10.1 Reactive Hazard :	None known, based on information available
10.2 Chemical stability :	Moisture sensitive.
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:	Bases, Water, Strong oxidizing agents, Alcohols
10.6 Hazardous decomposition products :	Carbon monoxide (CO), Carbon dioxide (CO ₂), Hydrogen chloride gas
10.7 Hazardous Polymerization	No information available.

SECTION 11: Toxicological information

11.1 Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Isobutyryl chloride	1000 mg/kg (Rat)	>2000 mg/kg (Rat)	0.47-1.95 mg/L/4h (Rat)

Toxicologically Synergistic Products No information Available

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

Irritation : No information available

Sensitization: No information available

Carcinogenicity : The table below indicates whether each agency has as a
any ingredient as a Carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Isobutyryl chloride	79-30-1	Not listed	Not listed	Not listed	Not listed	Not listed



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Mutagenic Effects:	No information available.
Reproductive Effects:	No information available.
Developmental Effects :	No information available.
Teratogenicity:	No information available.
STOT - single exposure :	None known
STOT - repeated exposure:	None known
Aspiration hazard :	No information available
Symptoms / effects, both acute and delayed:	Inhalation of high vapor concentrations may cause symptoms like 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
available.

Reacts with water so no ecotoxicity data for the substance is available.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Isobutyryl chloride	Not listed	215-464 mg/L 96h	Not listed	Not listed

12.2 Persistence and degradability: Persistence is unlikely

Bioaccumulation/ Accumulation No information available

12.3 Mobility: Is not likely mobile in the environment

Component	log Pow
Isobutyryl chloride	0.88

SECTION 13: Disposal considerations

13.1 Waste treatment methods: Chemical waste generators must determine whether a discarded



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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: 2395 IMDG: 2395 IATA: 2395		
14.2 UN proper shipping name	ISOBUTYRYL CHLORIDE		
ADR/RID :	ISOBUTYRYL CHLORIDE		
IMDG :	ISOBUTYRYL CHLORIDE		
IATA :	ISOBUTYRYL CHLORIDE		
14.3 Transport hazard class(es)	ADR/RID: 3	IMDG: 3	IATA: 3
Subsidiary Hazard Class	ADR/RID: 8	IMDG: 8	IATA: 8
14.4 Packaging group:	ADR/RID: II	IMDG: II	IATA: II

SECTION 15: Regulatory information

15.1 United states of America Inventory:

Component	CAS-No	TSCA	TSCA Inventory notification Active/Inactive	TSCA - EPA Regulatory Flags
Isobutyryl chloride	79-30-1	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
Isobutyryl chloride	79-30-1	x	-	201-194-1	X	X	-	X	98-3-989

U.S. Federal Regulations

SARA 313 Not applicable

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



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CWA (Clean Water Act)	Not applicable
Clean Air Act	Not applicable
OSHA - Occupational Safety and Health Administration	Not applicable
CERCLA	Not applicable
California Proposition 65	This product does not contain any Proposition 65 chemicals.

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

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Isobutyryl chloride	-	x	-	-	-

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 contains the following DHS chemicals:

Other International Regulations

Mexico – Grade No information available

SECTION 16: Other information

16.1 Prepared By:	Regulatory Affairs
	Krishna Solvechem Ltd
Email:	atul@kscl.co.in
Creation Date:	10-Nov-2010
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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.