Dear Customer,

This File Contains Both The ANSI Material Safety Data Sheet and The GHS Safety Data Sheet For The Same Product

Spectrum is currently transitioning all chemical product labeling from the ANSI\textsuperscript{1} format to the GHS\textsuperscript{2} format (see note below). In order to ensure that you receive complete labeling during the transition, we have included both the ANSI MSDS and the GHS SDS in a single file. The ANSI MSDS is given first, followed by the GHS SDS. Please use whichever matches the container label.

Why It Matters:

The complete precautionary labeling for this chemical consists of BOTH the label on the container AND the matching Material Safety Data Sheet (for ANSI labels) or Safety Data Sheet (for GHS labels). Both elements of the labeling [Label + (M)SDS] are written to be read and understood together, so as to provide complete precautionary information. It is intended for you to read and understood BOTH before handling or using the chemical.

Picking the Right One: 2 Easy Ways To Tell Whether Your Container Has an ANSI Label or a GHS Label

1) GHS labels: any pictogram displayed in the upper left-hand corner will be inside a red diamond. ANSI labels: pictograms, if present, will be inside individual black boxes.

2) GHS labels: on the bottom of the right-hand panel of the label, locate the Lot Number. Directly to the left will be a string of control characters, followed by a single letter. For GHS labels, the string of characters will end in "GHS:"

---

**Label in ANSI Format**

---

**Label in GHS Format**

---

**CORPORATE OFFICES**

14422 South San Pedro Street
Gardena, California 90248
PHONE 310.516.8000
FAX 310.516.9843

AN ISO 9001:2008 REGISTERED COMPANY

www.spectrumchemical.com
2 American National Standards Institute
2 Globally Harmonized System for Hazard Communication

Sincerely,

Regulatory Affairs
SAFETY DATA SHEET

Product code: I2018
Product Name: ISOBUTYL CHLOROFORMATE

Other means of identification
Synonyms:
Isobutyl chlorocarbonate
2-Methylpropyl carbonochloridate
2-Methylpropyl chloroformate
Chlorocarbonic acid isobutyl ester
Carbonochloridic acid, 2-methylpropyl ester
Chloroformic acid isobutyl ester
Formic acid, chloro-, isobutyl ester (8CI)

CAS #: 543-27-1
RTECS #: Not available
CI#: Not available

2. HAZARDS IDENTIFICATION

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

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>Category 4</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Vapors)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Flammable liquids</td>
<td>Category 3</td>
</tr>
</tbody>
</table>

Supplier:
Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Emergency telephone number: Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

Order Online At: https://www.spectrumchemical.com
Hazard statements
Harmful if swallowed
Toxic if inhaled
Causes severe skin burns and eye damage
May cause respiratory irritation
Flammable liquid and vapor

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
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 cool

Precautionary Statements - Response
Specific treatment (see .? on this label)
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see .? on this label)
In case of fire: Use CO2, dry chemical, or foam to extinguish.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse

Product code: I2018
Product name: ISOBUTYL CHLOROFORMATE
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
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</thead>
<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
<td>543-27-1</td>
<td>100</td>
<td>*</td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

**First aid measures**

**General Advice:** Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

**Skin Contact:** Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Wash contaminated clothing before re-use. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

**Eye Contact:** Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

**Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

**Most important symptoms and effects, both acute and delayed**

**Symptoms** Toxic by inhalation. Harmful if swallowed. Severe skin irritation. Severe eye irritation. May cause irritation of respiratory tract.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician:** Treat symptomatically

**Protection of first-aiders**

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

### 5. FIRE-FIGHTING MEASURES

**Extinguishing Media**

**Suitable Extinguishing Media:** Carbon dioxide (CO2), Dry chemical. Alcohol-resistant foam.

**Unsuitable Extinguishing Media:** Water.
Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon oxides, halogenated compounds, hydrogen chloride gas

Specific hazards: Flammable
Containers may explode when heated
Vapors may form explosive mixtures with air
Vapors may travel to source of ignition and flash back

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers. Do not get water inside containers. Move containers from fire area if you can do it without risk.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Use personal protective equipment. Keep people away from and upwind of spill/leak. Remove all sources of ignition. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Do not get water inside containers. Do not expose spill to water.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment: Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container.

Methods for cleaning up: Keep in suitable, closed containers for disposal. Protect from water. Reacts violently with water.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions: Provide sufficient air exchange and/or exhaust in work rooms. Keep away from incompatible materials. Remove all sources of ignition. Avoid dust formation. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Do not allow contact with water.

Safe Handling Advice: Wear personal protective equipment. Use only in well-ventilated areas. Avoid dust formation. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions: Keep containers tightly closed in a dry, cool and well-ventilated place. This product must be stored in accordance with the highly flammable liquids and liquefied petroleum gases regulations 1972.

Product code: I2018  Product name: ISOBUTYL CHLOROFORMATE
Incompatible Materials:

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

<table>
<thead>
<tr>
<th>United States</th>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
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<td>None</td>
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<td>None</td>
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</table>

<table>
<thead>
<tr>
<th>Canada</th>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
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<table>
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<th>Components</th>
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<th>Mexico</th>
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</thead>
<tbody>
<tr>
<td>Isobutyl Chloroformate 543-27-1</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Appropriate engineering controls

Engineering measures to reduce exposure:
Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles.
Skin and body protection: Full Suit. Gloves.
Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state:</td>
<td>Liquid</td>
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<tr>
<td>Odor:</td>
<td>Pungent</td>
</tr>
<tr>
<td>Formula:</td>
<td>C₅H₉ClO₂</td>
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<tr>
<td>Flash point (°C):</td>
<td>27°C</td>
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<tr>
<td>Molecular/Formula weight:</td>
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<td>Flash Point Tested according to:</td>
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<td>Autoignition Temperature (°C/°F):</td>
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<tr>
<td>Boiling point/range(°C/°F):</td>
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<td>Evaporation rate:</td>
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<td>Odor threshold (ppm):</td>
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</tr>
<tr>
<td>Miscibility:</td>
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</tr>
<tr>
<td>Appearance:</td>
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<td>Taste:</td>
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<tr>
<td>Color:</td>
<td>Light brown.</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Reactive with oxidizing agents
Evolves flammable hydrogen gas on contact with water

Chemical stability
Stability: Reacts violently with water.
Possibility of Hazardous Reactions: Reacts with water to produce Hydrogen chloride
Conditions to avoid: Heat, flames and sparks.. Moisture sensitive. Incompatible materials. Exposure to water.

Other Information
Corrosivity: No information available
Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product code: I2018
Product name: ISOBUTYL CHLOROFORMATE
Principal Routes of Exposure:
None.

Acute Toxicity

Component Information

*Isobutyl Chloroformate - 543-27-1*

<table>
<thead>
<tr>
<th>Route</th>
<th>Value</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>LD50/oral/rat</td>
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<td>LD50/oral/mouse</td>
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<td>LD50/dermal/rat</td>
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</tr>
<tr>
<td>LD50/dermal/rabbit</td>
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<tr>
<td>LC50/inhalation/mouse</td>
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<tr>
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<tr>
<td>LD50/dermal/rat VALUE - Acute Tox Dermal</td>
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<tr>
<td>LD50/oral/mouse VALUE - Acute Tox Oral</td>
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<tr>
<td>LD50/oral/rat VALUE - Acute Tox Oral</td>
<td>1400mg/kg</td>
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<tr>
<td>LC50/inhalation/rat VALUE-Vapor</td>
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<tr>
<td>LC50/inhalation/rat VALUE-Gas</td>
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<tr>
<td>LC50/inhalation/rat VALUE-Dust/Mist</td>
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<tr>
<td>LC50/inhalation/mouse VALUE - Vapor</td>
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<td></td>
</tr>
<tr>
<td>LC50/inhalation/mouse VALUE - Gas</td>
<td>No information available</td>
<td></td>
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<tr>
<td>LC50/inhalation/mouse VALUE - Dust/Mist</td>
<td>No information available</td>
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</table>

Product Information

<table>
<thead>
<tr>
<th>Route</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/oral/rat</td>
<td>(VALUE- Acute Tox Oral) 1400mg/kg</td>
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<tr>
<td>LD50/oral/mouse</td>
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<tr>
<td>LD50/dermal/rabbit</td>
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<tr>
<td>LC50/inhalation/rat</td>
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</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>No information available</td>
<td></td>
</tr>
</tbody>
</table>

Symptoms

**Skin Contact:**
Contact causes severe skin irritation and possible burns.

**Eye Contact:**
May cause severe eye irritation and possible burns.

**Inhalation**
Toxic by inhalation. May cause respiratory irritation. May cause dry or sore throat, itching and burning sensations of the nose, and coughing.

**Ingestion**
Harmful if swallowed. May cause abdominal pain.

**Aspiration hazard**
No information available

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

**Chronic Toxicity**
No information available

**Sensitization:**
No information available

Product code: I2018
Product name: ISOBUTYL CHLOROFORMATE
Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH - Carcinogens</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
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<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
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<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
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</tr>
</tbody>
</table>

Reproductive toxicity: No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure: No information available
STOT - repeated exposure: No information available
Target Organs: No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Toxic to aquatic organisms.

Persistence and degradability: No information available
Bioaccumulative potential: No information available
Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products: Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging: Empty containers should be taken for local recycling, recovery or waste disposal

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
<td>None</td>
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<td>None</td>
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</tbody>
</table>

14. TRANSPORT INFORMATION

Product code: I2018  Product name: ISOBUTYL CHLOROFORMATE
### DOT

- **UN-No:** UN3384
- **Proper Shipping Name:** Toxic by inhalation liquid, flammable, n.o.s.
- **Hazard Class:** 6.1
- **Subsidiary Risk:** 3
- **Packing Group:** I
- **ERG No:** 131
- **Marine Pollutant:** No data available
- **DOT RQ (lbs):** No information available
- **Symbol(s):** G

### TDG (Canada)

- **UN-No:** UN3384
- **Proper Shipping Name:** Toxic by inhalation liquid, flammable, n.o.s.
- **Hazard Class:** 6.1
- **Subsidiary Risk:** (3)
- **Packing Group:** I
- **Description:** No information available

### ADR

- **UN-No:** UN3384
- **Proper Shipping Name:** Toxic by inhalation liquid, flammable, n.o.s.
- **Hazard Class:** 6.1
- **Packing Group:** I
- **Subsidiary Risk:** 3
- **Classification Code:** No information available
- **Description:** No information available
- **CEFIC Tremcard No:** No information available

### IMO / IMDG

- **UN-No:** UN3384
- **Proper Shipping Name:** Toxic by inhalation liquid, flammable, n.o.s.
- **Hazard Class:** 6.1
- **Subsidiary Risk:** 3
- **Packing Group:** I
- **Description:** No information available
- **IMDG Page:** No information available
- **Marine Pollutant:** No information available
- **EMS:** F-E
- **MFAG:** No information available
- **Maximum Quantity:** No information available

### RID

- **UN-No:** UN3384
- **Proper Shipping Name:** Toxic by inhalation liquid, flammable, n.o.s.
- **Hazard Class:** 6.1
- **Subsidiary Risk:** 3
- **Packing Group:** I
- **Classification Code:** No information available
- **Description:** No information available

### ICAO

- **UN-No:** UN3384
- **Proper Shipping Name:** Toxic by inhalation liquid, flammable, n.o.s.
- **Hazard Class:** 6.1
14. TRANSPORT INFORMATION

Subsidiary Risk: 3
Packing Group: No information available
Description: No information available

IATA
UN-No: UN3384
Proper Shipping Name: Toxic by inhalation liquid, flammable, n.o.s.
Hazard Class: 6.1
Subsidiary Risk: 3
Packing Group: No information available
ERG Code: 6F
Description: No information available

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
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</thead>
<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
<td>Present</td>
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<td>Not present</td>
<td>Present (2)-1704</td>
<td>Present</td>
<td>Present</td>
<td>Present 208-840-1</td>
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</table>

U.S. Regulations

Isobutyl Chloroformate
New Jersey RTK Hazardous Substance List: 3348

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
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<tr>
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CERCLA/SARA

<table>
<thead>
<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
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U.S. TSCA

<table>
<thead>
<tr>
<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
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<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
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<td>Not Applicable</td>
</tr>
</tbody>
</table>

Canada

WHMIS hazard class:
Non-controlled

Product code: I2018  Product name: ISOBUTYL CHLOROFORMATE
Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
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</thead>
<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
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</thead>
<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
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<td>Not listed</td>
</tr>
</tbody>
</table>

EU Classification

R-phrase(s)
R10 - Flammable.
R23 - Toxic by inhalation.
R34 - Causes burns.

S-phrase(s)
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S23 - Do not breathe gas/fumes/vapor/spray.
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits: Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isobutyl Chloroformate</td>
<td></td>
<td>No information</td>
</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Flammable

F

16. OTHER INFORMATION
16. OTHER INFORMATION

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet
Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name/Trade Name: Isobutyl Chloroformate

Manufacturer: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Commercial Name(s): Not available.

Synonym: Isobutyl Chlorocarbonate; Carbonochloridic acid, 2-methylpropyl ester

Chemical Name: Chloroformic acid Isobutyl Ester

Chemical Family: Not available.

Chemical Formula: C₅H₉ClO₂

Supplier: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Catalog Number(s): I2018

CAS#: 543-27-1

RTECS: Not available.

TSCA: TSCA 8(b) inventory: Isobutyl Chloroformate

CI#: Not available.

IN CASE OF EMERGENCY
CHEMIREC (24hr) 800-424-9300

CALL (310) 516-8000

Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Isobutyl Chloroformate</td>
<td>543-27-1</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients: Isobutyl Chloroformate
LD₅₀: Not available.
LC₅₀: Not available.

Section 3. Hazards Identification

Potential Acute Health Effects: Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive), of eye contact (corrosive). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Continued on Next Page
## Potential Chronic Health Effects

Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

## Section 4. First Aid Measures

### Eye Contact

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

### Skin Contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

### Serious Skin Contact

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

### Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

### Serious Inhalation

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

### Ingestion

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

### Serious Ingestion

Not available.

## Section 5. Fire and Explosion Data

### Flammability of the Product

Flammable.

### Auto-Ignition Temperature

Not available.

### Flash Points

**CLOSED CUP:** 39°C (102.2°F).

### Flammable Limits

Not available.

### Products of Combustion

These products are carbon oxides (CO, CO2), halogenated compounds.

### Fire Hazards in Presence of Various Substances

Flammable in presence of open flames and sparks, of heat.

### Explosion Hazards in Presence of Various Substances

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

### Fire Fighting Media and Instructions

Flammable liquid.

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

### Special Remarks on Fire Hazards

Not available.

### Special Remarks on Explosion Hazards

Not available.
Section 6. Accidental Release Measures

Small Spill
Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill
Flammable liquid. Corrosive liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

Section 7. Handling and Storage

Precautions
Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as acids.

Storage
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above 8°C (46.4°F). Refrigerate Moisture sensitive.

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the workstation location.

Personal Protection

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance
Liquid.

Molecular Weight
136.58 g/mole

pH (1% soln/water)
Not available.

Boiling Point
128.7°C (263.7°F)

Melting Point
Not available.

Critical Temperature
Not available.

Specific Gravity
1.0475 (Water = 1)

Vapor Pressure
0.9 kPa (@ 20°C)

Vapor Density
Not available.

Volutility
Not available.

Odor Threshold
Not available.

Water/Oil Dist. Coeff.
Not available.

Ionicity (in Water)
Not available.

Dispersion Properties
Not available.

Solubility
May decompose in water.

Continued on Next Page
### Section 10. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Heat, ignition sources (flames, sparks, static), incompatible materials</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with acids</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Reactivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

### Section 11. Toxicological Information

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Absorbed through skin. Eye contact. Inhalation. Ingestion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to Animals</td>
<td>LD50: Not available. LC50: Not available.</td>
</tr>
<tr>
<td>Chronic Effects on Humans</td>
<td>Not available.</td>
</tr>
<tr>
<td>Other Toxic Effects on Humans</td>
<td>Very hazardous in case of skin contact (irritant), of ingestion, .</td>
</tr>
</tbody>
</table>

Hazardous in case of skin contact (corrosive), of eye contact (corrosive), of inhalation (lung corrosive).

<table>
<thead>
<tr>
<th>Special Remarks on Toxicity to Animals</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Remarks on Chronic Effects on Humans</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Section 12. Ecological Information

<table>
<thead>
<tr>
<th>Ecotoxicity</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD5 and COD</td>
<td>Not available.</td>
</tr>
<tr>
<td>Products of Biodegradation</td>
<td>Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.</td>
</tr>
<tr>
<td>Toxicity of the Products of Biodegradation</td>
<td>The products of degradation are as toxic as the product itself.</td>
</tr>
<tr>
<td>Special Remarks on the Products of Biodegradation</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
### Section 13. Disposal Considerations

**Waste Disposal**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

### Section 14. Transport Information

| DOT Classification | CLASS 3: Flammable liquid.  
|                    | CLASS 6.1: Poisonous material. |
| Identification     | UNNA: 3384 : Toxic by Inhalation liquid, flammable, n.o.s. (isobutyl chloroformate) PG: I |
| Special Provisions for Transport | Inhalation hazard, zone B |
| DOT(Pictograms)    | ![Pictograms](image-url) |

### Section 15. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>Federal and State Regulations</th>
<th>TSCA 8(b) inventory: Isobutyl Chloroformate</th>
</tr>
</thead>
</table>
| California Proposition 65 Warnings | California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.  
|                               | California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found. |
|                               | EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 208-840-1).  
|                               | Canada: Listed on Canadian Domestic Substance List (DSL).  
|                               | Japan: Listed on National Inventory (ENC).  
|                               | China: Not listed on National Inventory (KECI).  
|                               | Philippines: Not listed on National Inventory (PICCS).  
|                               | Australia: Listed on AICS.  
| Other Classifications         | WHMIS (Canada) CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).  
|                               | CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).  
|                               | CLASS E: Corrosive liquid.  
|                               | DSCL (IEC) R10- Flammable.  
|                               | R23- Toxic by inhalation.  
|                               | RB4- Causes burns.  
|                               | S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
|                               | S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.  
|                               | S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
|                               | S23- Do not breathe gas/fumes/vapour/spray.  
| HIMS (U.S.A.)                 | ![Hazard Levels](image-url) National Fire Protection Association (U.S.A.) Health 3 2 0 Flammability Reactivity Specific hazard |
|                              | Personal Protection |

Continued on Next Page
Protective Equipment

- Gloves
- Full suit
- Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
- Wear appropriate respirator when ventilation is inadequate.
- Face shield.
All chemicals may pose unknown hazards and should be used with caution. The Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.