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ACCT: 085511001
CAT NO: AC176181000

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**** MATERIAL SAFETY DATA SHEET ****

Isobutyl chloroformate, 98% (gc)
89704

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Isobutyl chloroformate, 98% (gc)

Catalog Numbers:

AC176180000, AC176180250, AC176181000, AC176185000

Synonyms:

Isobutyl chlorocarbonate
Company Identification (Europe):

Acros Organics BVBA
Janssen Pharmaceuticaalaa 3a
2440 Geel, Belgium
Acros Organics
One Reagent Lane
Fairlawn, NJ 07410

Company Identification (USA):

For information in North America, call: 800-ACROS-01
For information in Europe, call: 0032(0) 14575211
For emergencies in the US, call CHEMTREC: 800-424-9300
For emergencies in Europe, call: 0032(0) 14575299

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
543-27-1	Isobutyl chloroformate	99%	208-840-1
Hazard Symbols: T F C			
Risk Phrases: 10 23 34			

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear liquid. Flash Point: 39 deg C.
Danger! Flammable liquid and vapor. Corrosive. Moisture sensitive.
Lachrymator (substance which increases the flow of tears). Causes eye
and skin burns. Causes digestive and respiratory tract burns. May be
harmful if inhaled.
Target Organs: None known.

Potential Health Effects

Eye:
Causes eye burns. Lachrymator (substance which increases the flow
of tears).
Skin:
Causes skin burns.
Ingestion:
Causes gastrointestinal tract burns.
Inhalation:
Causes chemical burns to the respiratory tract. May be harmful if
inhaled.
Chronic:
No information found.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes,
occasionally lifting the upper and lower eyelids. Get medical aid
immediately. Do NOT allow victim to rub or keep eyes closed.
Skin:
Get medical aid immediately. Immediately flush skin with plenty of
water for at least 15 minutes while removing contaminated clothing
and shoes.
Ingestion:
Do NOT induce vomiting. If victim is conscious and alert, give 2-4
cupfuls of milk or water. Never give anything by mouth to an
unconscious person. Get medical aid immediately.
Inhalation:
Get medical aid immediately. Remove from exposure and move to fresh
air immediately. If not breathing, give artificial respiration. If
breathing is difficult, give oxygen.
Notes to Physician:
Treat symptomatically and

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

Containers can build up pressure if exposed to heat and/or fire. As
in any fire, wear a self-contained breathing apparatus in
pressure-demand, MSHA/NIOSH (approved or equivalent), and full
protective gear. Vapors can travel to a source of ignition and flash
back. Flammable Liquid. Can release vapors that form explosive
mixtures at temperatures above the flashpoint. Use water spray to
keep fire-exposed containers cool. Vapors may be heavier than air.
They can spread along the ground and collect in low or confined

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areas. Vapors may form an explosive mixture with air.
Extinguishing Media:

Use water spray to cool fire-exposed containers. Use foam, dry
chemical, or carbon dioxide. Do NOT get water inside containers. For
large fires, use water spray, fog or alcohol-resistant foam. Cool
containers with flooding quantities of water until well after fire
is out.

Autoignition Temperature: Not available.
Flash Point: 39 deg C (102.20 deg F)
Explosion Limits, lower: Not available.
Explosion Limits, upper: Not available.
NFPA Rating: Not published.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated
in Section 8.

Spills/Leaks:

Absorb spill with inert material (e.g. vermiculite, sand or earth),
then place in suitable container. Remove all sources of ignition. A
vapor suppressing foam may be used to reduce vapors. Do not get
water on spilled substances or inside containers.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Use only in a well-ventilated area.
Do not allow water to get into the container because of violent
reaction. Ground and bond containers when transferring material. Do
not get in eyes, on skin, or on clothing. Empty containers retain
product residue, (liquid and/or vapor), and can be dangerous. Keep
container tightly closed. Avoid contact with heat, sparks and flame.
Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze,
solder, drill, grind, or expose empty containers to heat, sparks or
open flames.

Storage:

Keep away from sources of ignition. Keep refrigerated. (Store below
4°C/39°F.) Store in a tightly closed container. Store in a cool,
dry, well-ventilated area away from incompatible substances. Loosen
closure cautiously before opening. Open periodically. Vent
periodically.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne
concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Isobutyl chloroformate	none listed	none listed	none listed

OSHA Vacated PELs:

Isobutyl chloroformate:
No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes:
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:
Wear appropriate protective gloves to prevent skin
exposure.
Clothing:
Wear appropriate protective clothing to prevent skin
exposure.
Respirators:
Follow the OSHA respirator regulations found in 29
CFR 1910.134 or European Standard EN 149. Always use
a NIOSH or European Standard EN 149 approved
respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Liquid
Color: clear
Odor: Unpleasant pungent odor.
pH: Not available.
Vapor Pressure: 6.5 mm Hg @ 20 deg
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.

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Boiling Point: 128.7 deg C @ 760.00mm Hg
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility in water: may decompose
Specific Gravity/Density: 1.0475g/cm3
Molecular Formula: C5H9ClO2
Molecular Weight: 136.58

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable. However, may decompose if exposed to moist air or water.
Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, exposure to moist air or water.
Incompatibilities with Other Materials:
Acids, can react with rust from corroded equipment.
Hazardous Decomposition Products:
Hydrogen chloride, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#: CAS# 543-27-1 unlisted.
LD50/LC50:
Not available.
Carcinogenicity:
Isobutyl chloroformate -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No data available.
Teratogenicity:
No data available.
Reproductive Effects:
No data available.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.
Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Water Danger/Protection: WGK 2

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.
US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: CHLOROFORMATES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S
Hazard Class: 6.1
UN Number: 2742
Packing Group: II
Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 543-27-1 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes

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CAS # 543-27-1: acute, flammable, reactive.
Section 313
No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depleters.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
Isobutyl chloroformate is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level:
None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: T F C

Risk Phrases:
R 10 Flammable.
R 23 Toxic by inhalation.
R 34 Causes burns.
Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36 Wear suitable protective clothing.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
CAS# 543-27-1: No information available.
United Kingdom Occupational Exposure Limits
United Kingdom Maximum Exposure Limits
Canada
CAS# 543-27-1 is listed on Canada's DSL List.
This product does not have a WHMIS classification.
CAS# 543-27-1 is not listed on Canada's Ingredient Disclosure List.
Exposure Limits

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 10/07/1997 Revision #2 Date: 3/18/2003

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.