Material Safety Data Sheet
1-Chloro-2-nitrobenzene, 99+%

ACC# 49254

Section 1 - Chemical Product and Company Identification

MSDS Name: 1-Chloro-2-nitrobenzene, 99+%
Catalog Numbers: AC109620010, AC109620050, AC109621000, AC109622500, AC109625000
Synonyms: o-Chloronitrobenzene, 2-Chloronitrobenzene.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
88-73-3	1-Chloro-2-nitrobenzene	>99	201-854-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: yellow crystals.
Warning! Harmful if swallowed, inhaled, or absorbed through the skin. May cause eye, skin, and respiratory tract irritation. Methemoglobin former - can cause cyanosis. Impairs the oxygen carrying capacity of the blood. May cause liver damage.
Target Organs: Blood, liver.

Potential Health Effects

Eye: May cause mild eye irritation. In eye irritation study with rabbits, undiluted test substance was found to be not irritating at dose of 50 mg/animal. Observation period was 7 days. (Bayer)
Skin: May cause skin irritation. Harmful if absorbed through the skin. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Data from Bayer found o-chloronitrobenzene to be sensitizing in guinea pigs. The allergenic activity of o-chloronitrobenzene is less marked than that of p-chloronitrobenzene; 2,4-dinitrochlorobenzene provokes even stronger sensitization effects than p-chloronitrobenzene.
Ingestion: Harmful if swallowed. May cause central nervous system depression. May form methemoglobin which in sufficient concentration causes cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood).
Inhalation: Harmful if inhaled. May cause respiratory tract irritation. Methemoglobinemia is characterized by dizziness, drowsiness, headache, shortness of breath, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown blood. May cause methemoglobinemia. Test exposing rats via inhalation to o-chloronitrobenzene for 5 months at conc of 0.000008 mg/l (a conc which has a minimal toxic effect) found the material to be sensitizing. The allergenic activity of o-chloronitrobenzene is less marked than that of p-chloronitobenzene. The state of allergy was investigated at the end of the experimental period by various methods in vitro and in vivo.
Chronic: May cause anemia and other blood cell abnormalities. Chronic exposure may cause liver damage. May cause fatigue, dizziness, headache, insomnia and weight loss. Experience with human exposure: in chloronitrobenzene poisoning, cardiac complications appear to be more frequent and more serious than in aniline poisoning and gastrointestinal irregularities (anacidity) also appear to be quite common (no further data, isomer(s) of chloronitrobenzene not specified). (ECB site from Bayer)

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.
Extinguishing Media: In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.
Flash Point: 124 deg C (255.20 deg F)
Autoignition Temperature: 470 deg C (878.00 deg F)

Explosion Limits, Lower:1.40 vol %
Upper: 8.70 vol %
NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Do not ingest or inhale.
Storage: Store in a cool, dry place. Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. 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
1-Chloro-2-nitrobenzene	none listed	none listed	none listed

OSHA Vacated PELs: 1-Chloro-2-nitrobenzene: 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 gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
Respirators: 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.

Section 9 - Physical and Chemical Properties

Physical State: Crystals
Appearance: yellow
Odor: None reported.
pH: Not applicable.
Vapor Pressure: 0.04 mm Hg @ 25 deg C
Vapor Density: 5.43 (air=1)
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 246 deg C @ 760 mm Hg
Freezing/Melting Point:32 - 34 deg C
Decomposition Temperature:> 300 deg C
Solubility: Insoluble.
Specific Gravity/Density:1.3480 g/cm3
Molecular Formula:C6H4ClNO2
Molecular Weight:157.56

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Dust generation, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 88-73-3: CZ0875000
LD50/LC50:
CAS# 88-73-3:
Oral, mouse: LD50 = 135 mg/kg;
Oral, rabbit: LD50 = 280 mg/kg;
Oral, rat: LD50 = 268 mg/kg;

Skin, rabbit: LD50 = 400 mg/kg;
.
Inhalation, 4H, rat, LC50: 3.2 mg/L. (DuPont)
Carcinogenicity:
CAS# 88-73-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: o-Chloronitrobenzene has been used for decades, but there have been no indications of an allergenic potential in man. (Bayer AG Leverkusen)Dermatitis caused by chlorodinitrobenzene has been observed in workers who used the compound to control algae in the coolant water of air-conditioning systems. The eruption is characterized by erythema, vesicles, & itching & thus resembles poison ivy.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: Terrestrial: O-Chloronitrobenzene does not contain a readily hydrolyzable functional group. Therefore, hydrolysis of O-chloronitrobenzene in soil is not significant. Aquatic: O-Chloronitrobenzene does not contain any readily hydrolyzable functional groups and is unlikely to undergo hydrolysis as a major fate. Atmospheric: Based on a vapor pressure of 0.035 mm Hg at 250C O-chloronitrobenzene process. Slight biodegradation but significant bioconcentration.
Physical: No information available.
Other: No information available.

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	Canada TDG
Shipping Name:	CHLORONITROBENZENE, LIQUID	CHLORONITOBENZENES
Hazard Class:	6.1	6.1
UN Number:	UN3409	UN1578
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 88-73-3 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.
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
CAS # 88-73-3: immediate, delayed.
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 depletors.
This material does not contain any Class 2 Ozone depletors.
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
CAS# 88-73-3 can be found on the following state right to know lists: Pennsylvania, Massachusetts.

California Prop 65

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

Risk Phrases:

R 20/22 Harmful by inhalation and if swallowed.
R 24 Toxic in contact with skin.
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 36/37/39 Wear suitable protective clothing, gloves and eye/face pr otection.
S 38 In case of insufficient ventilation, wear suitable respiratory equipment.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 60 This material and its container must be disposed of as hazardou s waste.
S 28A After contact with skin, wash immediately with plenty of water .

WGK (Water Danger/Protection)

CAS# 88-73-3: 3

Canada - DSL/NDSL

CAS# 88-73-3 is listed on Canada's NDSL List.

Canada - WHMIS

This product has a WHMIS classification of D1B, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 88-73-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 2/09/1999
Revision #4 Date: 12/16/2005