Material Safety Data Sheet
1,4-Dinitrobenzene

ACC# 43966

Section 1 - Chemical Product and Company Identification

MSDS Name: 1,4-Dinitrobenzene
Catalog Numbers: AC408650000, AC408650050, AC408650250
Synonyms: p-Dinitrobenzene; potent inducer of methemoglobin formation.
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
100-25-4	p-Dinitrobenzene	98	202-833-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystals.
Danger! May be fatal if swallowed. Causes eye, skin, and respiratory tract irritation. Harmful if absorbed through skin or if inhaled. Repeated exposure may cause skin dryness or cracking. Impairs the oxygen carrying capacity of the blood. Methemoglobin former - can cause cyanosis.
Target Organs: Blood, central nervous system, liver.

Potential Health Effects

Eye: May cause eye irritation. May cause visual impairment. Contact with the eye may cause yellow discoloration of the conjunctiva and sclera.
Skin: May be absorbed through the skin. Absorption into the body may cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). May cause yellow-brown discoloration of the hair and exposed of workers has been reported. The meta-isomer was shown to be a skin sensitizer in a guinea pig maximization test.
Ingestion: May be fatal if swallowed. May cause irritation of the digestive tract. May cause liver damage. May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, and death. May cause tissue anoxia, characterized by weakness, headache, dizziness, confusion, cyanosis (bluish skin due to deficient oxygenation of the blood), weak and irregular heart beat, collapse, unconsciousness, convulsions, coma and death. 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 colored blood.
Inhalation: Causes respiratory tract irritation. May cause effects similar to those described for ingestion.
Chronic: Chronic exposures of workers to dinitrobenzene have caused anemia; liver injury has been reported in a few cases. Visual impairment has occurred in the form of reduced visual acuity and central scotomas (loss or depression of vision within the central visual field), particularly for red and green colors. A yellow discoloration of the conjunctiva and the sclera was a common observation in these exposures (ACGIH Documentation of the TLV).

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 immediately. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. SPEEDY ACTION IS CRITICAL! Treat patient as for inhalation.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately. Treat patient as for inhalation.
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. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Material is shock sensitive and potentially explosive. Greatly increases the burning rate of combustible materials. Containers may explode when heated.
Extinguishing Media: Use water spray to cool fire-exposed containers. Use flooding quantities of water as spray. Cool containers with flooding quantities of water until well after fire is out.

Flash Point: Not applicable.
Autoignition Temperature: Not available.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 1; Instability: 4

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. 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 eyes, skin, and clothing. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Avoid mechanical shock and friction.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

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
p-Dinitrobenzene	0.15 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous r oute	1 mg/m3 TWA 50 mg/m3 IDLH	1 mg/m3 TWA

OSHA Vacated PELs: p-Dinitrobenzene: 1 mg/m3 TWA (Listed under 'Dinitrobenzene, all isomers')
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. 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: white
Odor: Not available.
pH: Not available.
Vapor Pressure: Negligible
Vapor Density: 5.8 (air=1)
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 299 deg C
Freezing/Melting Point:173-175 deg C
Decomposition Temperature: Not available.
Solubility: Not available.
Specific Gravity/Density:1.6300 g/cm3
Molecular Formula:C6H4N2O4
Molecular Weight:168.11

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Substance is sublimable, able to go directly from solid to vapor. o-Dinitrobenzene may explode if subjected to shock, friction, or heating under confinement.
Conditions to Avoid: Dust generation.
Incompatibilities with Other Materials: Metals, strong oxidizing agents, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide).
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 100-25-4: CZ7525000
LD50/LC50:
Not available.
Oral LD50, rat: < 50 mg/kg (Eastman Kodak). sis was reported in 1970, in workers, apparently due to absorption through the skin. (Eastman Kodak). LDLo, cat: 29 mg/kg.
Carcinogenicity:
CAS# 100-25-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: m-Dinitrobenzene impairs sperm production and fertility in rats. The o- and p- isomers did not demonstrate testicular toxicity.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

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:	DOT regulated - small quantity provisions apply (see 49CFR173.4)	DINITROBENZENES
Hazard Class:		6.1
UN Number:		UN1597
Packing Group:		II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 100-25-4 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
CAS# 100-25-4: 100 lb final RQ (Listed under Dinitrobenzene, mixed); 45.4 kg final RQ (Listed u
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313
This material contains p-Dinitrobenzene (CAS# 100-25-4, 98%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR
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:
CAS# 100-25-4 is listed as a Hazardous Substance 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# 100-25-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains p-Dinitrobenzene, a chemical known to the state of California to cause male reproductive toxicity.
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+ N

Risk Phrases:

R 26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.
R 33 Danger of cumulative effects.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 36/37 Wear suitable protective clothing and gloves.
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 .
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)

CAS# 100-25-4: 3

Canada - DSL/NDSL

CAS# 100-25-4 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D1A, 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# 100-25-4 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 5/14/1998
Revision #4 Date: 10/03/2005