Material Safety Data Sheet
o-Toluidine

ACC# 89310

Section 1 - Chemical Product and Company Identification

MSDS Name: o-Toluidine
Catalog Numbers: AC139080000, AC139080025, AC139085000, AC180750000, AC180750010, AC180750050 AC180750050, AC180752500
Synonyms: 2-Aminotoluene; 2-Methylaniline; 2-Methylbenzenamine; ortho-Methylaniline; 1-Amino-2-methylbenzene; 1-Methyl-2-aminobenzene.
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
95-53-4	o-Toluidine	>98	202-429-0

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear slightly yellow liquid. Flash Point: 85 deg C.
Danger! May be fatal if inhaled, absorbed through the skin or swallowed. Causes eye, skin, and respiratory tract irritation.
Combustible liquid and vapor. Cancer suspect agent. Light sensitive. Air sensitive. May cause methemoglobinemia. May cause kidney damage. Dangerous for the environment.
Target Organs: Blood, kidneys, central nervous system, eyes, skin, bladder.

Potential Health Effects

Eye: Causes severe eye irritation. May result in corneal injury.
Skin: Causes skin irritation. May be absorbed through the skin. Causes symptoms similar to those of inhalation. May cause dermatitis. Excessive drying of the skin may result from repeated or prolonged contact.
Ingestion: Harmful if swallowed. May cause irritation of the digestive tract. May cause effects similar to those for inhalation exposure.
Inhalation: Harmful if inhaled. Causes respiratory tract irritation. May cause anoxia, characterized by weakness, headache, dizziness, confusion, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), weak and irregular heart beat, collapse, unconsciousness, convulsions, coma and death. Exposure produces central nervous system depression. May cause kidney damage. May cause headache and cyanosis of the lips, mucous membranes and fingernail beds and the tongue. Clinical signs of intoxication with o-toluidine in humans have included methemoglobinemia, hematuria, marked renal & bladder irritation, & physiological & psychological disturbances. o-Toluidine has been absorbed via the respiratory tract & skin.
Chronic: Chronic inhalation may cause effects similar to those of acute inhalation. May cause kidney injury. May cause cancer according to animal studies. Absorption into the body leads to the formation of methemoglobin which in sufficient concentrations causes cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). This substance has caused adverse reproductive and fetal effects in laboratory animals. The chronic (long-term) effects in workers exposed to o-toluidine include anemia, anorexia, weight loss, skin lesions, central nervous system depression, cyanosis (bluish discoloration of skin due to deficient oxygenation of blood), and methemoglobinemia.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid immediately.
Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.
Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: For methemoglobinemia, administer oxygen alone or with Methylene Blue depending on the methemoglobin concentration in the blood. Absorption of this product into the body may cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). Moderate degrees of cyanosis need to be treated only by supportive measures: bed rest and oxygen inhalation. Cleansing of the entire contaminated area of the body is of utmost importance.
Antidote: Methylene blue, alone or in combination with oxygen is indicated as a treatment in nitrite induced methemoglobinemia.

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. Use water spray to keep fire-exposed containers cool. Combustible liquid and vapor. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point: 85 deg C (185.00 deg F)
Autoignition Temperature: 482 deg C (899.60 deg F)
Explosion Limits, Lower:1.50 vol %
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 2; Instability: 0

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. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation. Approach spill from upwind. Use water spray to cool and disperse vapors and protect personnel.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Use only in a chemical fume hood. Avoid contact with air and sunlight. Use only with adequate ventilation. Keep away from heat and flame.
Storage: Keep away from heat and flame. Keep away from sources of ignition. Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from light and air. Material darkens on exposure to air. Separate from oxidizing materials.

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
o-Toluidine	2 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous r oute	50 ppm IDLH	5 ppm TWA; 22 mg/m3 TWA

OSHA Vacated PELs: o-Toluidine: 5 ppm TWA; 22 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear slightly yellow
Odor: amine-like
pH: Not available.
Vapor Pressure: 0.26 mm Hg @ 25 deg C
Vapor Density: 3.7 (air=1)
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 200 deg C
Freezing/Melting Point:-16 deg C
Decomposition Temperature:> 200 deg C
Solubility: Slightly soluble.
Specific Gravity/Density:1.0000 g/cm3
Molecular Formula:C7H9N
Molecular Weight:107.15

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Substance undergoes color change upon exposure to light and air.
Conditions to Avoid: Light, exposure to air, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, strong bases, nitric acid.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 95-53-4: XU2975000

LD50/LC50:
CAS# 95-53-4:
Draize test, rabbit, eye: 750 ug/24H Severe;
Draize test, rabbit, skin: 500 mg/24H Mild;
Inhalation, rat: LC50 = 862 ppm/4H;
Oral, mouse: LD50 = 520 mg/kg;
Oral, rabbit: LD50 = 840 mg/kg;
Oral, rat: LD50 = 670 mg/kg;
Skin, rabbit: LD50 = 3250 uL/kg;
.
Cat LDLo Oral: 150 mg/kg. TCLo inhalation: 25 mg/m3 urine volume increased, hematuria (blood in the urine), methemoglobinemia.
Carcinogenicity:
CAS# 95-53-4:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 1/1/88
- **NTP:** Suspect carcinogen
- **IARC:** Group 2A carcinogen

Epidemiology: Ward et al. reported the results of an epidemiologic study in which occupational exposure to o-toluidine and another aromatic amine (aniline) was associated with a statistically significant increase of bladder cancer among workers.
Teratogenicity: o-Toluidine has been shown to be a transplacental carcinogen in mice. One Russian study reported an increased frequency of tumors in offspring of mice injected with o-toluidine during gestation.
Reproductive Effects: See actual entry in RTECS for complete information.
Mutagenicity: See actual entry in RTECS for complete information.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Bacteria: Phytobacterium phosphoreum: EC50 = 13.2 mg/L; 30 min; Microtox test If released on land, o-toluidine will be lost by a combination of biodegradation, oxidation, and chemical binding to soil components. If released into water, it will also be primarily lost by biodegradation, oxidation and photooxidation. There will also be some adsorption to sediment. Bioconcentration in fish should not be an important fate process. In the atmosphere, o-toluidine will photodegrade (estimated half-life 2.4 hr).
Environmental: No information available.
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:
CAS# 95-53-4: waste number U328.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	TOLUIDINES, LIQUID	TOLUIDINES, LIQUID
Hazard Class:	6.1	6.1
UN Number:	UN1708	UN1708
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 95-53-4 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 95-53-4: Effective 3/7/86, Sunset 12/19/95
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# 95-53-4: 100 lb final RQ; 45.4 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 95-53-4: immediate, delayed, fire.
Section 313

This material contains o-Toluidine (CAS# 95-53-4, >98%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 95-53-4 is listed as a hazardous air pollutant (HAP).
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# 95-53-4 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 o-Toluidine, a chemical known to the state of California to cause cancer.
California No Significant Risk Level: CAS# 95-53-4: 4 æg/day NSRL

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T N

Risk Phrases:

R 23/25 Toxic by inhalation and if swallowed.
R 36 Irritating to eyes.
R 45 May cause cancer.
R 50 Very toxic to aquatic organisms.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)

CAS# 95-53-4: 3

Canada - DSL/NDSL

CAS# 95-53-4 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D1B, D2A.
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# 95-53-4 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 5/18/1999
Revision #5 Date: 2/26/2004