MATERIAL SAFETY DATA SHEET

NFPA	HMIS	Personal Protective Equipment
		

See Section 8.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product code:	C1232
Product Name:	O-CHLOROTOLUENE, REAGENT
Chemical Name:	Toluene, o-chloro-
Synonyms:	Benzene, 1-chloro-2-methyl- (9CI) 1-Chloro-2-methylbenzene 2-Chloro-1-methylbenzene 2-Chlorotoluene 1-Methyl-2-chlorobenzene 2-Methylchlorobenzene o-Tolyl chloride
Recommended use:	Solvent. Insecticide. Bactericide. Disinfectant. Dyestuff intermediate. In organic synthesis.
CAS #:	95-49-8
Formula:	C-H3-C6-H4-Cl
RTECS #	XS9000000
CI#:	Not available
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:	Chris Terpak (East Coast)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING FLAMMABLE!. WARNING! IRRITANT. Irritating to skin. Irritating to eyes. Irritating to respiratory system.

Odor:	**Physical state:**	**Appearance:**	**Color:**
Aromatic	Liquid.	No information available	Colorless.

2. HAZARDS IDENTIFICATION

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

POTENTIAL HEALTH EFFECTS

Principal Routes of Exposure:
Skin. Inhalation. Ingestion. Eyes.

Acute Potential Health Effects:

Skin Contact:
Irritating to skin. Moderately irritating to the skin. It may be absorbed through the skin.

Eye Contact:
Causes eye irritation. Moderately irritating to the eyes. May cause conjunctivitis.

Inhalation:
Irritating to respiratory system. May affect respiration. May cause central nervous system effects. May cause cardiovascular effects.

Ingestion:
Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhoea. It may affect the kidneys. May affect the blood. May affect the liver. May cause central nervous system effects. May affect respiration.

Chronic Potential Health Effects:

Target Organs: Liver. Kidneys. Central nervous system.

Carcinogen Status: No information available

Mutagenic Effects: No information available

Teratogenic Effects: No information available

Aggravated Medical Conditions: No information available

See Section 11 for additional Toxicological Information

POTENTIAL ENVIRONMENTAL EFFECTS

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
o-Chlorotoluene	95-49-8	100

4. FIRST AID MEASURES

General Advice: Poison information centres 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 removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eye with water for 15 minutes. Get medical attention.

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

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Notes to Physician: Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flashpoint (°C/°F):	47-49 °C/116.6-120.2 °F 52.2 °C/126 °F

Tested according to: Closed cup Open cup

Lower Explosion Limit (%):	1.0-1.36
Upper Explosion Limit (%):	7.1-12.6

Autoignition Temperature (°C/°F):	>450 °C/842 °F->600 °C/1112 °F

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Hazardous Combustion Products: Carbon oxides; Hydrogen Chloride gas

Specific hazards: Flammable. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. Vapors may form explosive mixtures with air. Vapor may travel considerable distance to source of ignition and flash back. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Fire may produce irritating, corrosive and/or toxic gases.

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

Specific Methods: For fires involving tanks or car/trailer load, cool containers with flooding quantities of water until well after the fire is out. For large fires, flood fire area with water from a distance. Water mist may be used to cool closed containers.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental Precautions:
Prevent further leakage or spillage if safe to do so. Do not let this chemical enter the environment. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

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

7. HANDLING AND STORAGE

Handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat 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.

Storage

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Keep product and empty container away from heat and sources of ignition. Store in a segrated and approved area. Store away from incompatible materials.

Incompatible Products:
Oxidizing agents. Reducing agents. Acids. Bases.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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.

Personal Protective Equipment

Eye protection: Goggles. Safety glasses with side-shields.

Skin and body protection: Chemical resistant apron. Long sleeved clothing. 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.

National occupational exposure limits

United States

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
o-Chlorotoluene - 95-49-8	Vacated (revoked) PELs = 50 ppm/250 mg/m^3 TWA	50 ppm TWA 250 mg/m^3 TWA 75 ppm STEL 375 mg/m^3 STEL	50 ppm TWA	Not determined

Canada

Components	Alberta	British Columbia	Quebec	Ontario
o-Chlorotoluene 95-49-8	50 ppm TWA 259 mg/m^3 TWA	50 ppm TWA	50 ppm TWAEV 259 mg/m^3 TWAEV	50 TWA

Australia and Mexico

Components	Australia	Mexico
o-Chlorotoluene 95-49-8	50 ppm TWA 259 mg/m^3 TWA	50 ppm TWA 250 mg/m^3 TWA 75 ppm STEL 375 mg/m^3 STEL

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Liquid.

Appearance:
No information available

Color:
Colorless.

Odor:
Aromatic.

Taste
No information available

Molecular/Formula weight:
126.59

Flash point (°C):
47

Lower Explosion Limit (%):
1.0-1.36

Upper Explosion Limit (%):
7.1-12.6

Autoignition Temperature (°C/°F):
>450 °C/842 °F->600 °C/1112 °F

pH:
No information available

Boiling point/range(°C/°F):
157-159 °C/314.6-318.2 °F

Melting point/range(°C/°F):
-35.59 °C/-32.06 °F

Decomposition temperature(°C/°F):
No information available

Specific gravity:
1.0826 @ 20 °C

Density (g/cm3):
1.08 @ 20 °C

Bulk density:
No information available

Vapor pressure @ 20°C (kPa):
0.35

Vapor density:
4.37

Evaporation rate:
No information available

VOC content (g/L):
No information available

Odor threshold (ppm):
0.32

Partition coefficient (n-octanol/water):
3.42

Miscibility:
No information available

Solubility:
Freely soluble in Chloroform
Slightly soluble in water
Soluble in Acetone
Soluble in Ether
Soluble in alcohol
Soluble in Carbon tetrachloride
Soluble in Benzene
Sollubility in water: 374 mg/L @ 25 °C

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions

Conditions to avoid:	Heat. Ignition sources. Incompatible materials.
Materials to avoid:	Oxidising agents. Reducing agents. Acids. Bases.
Hazardous decomposition products:	Carbon dioxide. Carbon monoxide. Hydrogen chloride gas.
Possibility of Hazardous Reactions:	No information available
Polymerization:	Hazardous polymerisation does not occur
Corrosivity:	No information available
Special Remarks on Corrosivity:	No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

o-Chlorotoluene - 95-49-8

LD50/oral/rat =
2350 mg/kg Oral LD50 Rat (LOLI)
3900 mg/kg (RTECS)
2100 mg/kg (RTECS)
1659 mg/kg (RTECS)
LD50/oral/mouse =
2500 mg/kg (RTECS)
3776 mg/kg (RTECS)
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = 7119 mg/kg/4H (RTECS)
LC50/inhalation/mouse = No infomaton available
Other LD50 information = No information available

Product Information

LC50/inhalation/rat = 7119 mg/kg/4H (RTECS)
LC50/Inhalation/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LD50/oral/rat =
2350 mg/kg Oral LD50 Rat (LOLI)
3900 mg/kg (RTECS)
2100 mg/kg (RTECS)
1659 mg/kg (RTECS)
LD50/oral/mouse =
2500 mg/kg (RTECS)
3776 mg/kg (RTECS)

Local Effects

Skin irritation:	Irritating to skin. Moderate skin irritation.
Eye irritation:	Irritating to eyes. Moderate eye irritation. Causes conjunctivitis.

Inhalation: Irritating to respiratory system. It may affect behavior/central nervous system (convulsions, excitement). May affect behavior/cental nervous system (dizziness, loss of coordination, coma). Symptoms may include coughing and wheezing. May cause dyspnea (difficulty breathing or shortness of breath). May cause cardiovascular system effects (vasodilation).

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May affect respiration (respiratory depression). May affect behavior/central nervous system (somnolence, convulsions, tremor, ataxia). It may affect behavior/central nervous system (dizzness, excitement).

Sensitization: No information available

Chronic Toxicity

Chronic Toxicity Prolonged or repeated inhalation may affect the kidneys. Prolonged or repeated inhalation and/or ingestion may cause central nervous system effects (affect behavior). Prolonged or repeated ingestion may affect the liver, and kidneys. Prolonged or repeated ingestion may affect the blood. Prolonged or repeated inhalation may affect metabolism (weight loss). Prolonged or repeated ingestion may cause weight loss.

Carcinogenic effects: Not considered carcinogenic

Mutagenic Effects: No information available

Reproductive Effects: No information available

Teratogenic Effects: No information available

Target Organs: Liver. Kidneys. Central nervous system.

12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to terrestrial and aquatic plants and animals: Information given is based on data on the components and the ecotoxicology of similar products

Ecotoxicity effects: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Aquatic toxicity: Contains components that are toxic to the aquatic environment

o-Chlorotoluene - 95-49-8

Freshwater Fish Species Data: 70-100 mg/L LC50 Brachydanio rerio 96 h static 1

Water Flea Data: 20 mg/L EC50 Daphnia magna 24 h

Mobility: No information available

Persistence and degradability: No information available

Bioaccumulative potential: No information available

13. DISPOSAL CONSIDERATIONS

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

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
o-Chlorotoluene	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN2238
Proper Shipping Name: Chlorotoluenes
Hazard Class: 3
Packing Group: III
Subsidiary Risk: Not applicable
Marine Pollutant Marine Pollutant
ERG No: 129
DOT RQ (lbs): No information available
Symbol(s): P

TDG (Canada)

Proper Shipping Name: Chlorotoluenes
UN-No: UN2238
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Description: No information available

ADR

Proper Shipping Name: Chlorotoluenes
UN-No: UN2238
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

Proper Shipping Name: Chlorotoluenes
UN-No: UN2238
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Description: No information available
IMDG Page: No information available
Marine Pollutant Marine Pollutant
EMS: F-E
MFAG: No information available
Maximum Quantity: No information available

RID

Proper Shipping Name: Chlorotoluenes
UN-No: UN2238
Hazard Class: 3

Packing Group: III
Subsidiary Risk: 3
Classification Code: No information available
Description: No information available

ICAO

UN-No: UN2238
Hazard Class: 3
Proper Shipping Name: Chlorotoluenes
Packing Group: III
Subsidiary Risk: No information available
Description: No information available

IATA

Proper Shipping Name: Chlorotoluenes
UN-No: UN2238
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
ERG Code: 3L
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Components	U.S. TSCA	Philippines (PICCS)	KOREA KECL	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
o-Chlorotoluene	Present	Present	KE-05915	3-39	Present	Present	202-424-3

U.S. Regulations

o-Chlorotoluene

Massachusetts RTK: Present
New Jersey RTK Hazard Substance: Present
Pennsylvania RTK: Present
RI RTK - Hazardous Substances List: Present
Minnesota - Hazardous Substance List: Present
California Directors List of Hazardous Substances: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcment Act of 1986.

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)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
o-Chlorotoluene	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting *de minimis*
o-Chlorotoluene	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
o-Chlorotoluene	Not Applicable	04/29/1983 04/29/1993

Canada

WHMIS hazard class:
B3 Combustible liquid
D2B Toxic materials

o-Chlorotoluene
B3 D2B

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.

Components	WHMIS Ingredient Disclosure List -
o-Chlorotoluene	1 %

Inventory

Components	Canada (DSL)	Canada (NDSL)
o-Chlorotoluene	Present	Not Listed

EU Classification

R -phrase(s)
R20 - Harmful by inhalation.
R10 - Flammable.
R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S -phrase(s)
S61 - Avoid release to the environment. Refer to special instructions/safety data sheets.
S24/25 - Avoid contact with skin and eyes.

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

Indication of danger:
Xn - Harmful.
N - Dangerous for the environment.

16. OTHER INFORMATION

The MSDS format complies with ANSI Z400.1-2004 standards.

Preparation Date	10-Jan-2011
Reason for revision:	Not applicable
Prepared by:	Sonia Owen
Literature reference:	No information available

All chemicals may pose unknown hazards and should be used with caution. This 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. The physical properties reported in this MSDS 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 MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.