



## Material Safety Data Sheet

Creation Date 11-Jun-2009

Revision Date 16-Sep-2013

Revision Number 3

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name**

Toluene

**Cat No. :**

S80229HPLC; T288-1; T288RS-19; T290-1; T290-1LC; T290-4; T290RS-19; T290RS-28; T290RS-200; T290N2-19; T290SK-1; T290SK-4; T290SS-28; T290SS-50; T290SS-115; T290SS-200; T291-4; T291-4LC; T291RS-200; T291SK-4; T291SS-19; T313-4; T313SK-4; T323-4; T323-20; T324-1; T324-4; T324-20; T324-200; T324-500; T324CU-1300; T324FB-19; T324FB-50; T324FB-115; T324FB-200; T324POP-200; T324POPB-200; T324RB-19; T324RB-115; T324RB-200; T324RS-19; T324RS-28; T324RS-50; T324RS-115; T324RS-200; T324S-4; T324SK-4; T324SS-28; T324SS-50; T324SS-115; T324SS-200; T326F-1GAL; T326P-4; T326S-20; T326S-20LC; T330-4

**Synonyms**

Methylbenzene; Toluol; Phenyl methane (Certified ACS, HPLC, OPTIMA, Laboratory, Histological, Spectranalyzed, Scintanalyzed)

**Recommended Use**

Laboratory chemicals

**Company**

Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

**Emergency Telephone Number**

CHEMTREC®, Inside the USA: 800-424-9300  
CHEMTREC®, Outside the USA: 001-703-527-3887

### 2. HAZARDS IDENTIFICATION

**DANGER!**

**Emergency Overview**

Flammable liquid and vapor. Causes eye, skin, and respiratory tract irritation. Vapors may cause drowsiness and dizziness. Aspiration hazard if swallowed - can enter lungs and cause damage. Danger of serious damage to health by prolonged exposure. Possible risk of harm to the unborn child. May cause adverse kidney effects. May cause adverse liver effects.

**Appearance** Colorless

**Physical State** Liquid

**Odor** aromatic

**Target Organs**

Eyes, Skin, Respiratory system, Liver, Kidney, Central nervous system (CNS), Blood, spleen

**Potential Health Effects**

**Acute Effects**

**Principle Routes of Exposure**

<b>Eyes</b>	Irritating to eyes.
<b>Skin</b>	Irritating to skin. Can be absorbed through skin. May be harmful in contact with skin.
<b>Inhalation</b>	Irritating to respiratory system. May be harmful if inhaled. May cause drowsiness and dizziness.
<b>Ingestion</b>	Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed. Potential for aspiration if swallowed.
<b>Chronic Effects</b>	Component substance is listed on California Proposition 65 as a developmental hazard. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse liver effects. May cause adverse kidney effects. Danger of serious damage to health by prolonged exposure.

See Section 11 for additional Toxicological information.

**Aggravated Medical Conditions** Central nervous system disorders. Preexisting eye disorders. Kidney disorders. Liver disorders. Skin disorders.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Haz/Non-haz

Component	CAS-No	Weight %
Toluene	108-88-3	>95

### 4. FIRST AID MEASURES

<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
<b>Inhalation</b>	Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required. Aspiration into lungs can produce severe lung damage..
<b>Ingestion</b>	Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting. Call a physician or Poison Control Center immediately. If vomiting occurs, lean victim forward to reduce the risk of aspiration..
<b>Notes to Physician</b>	Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

<b>Flash Point</b>	4°C / 39.2°F
<b>Method -</b>	No information available.
<b>Autoignition Temperature</b>	535°C / 995°F
<b>Explosion Limits</b>	
<b>Upper</b>	7.1 vol %
<b>Lower</b>	1.1 vol %
<b>Suitable Extinguishing Media</b>	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

**Unsuitable Extinguishing Media** No information available.

**Hazardous Combustion Products** No information available.

**Sensitivity to mechanical impact** No information available.

**Sensitivity to static discharge** No information available.

**Specific Hazards Arising from the Chemical**

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**                      **Health** 2                      **Flammability** 3                      **Instability** 0                      **Physical hazards** N/A

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions** Use personal protective equipment. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and inhalation of vapors.. Remove all sources of ignition. Take precautionary measures against static discharges.

**Environmental Precautions** Should not be released into the environment. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

**Methods for Containment and Clean Up** Provide adequate ventilation. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

**7. HANDLING AND STORAGE**

**Handling** Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use explosion-proof equipment. Take precautionary measures against static discharges. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat and sources of ignition.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas.

### Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Toluene	TWA: 20 ppm	(Vacated) TWA: 100 ppm (Vacated) TWA: 375 mg/m <sup>3</sup> Ceiling: 300 ppm (Vacated) STEL: 150 ppm (Vacated) STEL: 560 mg/m <sup>3</sup> TWA: 200 ppm	IDLH: 500 ppm TWA: 100 ppm TWA: 375 mg/m <sup>3</sup> STEL: 150 ppm STEL: 560 mg/m <sup>3</sup>

Component	Quebec	Mexico OEL (TWA)	Ontario TWA EV
Toluene	TWA: 50 ppm TWA: 188 mg/m <sup>3</sup> Skin	TWA: 50 ppm TWA: 188 mg/m <sup>3</sup>	TWA: 20 ppm

**NIOSH IDLH:** Immediately Dangerous to Life or Health

### Personal Protective Equipment

#### Eye/face Protection

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 and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

#### Respiratory Protection

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	1.74 ppm
pH	Not applicable
Vapor Pressure	29 mbar @ 20 °C
Vapor Density	3.1 (Air = 1.0)
Viscosity	0.6 mPa.s @ 20 °C
Boiling Point/Range	111°C / 231.8°F @ 760 mmHg
Melting Point/Range	-95°C / -139°F
Decomposition temperature	No information available.
Flash Point	4°C / 39.2°F
Evaporation Rate	2.4 (Butyl acetate = 1.0)
Specific Gravity	0.866
Solubility	Insoluble in water
log Pow	No data available
Molecular Weight	92.14
Molecular Formula	C7 H8

## 10. STABILITY AND REACTIVITY

### Stability

Stable under normal conditions.

### Conditions to Avoid

Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.

<b>Incompatible Materials</b>	Strong oxidizing agents, Strong acids
<b>Hazardous Decomposition Products</b>	Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> )
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.
<b>Hazardous Reactions</b>	None under normal processing.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

#### Product Information

#### Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Toluene	> 5000 mg/kg ( Rat )	12124 mg/kg ( Rat ) 8390 mg/kg ( Rabbit )	26700 ppm ( Rat ) 1 h

**Irritation** Irritating to eyes, respiratory system and skin

**Toxicologically Synergistic Products** No information available.

### Chronic Toxicity

**Carcinogenicity** There are no known carcinogenic chemicals in this product

**Sensitization** No information available.

**Mutagenic Effects** Not mutagenic in AMES Test

**Reproductive Effects** Experiments have shown reproductive toxicity effects on laboratory animals.

**Developmental Effects** Developmental effects have occurred in experimental animals.

**Teratogenicity** Possible risk of harm to the unborn child.

**Other Adverse Effects** The toxicological properties have not been fully investigated.

**Endocrine Disruptor Information** No information available

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

Do not empty into drains

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Toluene	433 mg/L EC50 > 96 h 12.5 mg/L EC50 = 72 h	50-70 mg/L LC50 96 h 5-7 mg/L LC50 96 h 15-19 mg/L LC50 96 h 28 mg/L LC50 96 h 12 mg/L LC50 96 h	EC50 = 19.7 mg/L 30 min	11.5 mg/L EC50 = 48 h 5.46 - 9.83 mg/L EC50 48 h

**Persistence and Degradability** Readily biodegradable.

**Bioaccumulation/ Accumulation** No information available

**Mobility** . Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Toluene	2.65

**13. DISPOSAL CONSIDERATIONS**

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Toluene - 108-88-3	U220	-

**14. TRANSPORT INFORMATION**

**DOT**

UN-No UN1294  
 Proper Shipping Name TOLUENE  
 Hazard Class 3  
 Packing Group II

**TDG**

UN-No UN1294  
 Proper Shipping Name TOLUENE  
 Hazard Class 3  
 Packing Group II

**IATA**

UN-No UN1294  
 Proper Shipping Name TOLUENE  
 Hazard Class 3  
 Packing Group II

**IMDG/IMO**

UN-No UN1294  
 Proper Shipping Name TOLUENE  
 Hazard Class 3  
 Packing Group II

**15. REGULATORY INFORMATION**

**International Inventories**

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	CHINA	KECL
Toluene	X	X	-	203-625-9	-		X	X	X	X	X

Legend:

**X - Listed**

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

**U.S. Federal Regulations**

TSCA 12(b) Not applicable

**SARA 313**

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Toluene	108-88-3	>95	1.0

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

**Clean Water Act**

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Toluene	X	1000 lb	X	X

**Clean Air Act**

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Toluene	X		-

**OSHA Occupational Safety and Health Administration**

Not applicable

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Toluene	1000 lb	-

**California Proposition 65**

This product contains the following Proposition 65 chemicals:

Component	CAS-No	California Prop. 65	Prop 65 NSRL
Toluene	108-88-3	Developmental Female Reproductive	-

**State Right-to-Know**

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Toluene	X	X	X	X	X

**U.S. Department of Transportation**

Reportable Quantity (RQ): Y  
 DOT Marine Pollutant N  
 DOT Severe Marine Pollutant N

**U.S. Department of Homeland Security**

This product does not contain any DHS chemicals.

**Other International Regulations**

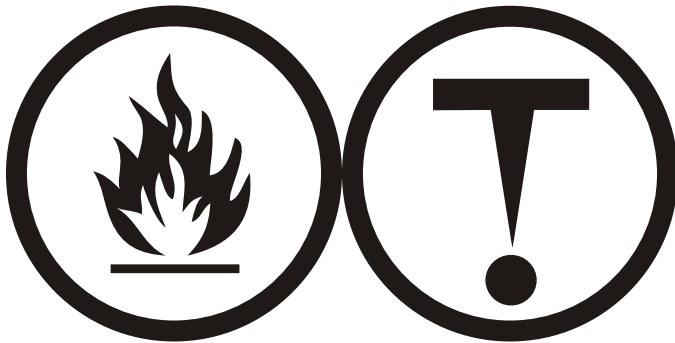
**Mexico - Grade** Serious risk, Grade 3

**Canada**

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

**WHMIS Hazard Class**

B2 Flammable liquid  
 D2A Very toxic materials  
 D2B Toxic materials



**16. OTHER INFORMATION**

**Prepared By** Regulatory Affairs  
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**Revision Summary**

Update to Format, (M)SDS sections updated, 4, 8, 11, 12, 13, 15, 16.

**Disclaimer**

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of MSDS**