

# MATERIAL SAFETY DATA SHEET

## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT

**Product Name:** TOLUENE  
**Product Description:** Aromatic Hydrocarbon  
**Product Code:**  
**Intended Use:** Feedstock

This (M)SDS is a generic document with no country specific information included.

## SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

This material is regulated as a substance.

### Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	Symbols/Risk Phrases
Toluene	108-88-3	100%	F;R11, Xi;R38, Xn;R48/20, Xn;Repro. Cat. 3;R63, Xn;R65, R67

\* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## SECTION 3 HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

CLASSIFICATION: | F; R11 | Repro. Cat. 3; R63 | Xn; R48/20 | Xn; R65 | Xi; R38 | R67 |

### PHYSICAL / CHEMICAL HAZARDS

Highly flammable. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited. Material can accumulate static charges which may cause an incendiary electrical discharge.

### HEALTH HAZARDS

Possible risk of harm to the unborn child. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Harmful: may cause lung damage if swallowed. Irritating to skin. Vapours may cause drowsiness and dizziness. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression.

Note: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

## SECTION 4 FIRST AID MEASURES

### INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use

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mouth-to-mouth resuscitation.

## SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

## EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

## INGESTION

Seek immediate medical attention. Do not induce vomiting.

## NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

## SECTION 5

### FIRE FIGHTING MEASURES

#### EXTINGUISHING MEDIA

**Appropriate Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight streams of water

#### FIRE FIGHTING

**Fire Fighting Instructions:** Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapours and to protect personnel attempting to stop a leak. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

**Unusual Fire Hazards:** Highly flammable. Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

**Hazardous Combustion Products:** Incomplete combustion products, Smoke, Fume, Oxides of carbon

#### FLAMMABILITY PROPERTIES

**Flash Point [Method]:**  $\geq 4C$  (39F) [ASTM D-56]

**Flammable Limits (Approximate volume % in air):** LEL: 1.3 UEL: 6.7

**Autoignition Temperature:**  $>500^{\circ}C$  (932 $^{\circ}F$ )

## SECTION 6

### ACCIDENTAL RELEASE MEASURES

#### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

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## PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for Personal Protective Equipment.

## SPILL MANAGEMENT

**Land Spill:** Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces.

**Water Spill:** Stop leak if you can do so without risk. Eliminate sources of ignition. If the Flash Point exceeds the Ambient Temperature by 10 deg C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

## ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways,

sewers, basements or confined areas.

## SECTION 7

## HANDLING AND STORAGE

### HANDLING

Avoid contact with skin. Use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapour may be evolved from heated or agitated material. Use only with adequate ventilation. Use proper bonding and/or earthing procedures. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source).

**Loading/Unloading Temperature:** [Ambient]

**Transport Temperature:** [Ambient]

**Transport Pressure:** [Ambient]

**Static Accumulator:** This material is a static accumulator.

### STORAGE

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Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be earthed and bonded. Drums must be earthed and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

**Storage Temperature:** [Ambient] **Storage**

**Pressure:** [Ambient]

**Suitable Containers/Packing:** Barges; Drums; Tank Trucks; Tank Cars; Tankers

**Suitable Materials and Coatings:** Carbon steel; Teflon; Polyester; Stainless steel

**Unsuitable Materials and Coatings:** Rubber; Polystyrene; Ethylene-propylene-diene monomer (EPDM); Polyethylene

### SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

#### EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard	Note	Source	Year
Toluene		TWA 20 ppm		ACGIH	2007

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

#### ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment to stay below exposure limits.

#### PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

**Respiratory Protection:** If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator Type A filter material.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

**Hand Protection:** Any specific glove information provided is based on published literature and glove manufacturer

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data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

If prolonged or repeated contact is likely, chemical-resistant gloves are recommended. If contact with forearms is likely, wear gauntlet-style gloves. Nitrile, Polyvinyl Chloride (PVC)

**Eye Protection:** If contact is likely, safety glasses with side shields are recommended.

**Skin and Body Protection:** Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical / oil resistant clothing if contact with material is likely.

**Specific Hygiene Measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

## ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

## SECTION 9

## PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

### GENERAL INFORMATION

**Physical State:** Liquid

**Form:** clear

**Colour:** Colourless

**Odour:** Aromatic

**Odour Threshold:** N/D

### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density:** 0.87

**Density (at 15 °C):** 870 kg/m<sup>3</sup> (7.26 lbs/gal, 0.87 kg/dm<sup>3</sup>)

**Flash Point [Method]:** ≥4C (39F) [ASTM D-56]

**Flammable Limits (Approximate volume % in air):** LEL: 1.3 UEL: 6.7

**Autoignition Temperature:** >500°C (932°F)

**Boiling Point / Range:** 110C (230F) - 111C (232F)

**Vapour Density (Air = 1):** > 1 @ 101 kPa

**Vapour Pressure:** | 7 kPa (52.5 mm Hg) at 38C

**Evaporation Rate (N-Butyl Acetate = 1):** 2.4 **pH:**

N/A

**Log Pow (n-Octanol/Water Partition Coefficient):** N/D

**Solubility in Water:** Negligible

**Viscosity:** | 0.65 cSt (0.65 mm<sup>2</sup>/sec) at 25C

**Oxidising properties:** See Sections 3, 15, 16.

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## OTHER INFORMATION

**Freezing Point:** -95°C (-139°F)

**Melting Point:** N/D

**Molecular Weight:** 92

**Hygroscopic:** No

**Coefficient of Thermal Expansion:** 0.0009 V/V/DEG C

**Decomposition Temperature:** N/D

## SECTION 10

## STABILITY AND REACTIVITY

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Avoid heat, sparks, open flames and other ignition sources.

**MATERIALS TO AVOID:** Strong oxidisers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**HAZARDOUS POLYMERIZATION:** Will not occur.

## SECTION 11

## TOXICOLOGICAL INFORMATION

### Acute Toxicity

Route of Exposure	Conclusion / Remarks
<b>INHALATION</b>	
Toxicity: LC50 30-35 mg/l	Minimally Toxic. Based on available literature
Irritation: Data available.	Negligible hazard at ambient/normal handling temperatures. Based on available literature
<b>INGESTION</b>	
Toxicity: LD50 > 7000 mg/kg	Minimally Toxic. Based on available literature
<b>Skin</b>	
Toxicity: LD 50 12-14 g/kg	Minimally Toxic. Based on available literature
Irritation: Data available.	Mildly irritating to skin with prolonged exposure. Based on available literature

<b>Eye</b>	
Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on available literature

### CHRONIC/OTHER EFFECTS For the product itself:

Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

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TOLUENE : Concentrated, prolonged or deliberate inhalation may cause brain and nervous system damage. Prolonged and repeated exposure of pregnant animals (> 1500 ppm) have been reported to cause adverse fetal developmental effects.

Additional information is available by request.

## IARC Classification:

The Following Ingredients are Cited on the Lists Below: None.

1 = IARC 1

--REGULATORY LISTS SEARCHED--

2 = IARC 2A

3 = IARC 2B

## SECTION 12

### ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

#### ECOTOXICITY

Material -- Expected to be harmful to aquatic organisms.

#### MOBILITY

Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

#### PERSISTENCE AND DEGRADABILITY

##### Biodegradation:

Material -- Expected to be readily biodegradable.

##### Atmospheric Oxidation:

Material -- Expected to degrade at a moderate rate in air

#### BIOACCUMULATION POTENTIAL

Material -- Potential to bioaccumulate is low.

#### OTHER ECOLOGICAL INFORMATION

VOC: Yes

## SECTION 13

### DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

#### DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised

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incineration at very high temperatures to prevent formation of undesirable combustion products.

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

### SECTION 14

### TRANSPORT INFORMATION

#### LAND

**Proper Shipping Name:** Toluene  
**Hazard Class:** 3  
**Hazchem Code:** 3YE  
**UN Number:** 1294  
**Packing Group:** II  
**Label(s) / Mark(s):** 3

#### SEA (IMDG)

**Proper Shipping Name:** Toluene  
**Hazard Class & Division:** 3  
**EMS Number:** F-E, S-D  
**UN Number:** 1294  
**Packing Group:** II  
**Label(s):** 3  
**Transport Document Name:** UN1294, TOLUENE, 3, PG II, (4°C c.c.)

#### AIR (IATA)

**Proper Shipping Name:** Toluene  
**Hazard Class & Division:** 3  
**UN Number:** 1294  
**Packing Group:** II  
**Label(s):** 3  
**Transport Document Name:** UN1294, TOLUENE, 3, PG II

### SECTION 15

### REGULATORY INFORMATION

Material is hazardous as defined by the EU Dangerous Substances/Preparations Directives.

**EU CLASSIFICATION:** Highly flammable. Category 3 Toxic to reproduction. Harmful. Irritant. The classification of this product is based all or in part on test data.

#### EU LABELING:

**Symbol:** F, Xn





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Highly flammable. Harmful.

**Nature of Special Risk:** R11; Highly flammable. R63; Possible risk of harm to the unborn child. R48/20; Harmful: danger of serious damage to health by prolonged exposure through inhalation. R65; Harmful: may cause lung damage if swallowed. R38; Irritating to skin. R67; Vapours may cause drowsiness and dizziness.

**Safety Advice:** S16; Keep away from sources of ignition - No smoking. S36/37; Wear suitable protective clothing and gloves. S46; If swallowed, seek medical advice immediately and show this container or label. S62; If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

## REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

**Complies with the following national/regional chemical inventory requirements:** TSCA, AICS, IECSC, EINECS, DSL, KECI, PICCS, ENCS

## SECTION 16

## OTHER INFORMATION

**N/D = Not determined, N/A = Not applicable**

**KEY TO THE RISK CODES CONTAINED IN SECTION 2 AND 3 OF THIS DOCUMENT (for information only):**

R11; Highly flammable. R38;  
Irritating to skin.

R48/20; Harmful: danger of serious damage to health by prolonged exposure through inhalation. R63;  
Possible risk of harm to the unborn child.

R65; Harmful: may cause lung damage if swallowed. R67;  
Vapours may cause drowsiness and dizziness.

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

No revision information is available.

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DGN: 4406035AAP (1004494) (AP Core)

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