PURITAN PRODUCTS

Effective Date: 01/02/14
Replaces Revision: 06/16/09

NON-EMERGENCY TELEPHONE
610-866-4225

24-HOUR CHEMTREC EMERGENCY TELEPHONE
800-424-9300

SDS – SAFETY DATA SHEET

1. Identification

Product Identifier: TOLUENE
Synonyms: Methylbenzene; Toluol; Phenylmethane
Chemical Formula: C6H5-CH3
Recommended Use of the Chemical and Restrictions On Use: Laboratory Reagent
Manufacturer / Supplier: Puritan Products; 2290 Avenue A, Bethlehem, PA 18017 **Phone:** 610-866-4225
Emergency Phone Number: 24-Hour Chemtrec Emergency Telephone 800-424-9300

2. Hazard(s) Identification

Classification of the Substance or Mixture:
Flammable liquids (Category 2)
Acute toxicity, Inhalation (Category 4)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Reproductive toxicity (Category 2)
Specific target organ toxicity - single exposure (Category 2)
Specific target organ toxicity - single exposure (Category 3)
Aspiration hazard (Category 1)
Acute aquatic toxicity (Category 4)

Risk Phrases:
R11: Highly flammable.
R20: Harmful by inhalation.
R36/38: Irritating to eyes and skin.
R51: Toxic to aquatic organisms.
R62: Possible risk of impaired fertility.
R65: Harmful: may cause lung damage if swallowed.
R67: Vapors may cause drowsiness and dizziness.

Label Elements:

Trade Name: TOLUENE

Signal Word: Danger

Hazard Statements:
H225: Highly flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H336: May cause drowsiness or dizziness.
H361: Suspected of damaging fertility or the unborn child.
H371: May cause damage to organs.
H401: Toxic to aquatic life.

Precautionary Statements:
P210: Keep away from heat / sparks / open flames / hot surfaces. No smoking.
P260: Do not breathe dust / fume / gas / mist / vapors / spray.
P281: Use personal protective equipment as required.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P331: Do NOT induce vomiting.

3. Composition / Information on Ingredients

CAS Number: 108-88-3
EC Number: 203-625-9
Index Number: 601-021-00-3
Molecular Weight: 92.14 g/mol

Ingredient	CAS Number	EC Number	Percent	Hazardous	Chemical Characterization
Toluene	108-88-3	203-625-9	100%	Yes	Substance

4. First-aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. Call a physician immediately.

Ingestion: Aspiration hazard. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. If vomiting occurs, keep head below hips to prevent aspiration into lungs.

Skin Contact: Remove any contaminated clothing. Wipe off excess from skin. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact: In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

5. Fire-fighting Measures

Fire: Flammable Liquid and Vapor! Vapor may cause flash fire. Dangerous fire hazard when exposed to heat or flame. Flash point: 7C (45F) CC / Autoignition temperature: 422C (792F) / Flammable limits in air % by volume: uel: 19; lel: 3.3

Explosion: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Contact with strong oxidizers may cause fire or explosion. Sensitive to static discharge.

Fire Extinguishing Media: Dry chemical, foam or Carbon Dioxide. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Water spray may be used to keep fire exposed containers cool. Vapors can flow along surfaces to distant ignition source and flash back.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions and Methods and Materials for Containment and Cleaning Up: Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth.) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is 800-424-8802.

7. Handling and Storage

Precautions for Safe Handling and Conditions for Safe Storage, Including Any Incompatibilities: Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid.) Observe all warnings and precautions listed for the product.

8. Exposure Controls / Personal Protection

Airborne Exposure Limits:
OSHA Permissible Exposure Limit (PEL): 200 ppm (TWA);
300 ppm (acceptable ceiling concentration); 500 ppm (maximum concentration)
ACGIH Threshold Limit Value (TLV): 50 ppm (TWA) skin, A4 - Not Classifiable as a Human Carcinogen

Ventilation System: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): If the exposure limit is exceeded and engineering controls are not feasible, a half face-piece organic vapor respirator may be worn for up to ten times (10X) the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full face-piece organic vapor respirator may be worn up to fifty (50X) times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full face-piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in Oxygen-deficient atmospheres.

Skin Protection: Wear impervious, solvent-resistant, flame-retardant, antistatic, protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. If splashes are likely to occur, wear protective suit. Gloves must be inspected prior to use and replaced when worn.

Eye Protection: Use chemical safety goggles and / or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance: Clear, colorless liquid
Odor: Aromatic benzene-like

Odor Threshold: Not determined
pH: Not determined
% Volatiles by volume @ 21C (70F): 100
Melting Point: -95C (ca. -139F)
Boiling Point / Boiling Range: 111C (232F)
Flash Point: 7C (45F) CC
Evaporation Rate (BuAC=1): 2.24
Flammability: Flammable Liquid and Vapor!
Upper / Lower Flammability or Explosive Limits: uel: 19; lel: 3.3
Vapor Pressure (mm Hg): 22 @ 20C (68F)
Vapor Density (Air=1): 3.14
Relative Density: 0.865 g/mL at 25C (77F)
Solubility: 0.05 gm/100gm water @ 20C (68F)
Partition Coefficient: n-octanol / water: Not determined
Auto-ignition Temperature: 422C (792F)
Decomposition Temperature: Not determined
Viscosity: Not determined

10. Stability and Reactivity

Reactivity and / or Chemical Stability: Stable under recommended storage conditions. Containers may burst when heated.

Possibility of Hazardous Reactions and Conditions to Avoid: Heat, flames, ignition sources, and incompatibles.

Incompatible Materials: Strong oxidizers, Nitric and Sulfuric acids, Chlorine, Nitrogen Tetraoxide; will attack some forms of plastics, rubber, coatings.

Hazardous Decomposition Products: Carbon Dioxide and Carbon Monoxide may form when heated to decomposition.

11. Toxicological Information

Emergency Overview: POISON! DANGER! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR HARMFUL. FLAMMABLE LIQUID AND VAPOR. MAY AFFECT LIVER, KIDNEYS, BLOOD SYSTEM, OR CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Potential Health Effects:

Inhalation: Inhalation may cause irritation of the upper respiratory tract. Symptoms of overexposure may include fatigue, confusion, headache, dizziness and drowsiness. Peculiar skin sensations (e. g. pins and needles) or numbness may be produced. Very high concentrations may cause unconsciousness and death.

Ingestion: Swallowing may cause abdominal spasms and other symptoms that parallel over-exposure from inhalation. Aspiration of material into the lungs can cause chemical pneumonitis, which may be fatal.

Skin Contact: Causes irritation. May be absorbed through skin.

Eye Contact: Causes severe eye irritation with redness and pain.

Chronic Exposure: Reports of chronic poisoning describe anemia, decreased blood cell count and bone marrow hypoplasia. Liver and kidney damage may occur. Repeated or prolonged contact has a defatting action, causing drying, redness, dermatitis. Exposure to toluene may affect the developing fetus.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or impaired liver or kidney function may be more susceptible to the effects of this substance. Alcoholic beverage consumption can enhance the toxic effects of this substance.

Reproductive Toxicity: Has shown some evidence of reproductive effects in male and female laboratory animals.

Teratogenicity: Damage to fetus possible; Suspected human reproductive toxicant.

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System:) No data available

Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System:) No data available

Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen

Ingredient	Known	Anticipated	IARC Category
Toluene (108-88-3)	No	No	None

Acute Toxicity: Oral rat LD50: 636 mg/kg; skin rabbit LD50: 14100 uL/kg; inhalation rat LC50: 49 gm/m3/4H; Irritation data: skin rabbit, 500 mg, Moderate; eye rabbit, 2 mg/24H, Severe. Investigated as a tumorigen, mutagen, reproductive effecter

12. Ecological Information

Ecotoxicity: This material is expected to be toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

Persistence and Degradability: When released into the soil, this material may biodegrade to a moderate extent. . When released into water, this material may biodegrade to a moderate extent. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

Bioaccumulative Potential: This material is not expected to significantly bioaccumulate.

Mobility in Soil: When released into the soil, this material may evaporate to a moderate extent. When released into the soil, this material is expected to leach into groundwater.

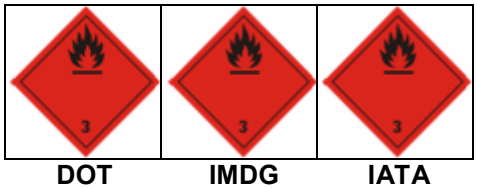
Other adverse effects: When released into water, this material may evaporate to a moderate extent. When released into the air, this material is expected to have a half-life of less than 1 day. This material has a log octanol-water partition coefficient of less than 3.0. Bioconcentration factor = 13.2 (eels.)

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

UN Number: UN1294
UN Proper Shipping Name: TOLUENE
Packing Group: II



DOT **IMDG** **IATA**

Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)
Transport Hazard Class(es): 3

Maritime Transport IMDG/GGVSea
Transport Hazard Class(es): 3
EMS Number: F-E, S-D
Marine Pollutant: No

Air Transport ICAO-TI and IATA-DGR
Transport Hazard Class(es): 3

Transport in Bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory Information

Chemical Inventory Status – Part 1

Ingredient	TSCA	EC	Japan	Australia
Toluene (108-88-3)	Yes	Yes	Yes	Yes

Chemical Inventory Status – Part 2

Ingredient	Korea	Canada		Phil.
		DSL	NDSL	
Toluene (108-88-3)	Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1

	SARA 302		SARA 313	
Ingredient	RQ	TPQ	List Chemical	Catg.
Toluene (108-88-3)	No	No	Yes	No

Federal, State & International Regulations - Part 2

	RCRA		TSCA
Ingredient	CERCLA	261.33	8(d)
Toluene (108-88-3)	1000	U220	No

Chemical Weapons Convention: No		**TSCA 12(b):** No		**CDTA:** Yes
SARA 311/312:	**Acute:** Yes	**Chronic:** Yes	**Fire:** Yes	**Pressure**: No
Reactivity: No		Pure / Liquid		

Australian Hazchem Code: 3[Y]E

Poison Schedule: S6

16. Other Information

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