

**Toluene Spirit Filled Glass Thermometer  
Safety Data Sheet**

Effective date: April 1, 2016

According to 29 CFR 1910:1200 and GHS Rev. 3

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**SECTION 1: Identification of the substance/mixture and of the Manufacturer**

**Chemical Name:** Toluene, C7H8 (CAS No: 108-88-3)  
**Manufacturer Product Name:** Toluene Spirit Filled Glass Thermometer  
**Recommended uses of the chemical/product:** Toluene dyed with a red aniline dye is the thermometric fluid in a toluene spirit filled glass thermometer. The dyed toluene expands or contracts with change in temperature. The thermometer will have approximately 1cc of toluene.  
**Manufacturer Details:** Miller-Weber of Texas  
 6952 Lawndale Street  
 Houston, TX 77023  
 713-926-2623 Fax: 713-926-7736  
**Emergency Telephone Number:** Chem-Tel, Inc. (Contract Number: MIS0003159)  
 1-800-255-3924

**SECTION 2: Hazards Identification**

The amount of toluene in a single thermometer is approximately one cc. This section identifies the hazards of the substance, without regard of amount of toluene present in the finished product.

**Hazard Classification of the chemical (GHS-US Hazard Pictograms):**



GHS02



GHS07



GHS08

**Signal word (GHS-US):** Danger

**Hazard statements (GHS-US):**

H225 – Highly flammable liquid and vapor  
 H304 – May be fatal if swallowed and enters airways  
 H315 – Causes skin irritation

H336 – May cause drowsiness or dizziness  
 H361 – Suspected of damaging fertility or the unborn child  
 H373 – May cause damage to organs through prolonged or repeated exposure

**Precautionary statements (GHS-US):**

P201 – Obtain special instructions before use  
 P202 – Do not handle until all safety precautions have been read and understood  
 P210 – Keep away from heat, sparks, open flames, hot surfaces. – No smoking  
 P233 – Keep container tightly closed  
 P240 – Ground/bond container and receiving equipment  
 P241 – Use explosion-proof electrical, ventilating, lighting equipment  
 P242 – Use only non-sparking tools  
 P243 – Take precautionary measures against static discharge  
 P260 – Do not breathe vapors, gas  
 P264 – Wash skin, hands thoroughly after handling  
 P271 – Use only outdoors or in well-ventilated area  
 P280 – Wear eye protection, protective clothing, protective gloves, face mask  
 P301+P310 – IF SWALLOWED: immediately call a POISON CENTER or doctor/physician

P303+P361+P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 P308+P313 - IF exposed or concerned: Get medical advice/attention  
 P331 – If swallowed, do NOT induce vomiting  
 P332+P313 – If skin irritation occurs: Get medical advice/attention  
 P362 – Take off contaminated clothing and wash before reuse.  
 P370+P313 – If skin irritation occurs: Get medical advice/attention  
 P362 – Take off contaminated clothing and wash before reuse  
 P370+P378 – In case of fire: Use carbon dioxide (CO2), powder, alcohol-resistant foam for extinction  
 P403+P233 - Store in a well-ventilated place. Keep container tightly closed  
 P405 - Store locked up  
 P501 – Dispose of contents/container to comply with local, state and federal regulations  
 P235 – Keep cool

**NFPA/HMIS Ratings (0-4) (Non-GHS):** Health: 3, Flammability: 1, Reactivity: 2, PPG: H

**SECTION 3: Composition/Information on Ingredients**

Name	Product Identifier	%	GHS-US Classification
Toluene	CAS No. 108-88-3	100	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304

See Section 16 for full text of H-phrases

**SECTION 4: First aid measures**

The first aid measures described in this section are for exposure to toluene, regardless of the quantity of the toluene involved in the exposure. The first aid measures below come from the Safety Data Sheets of our bulk toluene suppliers.

**Description of first aid measures**

**General:** Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on victim's condition: doctor/hospital. Never give alcohol to drink.

**After inhalation:** Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

**After skin contact:** Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Remove clothing before washing. Take victim to a doctor if irritation persists.

**After eye contact:** Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

**After swallowing (ingestion):** Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not give milk/oil to drink. Do not induce vomiting. Give activated charcoal. Call Poison Control Center. Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately take victim to hospital.

**Most important symptoms and effects, both acute and delayed**

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**After inhalation:** EXPOSURE TO HIGH CONCENTRATIONS: Headache. Nausea. Feeling of weakness. Dizziness. Central nervous system depression. Narcosis. Mental confusion. Drunkenness. Coordination disorders. Disturbed motor response. Disturbances of consciousness.

**After skin contact:** Tingling/irritation of the skin.

**After eye contact:** Irritation of the eye tissue.

**After ingestion:** Risk of aspiration pneumonia. Nausea. Abdominal pain. Symptoms similar to those listed under inhalation.

**Chronic symptoms:** ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Dry skin. Skin rash/inflammation. Impairment of the nervous system. Tremor. Impaired memory. Impaired concentration. Brain affection. Disturbances of heart rate. Change in the hemoglobin/blood composition.

### Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

## SECTION 5: Firefighting measures

### Extinguishing media

**Suitable extinguishing agents:** Preferably: alcohol resistant foam. Water spray. BC powder. Polyvalent foam. AFFF foam. Carbon dioxide.

**Unsuitable extinguishing media:** None identified, but avoid heavy water stream.

### Special hazards arising from the substance or mixture

**Fire Hazard:** DIRECT FIRE HAZARD. Highly flammable. Gas/vapor flammable with air within explosion limits. INDIRECT FIRE HAZARD. May build up electrostatic charges: risk of ignition. May be ignited by sparks. Gas/vapor spreads at floor level: ignition hazard. Reactions involving a fire hazard: see "Reactivity Hazard".

**Explosion Hazard:** DIRECT EXPLOSION HAZARD. Gas/vapor explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. May be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".

**Reactivity:** Upon combustion: CO and CO<sub>2</sub> are formed. Reacts violently with (some) halogens. Reacts violently with (strong) oxidizers; (increased) risk of fire/explosion. Violent to explosive reaction with (some) acids.

### Advice to firefighters:

**Firefighting instructions:** Use water spray or fog for cooling exposed thermometers.

**Protective equipment for firefighters:** Heat/fire exposure: compressed air/oxygen apparatus if other hazards also exist.

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

**General Measures:** If thermometer breaks, wipe up liquid with disposable wiping cloth. Allow to dry under a fume hood and discard or discard into spark and explosion proof waste receptacle.

**Protective Equipment:** Gloves and protective glasses/goggles.

**Emergency procedures:** Keep upwind. Keep away from engines. No smoking. No flames or sparks. Wash contaminated clothing.

### Environmental precautions

Prevent soil and water pollution.

**Methods and material for containment and cleaning up** Carefully clean up broken glass. Wipe up liquid toluene spirit immediately after putting on protective equipment.

**Reference to other sections** No additional information available.

## SECTION 7: Handling and storage

### Precautions for safe handling

Handle and store thermometer in such a way to prevent breakage. If thermometer breaks, toluene will be released. Do not handle until all safety precautions have been read and understood. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in case of breakage. Supply spark and explosion proof waste receptacle, as necessary.

### Hygiene measures

Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke when using this product.

### Conditions for safe storage, including any incompatibilities

Store thermometer in such a way to prevent breakage. Store away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from materials incompatible with toluene (see Section 10 of this SDS). Store in area that will secure toluene if thermometer is broken in storage. Inspect all incoming containers with thermometers carefully for breakage. If breakage is suspected, use proper protective equipment (see Section 8 of this SDS) and containment. Store and handle in well ventilated areas.

## SECTION 8: Exposure controls/personal protection

### Control Parameters:

Toluene (CAS No. 108-88-3)		
USA ACGIH	ACGIH TWA (ppm)	20 ppm
USA ACGIH	ACGIH STEL (ppm)	20 ppm
USA OSHA	OSHA PEL (TWA) (ppm)	200 ppm
USA OSHA	OSHA PEL (STEL) (ppm)	500 ppm 10-min peak per 8 hour shift
USA OSHA	OSHA PEL (Ceiling) (ppm)	300 ppm

### Appropriate Engineering controls

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation.

### Personal Protective Equipment (if thermometer breaks)

If thermometer breaks, avoid all unnecessary exposure. Gloves. Protective clothing. Safety glasses or goggles. Respiratory protection if concentration in air is above the exposure limits.



**Hand Protection:** Gloves. Tetrafluoroethylene, viton, PVA give good resistance.

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**Eye Protection:** Safety glasses.

**Respiratory Protection:** Wear gas mask with filter type A if concentration in air is greater than the exposure limit.

**Skin and Body Protection:** If necessary, head/neck protection. Protective clothing.

### SECTION 9: Physical and chemical properties

<b>Appearance (physical state, color)</b>	Red dyed liquid	<b>Explosion Limit (upper and lower)</b>	1.3-7 vol %, 46-270 g/m3
<b>Odor</b>	Aromatic odor	<b>Vapor pressure</b>	109 hPa at 50 °C
<b>Odor threshold</b>	0.2 – 69 ppm (0.8 – 276 mg/m3)	<b>Vapor density</b>	3.2 (Air = 1.0) at 20 °C
<b>pH value</b>	No data available	<b>Relative density</b>	0.87 g/cm3 at 15 °C
<b>Melting/Freezing point</b>	-95 °C	<b>Solubilities (at 25 °C)</b>	Insoluble in water. Soluble in other organic liquids.
<b>Boiling point/ Boiling range</b>	111 °C	<b>Partition coefficient (n-octanol/water)</b>	Not Determined
<b>Flash point</b>	4 °C	<b>Auto/Self-ignition temperature</b>	480 °C
<b>Relative Evaporation rate (butylacetate=1)</b>	2.24	<b>Decomposition temperature</b>	No data available
<b>Flammability (solid, gaseous)</b>	No data available	<b>Viscosity (kinematic)</b>	0.690 mm2/s (20 °C)
<b>Upper.Lower flammability limits</b>	Not Determined	<b>Viscosity (dynamic)</b>	0.0006 Pa.s (20 °C)

### SECTION 10: Stability and reactivity

**Reactivity:** Upon combustion: CO and CO2 are formed. Reacts violently with (some) halogens. Reacts violently with (strong) oxidizers; (increased) risk of fire/explosion. Violent to explosive reaction with (some) acids.

**Chemical stability:** Stable under normal conditions of use.

**Possibility of hazardous reactions:** No additional information available.

**Conditions to avoid:** Intact thermometer should not be exposed to hydrofluoric acid. Avoid Excessive heat, sources of ignition, direct sunlight and extremely high or low temperatures. If broken, avoid materials incompatible with toluene.

**Incompatible materials:** strong oxidizers.

**Hazardous decomposition products:** If thermometer is broken, carbon dioxide and carbon monoxide.

### SECTION 11: Toxicological information

**Acute toxicity:** Not classified

<b>Toluene (lf) 108-88-3</b>	
LD50 oral rat	>2000 mg/kg (5580 mg/kg bodyweight; Rat; Rat; Experimental value)
LD50 dermal rabbit	12223 mg/kg (>5000 mg/kg bodyweight; Rabbit; Rabbit; Experimental value; Other, >5000 mg/kg bodyweight; Rabbit; Rabbit; Experimental value; Other)
LD50 inhalation rat (mg/l)	>20 mg/l/4h (Rat)

**Skin corrosion/irritation:** Causes skin irritation.

**Serious eye damage/irritation:** Not classified

**Respiratory or skin sensitization:** Not classified

**Germ cell mutagenicity:** No classified

**Carcinogenicity:** Not classified (Toluene 108-88-3 IARC Group 3- Not classifiable)

**Reproductive toxicity:** Suspected of damaging fertility or the unborn child.

**Specific target organ toxicity- (single exposure):** May cause drowsiness or dizziness.

**Specific target organ toxicity- (repeated exposure):** May cause damage to organs through prolonged or repeated exposure.

**Aspiration hazard:** May be fatal if swallowed and enters airways.

See Section 4 of the SDS for most important symptoms and effects, both acute and delayed for inhalation, skin contact, eye contact, ingestion and chronic symptoms of toluene exposure.

### SECTION 12: Ecological information

#### Exotoxicity (Toluene CAS No. 108-88-3)

<b>LD50 Fishes 1:</b>	24 mg/l (Exposure time: 96 h – Species: Salmo gairdneri (Oncorhynchus mykiss))
<b>EC50 Daphnia 1:</b>	84 mg/l (Exposure time: 24 h – Species: Daphnia magna; Locomotor effect)
<b>LC50 Fish 2:</b>	13 mg/l (Exposure time: 96 h – Species: Lepomis macrochirus)
<b>EC50 Daphnia 2:</b>	11.5-19.6 mg/l (Exposure time 48 h; Daphnia magna)
<b>Threshold limit algae 1:</b>	>400 mg/l (168 h; Scenedesmus quadricauda; Toxicity test)
<b>Threshold limit algae 2:</b>	105 mg/l (192 h; Microcystis aeruginosa)

#### Persistence and degradability (Toluene CAS No. 108-88-3):

<b>Readily biodegradable in water. Biodegradable in the soil. Low potential for adsorption in soil.</b>	
<b>Biochemical oxygen demand (BOD):</b>	2.15 g O2/g substance
<b>Chemical oxygen demand (COD):</b>	2.52 g O2/g substance
<b>ThOD:</b>	3.13 g O2/g substance
<b>BOD (% of ThOD):</b>	0.69% ThOD

#### Bioaccumulative potential (Toluene CAS No. 108-88-3):

<b>BCF fish 1:</b>	13.2 (Anguilla japonica)
<b>BCF fish 2:</b>	90 (Exposure time: 72 h; Leuciscus idus)
<b>BCF other aquatic organisms 1:</b>	380 (Exposure Time: 24 h; Chlorella sp.; Fresh weight)
<b>BCF other aquatic organisms 2:</b>	4.2 (Mytilus edulis; Fresh weight)
<b>Log Pow:</b>	2.73 (Experimental value; Other; 20 °C, Experimental value; Other; 20 °C)
<b>Bioaccumulative potential:</b>	Low potential for bioaccumulation (BCF < 500).

#### Mobility in soil (Toluene CAS No. 108-88-3):

<b>Surface tension:</b>	0.03 N/m (20 °C)
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#### Other adverse effects:

No additional information available.

### SECTION 13: Disposal considerations

#### Waste disposal recommendations:

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Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. For large quantities of toluene waste, recycle by distillation. Do not landfill. Remove to an authorized waste incinerator for solvents with energy recovery. Do not discharge into drains or the environment.

### SECTION 14: Transport information

The shipping of toluene spirit filled glass thermometers is not regulated. Thermometers should be packaged in such a way to avoid breakage. They should also be packed so that if breakage occurs, toluene does not leak from the container. The information below is for bulk toluene shipments.

**Transport document description:** UN1294 Toluene, 3, 11  
**UN-Number (DOT):** UN1294  
**DOT proper shipping name:** Toluene

**Transport hazard class(es):**

**Hazard Classes (DOT):** 3- Class 3 – Flammable and combustible liquid 49 CFR 173.120  
**Hazard labels (DOT):** 3 – Flammable liquid



**Packing group (DOT):** II- Medium Danger  
**DOT Packaging:** 49 CFR 173.150 (Exceptions)  
 49 CFR 173.202 (Non Bulk)  
 49 CFR 173.242 (Bulk)  
 49 CFR 172.102 (Special Provisions)

**DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27):** 5 L  
**DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75):** 60 L

### SECTION 15: Regulatory information

#### United States (USA)

**SARA Section 304:** Reportable Quantity: 1000 pounds.  
**SARA Section 311/312 (Specific toxic chemical listings):** Immediate (acute) health hazard; Fire hazard  
**SARA Section 313 (Specific toxic chemical listings):** 108-88-3 Toluene

#### Proposition 65 (California)

**Chemicals known to cause cancer:** None of the ingredients is listed.  
**Chemicals known to cause reproductive toxicity for females:** Toluene  
**Chemicals known to cause reproductive toxicity for males:** None of the ingredients is listed.  
**Chemicals known to cause developmental toxicity:** Toluene  
**No significance risk level (NSRL):** 7000 micrograms/day

#### Canada

**Canadian Domestic Substances List (DSL):** All ingredients are listed.  
**Listed on the Canadian Ingredient Disclosure List:** Toluene 108-88-3

### SECTION 16: Other information

**Full text of H-phrases:** see section 3

Asp. Tox. 1	Aspiration hazard, Category 1
Flam. Liq. 2	Flammable liquids, Category 2
Repr. 2	Reproductive toxicity, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis
H225	Highly flammable liquid and vapor
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H336	May cause drowsiness or dizziness
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure

#### Other Information

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No previous publication of SDS by Miller-Weber of Texas