1. IDENTIFICATION

Product code: T1090
Product Name: TOLUENE, REAGENT, ACS

Other means of identification
Synonyms: Benzene, methyl-
Methacide
Methane, phenyl-
Phenylmethane
Methylbenzene
Methylbenzol
Tolueno (Spanish)
Tolène (French)
Toluol
Tolu-Sol

CAS #: 108-88-3
RTECS # XS5250000
CI#: Not available

Recommended use of the chemical and restrictions on use
Uses advised against No information available

Supplier: Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA  90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com

Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin corrosion/irrititation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2A</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Category 2</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Category 2</td>
</tr>
</tbody>
</table>
Aspiration toxicity Category 1
Flammable liquids Category 2

Label elements

Danger

Hazard statements
Causes serious eye irritation
Causes skin irritation
Harmful if swallowed
May be fatal if swallowed and enters airways
May cause drowsiness or dizziness
Suspected of damaging fertility or the unborn child
May cause damage to organs through prolonged or repeated exposure
Highly flammable liquid and vapor

Flammable liquids Category 2

Hazard statements
Causes serious eye irritation
Causes skin irritation
Harmful if swallowed
May be fatal if swallowed and enters airways
May cause drowsiness or dizziness
Suspected of damaging fertility or the unborn child
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/ equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
Specific treatment (see .? on this label)
In case of fire: Use CO2, dry chemical, or foam to extinguish.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do NOT induce vomiting
Rinse mouth

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>100</td>
<td>*</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures
General Advice: Poison information centers 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.

Most important symptoms and effects, both acute and delayed

Indication of any immediate medical attention and special treatment needed
Notes to Physician: Treat symptomatically

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: Dry chemical. Carbon dioxide (CO2). Water spray mist or foam.
Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon monoxide; Carbon dioxide

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

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. 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 product enter drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment: Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up: Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe 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. Take precautionary measures against static discharges. 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.

Conditions for safe storage, including any incompatibilities

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

Incompatible Materials:

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>200 ppm TWA</td>
<td>100 ppm TWA</td>
<td>20 ppm TWA</td>
<td>None</td>
</tr>
<tr>
<td>108-88-3</td>
<td>300 ppm Ceiling</td>
<td>375 mg/m³ TWA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>150 ppm STEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>560 mg/m³ STEL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Canada

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>50 ppm TWA</td>
<td>20 ppm TWA</td>
<td>20 ppm TWA</td>
<td>50 ppm TWAEV</td>
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<tr>
<td>108-88-3</td>
<td>188 mg/m³ TWA</td>
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<td></td>
<td>188 mg/m³ TWAEV</td>
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Australia and Mexico

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<thead>
<tr>
<th>Components</th>
<th>Australia</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>574 mg/m³ STEL</td>
<td>50 ppm TWA</td>
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<tr>
<td>108-88-3</td>
<td>150 ppm STEL</td>
<td>188 mg/m³ TWA</td>
</tr>
<tr>
<td></td>
<td>50 ppm TWA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>191 mg/m³ TWA</td>
<td></td>
</tr>
</tbody>
</table>

Appropriate engineering controls

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.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>Appearance:</th>
<th>Color:</th>
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</thead>
<tbody>
<tr>
<td>Liquid.</td>
<td>No information available</td>
<td>Clear. Colorless.</td>
</tr>
<tr>
<td>Odor:</td>
<td>Taste</td>
<td>Molecular/Formula weight: 92.14</td>
</tr>
<tr>
<td>Strong. Pungent. Sweet. Benzene-like.</td>
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</table>

<table>
<thead>
<tr>
<th>Formula:</th>
<th>Flammability:</th>
<th>Flash point (°C):</th>
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<tbody>
<tr>
<td>C7-H8</td>
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<table>
<thead>
<tr>
<th>Flashpoint (°C/°F):</th>
<th>Flash Point Tested according to:</th>
<th>Autoignition Temperature (°C/°F):</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.44 °C/40 °F</td>
<td>Closed cup</td>
<td>480-536 °C/896-996.8 °F</td>
</tr>
<tr>
<td>16 °C/60.6 °F</td>
<td>Open cup</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower Explosion Limit (%):</th>
<th>Upper Explosion Limit (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1-1.4%</td>
<td>7.0 - 7.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Melting point/range(°C/°F):</th>
<th>Boiling point/range(°C/°F):</th>
</tr>
</thead>
<tbody>
<tr>
<td>-95 °C/-139 °F</td>
<td>110.6 °C/231.1 °F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bulk density:</th>
<th>Specific gravity:</th>
<th>Density (g/cm3):</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information available</td>
<td>0.8636-0.866 20 °C</td>
<td>No information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vapor pressure @ 20°C (kPa):</th>
<th>Evaporation rate:</th>
<th>Partition coefficient (n-octanol/water):</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.93</td>
<td>No information available</td>
<td>2.11-2.79</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>VOC content (g/L):</th>
<th>Odor threshold (ppm):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>863-866</td>
<td>1.03-2.14</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Viscosity:</th>
<th>Miscibility:</th>
<th>Solubility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information available</td>
<td>Miscible with alcohol</td>
<td>Practically insoluble in water</td>
</tr>
<tr>
<td></td>
<td>Miscible with Chloroform</td>
<td>Soluble in Ethanol</td>
</tr>
<tr>
<td></td>
<td>Miscible with Acetone</td>
<td>Soluble in Ether</td>
</tr>
<tr>
<td></td>
<td>Miscible with Ether</td>
<td>Soluble in Benzene</td>
</tr>
<tr>
<td></td>
<td>Miscible with glacial Acetic Acid</td>
<td>Soluble in Chloroform</td>
</tr>
<tr>
<td></td>
<td>Miscible with Carbon disulfide</td>
<td>Soluble in Acetone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soluble in Carbon Disulfide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soluble in glacial Acetic acid</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Reacts vigorously with oxidizing agents
Reactive with strong oxidizers, silver perchlorate, sodium difluoride, tetraniromethane, Uranium Hexafluoride
Toluene reacts explosively reaction with the following: 1,3-dichloro-5,5-dimethyl-2,4-imidazolidinone, dinitrogen tetroxide, uranium hexafluoride, sulfur dichloride, bromine trifluoride, N2O4, AgClO4, concentrated Nitric acid, and Sulfuric acid + Nitric acid.
Toluene forms an explosive mixture with Tetraniromethane.
Reacts photochemically with nitrogen oxides or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Chemical stability
Stability: Stable under recommended storage conditions.
Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Product code: T1090  Product name: TOLUENE, REAGENT, ACS

Hazardous decomposition products: Carbon monoxide. Carbon dioxide.

Other Information
Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

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

Acute Toxicity

Component Information

**Toluene - 108-88-3**
- LD50/oral/rat = 636 mg/kg Oral LD50 Rat
- LD50/oral/mouse = No information available
- LD50/dermal/rat = 12124 mg/kg Dermal LD50 Rat
- LD50/dermal/rabbit = 8390 mg/kg Dermal LD50 Rabbit
  - 26.4 mg/kg (RTECS)
- LC50/inhalation/rat = 12.5 mg/L Inhalation LC50 Rat 4 h
  - 26700 ppm Inhalation LC50 Rat 1 h
- LC50/inhalation/mouse = 30000 mg/m³ 2 h (RTECS)
  - 19900 mg/m³ 7 h (RTECS)
- Other LD50 or LC50 information = No information available

Product Information

- LD50/oral/rat =
  - VALUE- Acute Tox Oral = 636mg/kg
- LD50/oral/mouse =
  - Value - Acute Tox Oral = No information available
- LD50/dermal/rabbit
  - VALUE-Acute Tox Dermal = 8390mg/kg
- LD50/dermal/rat
  - VALUE -Acute Tox Dermal = 12124mg/kg
- LC50/inhalation/rat
  - VALUE-Vapor = 12.5mg/l
  - VALUE-Gas = No information available
  - VALUE-Dust/Mist = No information available
- LC50/Inhalation/mouse
  - VALUE-Vapor = 19900 mg/m³

Product code: T1090 Product name: TOLUENE, REAGENT, ACS
VALUE - Gas = No information available

VALUE - Dust/Mist = No information available

**Symptoms**

**Skin Contact:**
Causes skin irritation. Mild skin irritation. Moderate skin irritation.

**Eye Contact:**
Causes serious eye irritation. Causes conjunctivitis. Causes lacrimation. Causes blepharospasm, corneal edema, corneal abrasions. Irritating, but will not permanently injure eye tissue. Exposure to high concentration of vapor may cause pupillary dilation or pupillary constriction, and impaired pupillary reaction.

**Inhalation**
Irritating to respiratory system. May cause nausea, vomiting. May cause bronchospasms. May cause bronchitis. May cause chemical pneumonitis. It may cause pulmonary edema. Inhalation of high concentrations of vapors may cause dizziness or suffocation. Inhalation of high concentrations of vapor may cause anesthetic effects. It may affect behavior/central nervous system (excitation and wakefulness followed by central nervous system depression - headache, irritability, nervousness, insomnia, ataxia, seizures, tremors, hallucinations, euphoria, memory, loss, somnolence, fatigue, sedation, general anesthetic). May affect cardiovascular system (bradycardia, tachycardia, cardiac arrhythmias). May affect the brain. It may affect the cardiovascular system (hypotension, cardiac arrhythmias, cardiac arrest). May affect the kidneys. It may affect the blood (changes in white blood cell count, changes in other cell count). It may affect the bone marrow (changes in bone marrow).

**Ingestion**
Harmful if swallowed. Aspiration hazard if swallowed. Aspiration into the lungs can cause chemical pneumonitis. Causes digestive (gastrointestinal) tract irritation. Ingestion may cause nausea, vomiting, diarrhea. May cause abdominal pain. May affect the cardiovascular system (hypertension, increase in pulse rate, arrhythmias). It may affect the brain. May affect behavior/central nervous system (muscle contraction or spasticity). May affect behavior/central nervous system (ataxia). May affect behavior/central nervous system (convulsions). May affect respiration (acute pulmonary edema). May affect blood (changes in serum composition).

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

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**
Chronic Toxicity

Prolonged or repeated skin contact may cause dermatitis and defatting, dryness, and cracking of the skin. Prolonged or repeated inhalation may cause nausea, vomiting, abdominal pain, loss of appetite, and weight loss. Prolonged or repeated inhalation may affect respiration (respiratory failure). Prolonged or repeated inhalation may cause central nervous system effects. Prolonged or repeated ingestion or inhalation may affect the brain (degenerative changes). Prolonged or repeated inhalation may affect the peripheral nervous system (weakness, peripheral neuropathy with paresthesia - a tingling, pricking, or numbness of the skin (known as the feeling of "pins and needles) generally of the hands and feet (extremities)). Prolonged or repeated inhalation may cause decreased visual acuity, impaired color vision, optic atrophy, blindness, and ototoxicity. Prolonged or repeated inhalation may affect the cardiovascular system (dysrhythmias, tachycardia, cardiomyopathy). Prolonged or repeated inhalation may affect the liver. Prolonged or repeated inhalation may affect the kidneys. Prolonged or repeated inhalation may affect the adrenal gland. Prolonged or repeated inhalation may affect the blood (pigmented or nucleated red blood cells). Prolonged or repeated inhalation may cause metabolic acidosis, hypokalemia. Prolonged or repeated inhalation may cause rhabdomyolysis, a breakdown of muscle fibers resulting in the release of muscle fiber contents (myoglobin) into the bloodstream. This may be harmful to the kidneys and frequently result in kidney damage. Prolonged or repeated ingestion may affect the liver, and kidneys. Prolonged or repeated ingestion may affect the blood (changes in serum composition). Prolonged or repeated ingestion may affect the spleen. Prolonged or repeated ingestion may affect the adrenal gland. Prolonged or repeated ingestion may affect the thymus gland. Prolonged or repeated ingestion may affect the blood (changes in white blood cell count). Prolonged or repeated inhalation may affect the blood (changes in white blood cell count). Prolonged or repeated inhalation may affect the blood (changes in red blood cell count). Prolonged or repeated ingestion may affect hearing. Prolonged or repeated ingestion may cause loss of appetite. Prolonged or repeated ingestion may cause weight loss.

Sensitization: No information available

Mutagenic Effects: May affect genetic material

Experiments with bacteria and/or yeast have shown mutagenic effects

Carcinogenic effects: Not classifiable as to its carcinogenicity to humans. Not classifiable as a human carcinogen.

<table>
<thead>
<tr>
<th>Components</th>
<th>IARC</th>
<th>ACGIH - Carcinogens</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
</tr>
</thead>
</table>

Reproductive toxicity Suspected of damaging fertility or the unborn child

Reproductive Effects: May cause adverse developmental effects

May cause harm to the unborn child

Experiments have shown reproductive toxicity effects on laboratory animals

An association between increased risk of spontaneous abortion and occupational exposure to Toluene at least three times a week in early pregnancy was observed in a case-control study of 206 spontaneous abortions among laboratory workers

Chronic abuse of toluene during pregnancy can result in miscarriages

Product code: T1090

Product name: TOLUENE, REAGENT, ACS
Developmental Effects: No information available
Teratogenic Effects: May cause birth defects (teratogenic effects)
Showed teratogenic effects in animal experiments
Microcephaly, central nervous system dysfunction, cerebellar dysfunction, growth
deficiency, developmental delay, and craniofacial anomalies, similar in some regards
to those seen in fetal alcohol syndrome, have been described in children born of
women who had abused toluene during their pregnancies

Specific Target Organ Toxicity

STOT - single exposure
STOT - single exposure. central nervous system.
STOT - repeated exposure
No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

Toluene - 108-88-3
Freshwater Algae Data: 12.5 mg/L EC50 Pseudokirchneriella subcapitata 72 h
433 mg/L EC50 Pseudokirchneriella subcapitata 96 h
Freshwater Fish Species Data: 11.0 - 15.0 mg/L LC50 Lepomis macrochirus 96 h static 1
14.1 - 17.16 mg/L LC50 Oncorhynchus mykiss 96 h static 1
15.22 - 19.05 mg/L LC50 Pimephales promelas 96 h flow-through 1
5.89 - 7.81 mg/L LC50 Oncorhynchus mykiss 96 h flow-through 1
50.87 - 70.34 mg/L LC50 Poecilia reticulata 96 h static 1
12.6 mg/L LC50 Pimephales promelas 96 h static 1
28.2 mg/L LC50 Poecilia reticulata 96 h semi-static 1
5.8 mg/L LC50 Oncorhynchus mykiss 96 h semi-static 1
54 mg/L LC50 Oryzias latipes 96 h static 1
Water Flea Data: 5.46 - 9.83 mg/L EC50 Daphnia magna 48 h
11.5 mg/L EC50 Daphnia magna 48 h
Persistence and degradability: No information available
Bioaccumulative potential: No information available
Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>U220</td>
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Product code: T1090 Product name: TOLUENE, REAGENT, ACS
<table>
<thead>
<tr>
<th>DOT</th>
<th>UN-No: UN1294</th>
<th>Proper Shipping Name: Toluene</th>
<th>Hazard Class: 3</th>
<th>Subsidiary Risk: No information available</th>
<th>Packing Group: II</th>
<th>ERG No: 130</th>
<th>Marine Pollutant: No data available</th>
<th>DOT RQ (lbs): No information available</th>
<th>Symbol(s): R4</th>
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<tbody>
<tr>
<td>TDG (Canada)</td>
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<td>ADR</td>
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<td>Subsidiary Risk: No information available</td>
<td>Packing Group: II</td>
<td>Classification Code: No information available</td>
<td>Description: No information available</td>
<td>CEFIC Tremcard No: No information available</td>
<td></td>
</tr>
<tr>
<td>IMO / IMDG</td>
<td>UN-No: UN1294</td>
<td>Proper Shipping Name: Toluene</td>
<td>Hazard Class: 3</td>
<td>Subsidiary Risk: No information available</td>
<td>Packing Group: II</td>
<td>Description: No information available</td>
<td>IMDG Page: No information available</td>
<td>Marine Pollutant: No information available</td>
<td>EMS: F-E</td>
</tr>
<tr>
<td>RID</td>
<td>UN-No: UN1294</td>
<td>Proper Shipping Name: Toluene</td>
<td>Hazard Class: 3</td>
<td>Subsidiary Risk: 3</td>
<td>Packing Group: II</td>
<td>Classification Code: No information available</td>
<td>Description: No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICAO</td>
<td>UN-No: UN1294</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Product code: T1090  
Product name: TOLUENE, REAGENT, ACS
14. TRANSPORT INFORMATION

Proper Shipping Name: Toluene
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
Description: No information available

IATA
UN-No: UN1294
Proper Shipping Name: Toluene
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
ERG Code: 3L
Description: No information available

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Present</td>
<td>Present KE-33936</td>
<td>Present (3)-2</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present 203-625-9</td>
</tr>
</tbody>
</table>

U.S. Regulations

**Toluene**
- Massachusetts RTK: Present
- New Jersey RTK Hazardous Substance List: 1866
- New Jersey (EHS) List: 1866 500 lb TPQ
- New Jersey - Discharge Prevention - List of Hazardous Substances: Present
- Pennsylvania RTK: Environmental hazard
- Pennsylvania RTK - Environmental Hazard List: Present
- Michigan - Critical Materials List: Present
- Minnesota - Hazardous Substance List: Present
- New York Release Reporting - List of Hazardous Substances:
  - 1000 lb RQ
  - 1 lb RQ
- Louisiana Reportable Quantity List for Pollutants: 1000 lb final RQ
- 454 kg final RQ
- California Directors List of Hazardous Substances: Present


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:
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Not Listed</td>
<td>developmental toxicity</td>
<td>Not Listed</td>
<td>female reproductive toxicity</td>
</tr>
</tbody>
</table>

CERCLASARA

<table>
<thead>
<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>1000 lb final RQ 454 kg final RQ</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>1.0 % de minimis concentration</td>
</tr>
</tbody>
</table>

Product code: T1090  Product name: TOLUENE, REAGENT, ACS
U.S. TSCA

<table>
<thead>
<tr>
<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Not Applicable</td>
<td>10/04/1982 10/04/1992</td>
</tr>
</tbody>
</table>

Canada

**WHMIS hazard class:**
- B2  Flammable liquid
- D2A Very toxic materials
- D2B Toxic materials

**Toluene**
- B2  D2A  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.

<table>
<thead>
<tr>
<th>Components</th>
<th>WHMIS Ingredient Disclosure List -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>1 %</td>
</tr>
</tbody>
</table>

Inventory

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Present</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

EU Classification

**R-phrase(s)**
- R11 - Highly flammable.
- R38 - Irritating to skin.
- R63 - Possible risk of harm to the unborn child.
- R65 - Also harmful: may cause lung damage if swallowed
- R67 - Vapors may cause drowsiness and diziness.
- R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation

**S-phrase(s)**
- S 2 - Keep out of the reach of children.
- 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.
- S36/37 - Wear suitable protective clothing and gloves.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
</tr>
</thead>
</table>

**Product code:** T1090  
**Product name:** TOLUENE, REAGENT, ACS
The preparation is classified as dangerous in accordance with Directive 1999/45/EC

Contains: Toluene

Indication of danger:
F - Highly flammable.
Xn - Harmful.
Xi - Irritant.

16. OTHER INFORMATION
Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) 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 SDS. The physical properties reported in this SDS 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 SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet