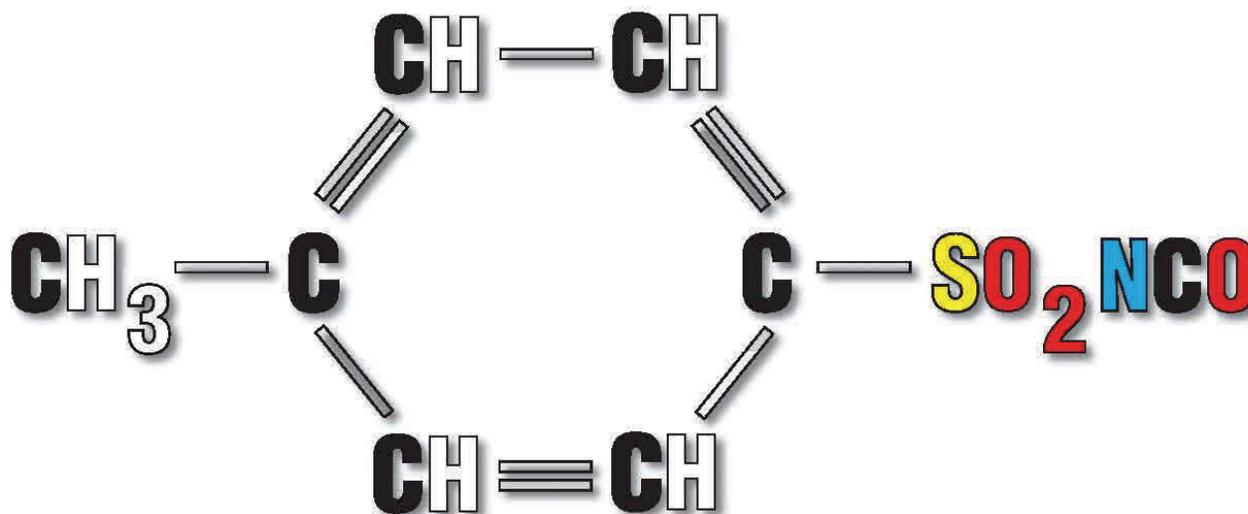


## p-Toluenesulfonyl Isocyanate (PTSI)



Molecular Weight = 197.2  
CAS# 4083-64-1

### SPECIFICATIONS

p-Toluenesulfonyl Isocyanate	98% minimum
Color	50 APHA
Tosyl Chloride	1.1% maximum

### PHYSICAL PROPERTIES

Physical Form (ambient)	liquid
Odor	acid odor
Density @ 20°C	1.29 gm/cm <sup>3</sup>
Boiling Point	291.2°F (144°C) (10 mmHg)
Freezing Point	28.4°F (-2°C)
Flash Point	293°F (145°C)
Latent Heat of Vaporization	
@ 100°C (212°F)/1 mmHg	81.18 Btu/lb.
Heat Capacity @ 25°C (77°F)/760 mmHg	0.31 Btu/lb. °F

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**APPLICATIONS**

The reactivity of PTSI toward active hydrogen atoms makes it useful as a scavenger for water and other isocyanate reactive groups such as free acid in powdered aluminum alkanoates and active hydrogen present in carbon black pigments which cause polyurethane coatings, sealants and adhesives to thicken during storage.

PTSI is recommended especially for one-component, low-VOC polyurethane coatings. The reaction of PTSI with water introduced from pigments and solvents in the paint formulation generates carbon dioxide and soluble inert chemical products. Experience has demonstrated that 13 grams of PTSI effectively scavenges 1 gram of water. PTSI reacts with water in a 1 to 1 molar ratio, generating PTSA and carbon dioxide gas. This reaction occurs readily at room temperature and does not require heating. The PTSA generated in the process is essentially an inert material that does not further react with PTSI or other isocyanate groups, with the resultant formation of insoluble ureas.

Compatibility with paint binders should always be tested. This highly reactive sulfonyl isocyanate is also used as an intermediate in the synthesis of other useful chemical compounds. For further information, write or call for our bulletins "Urethane Applications" and/or "Chemical Reactions".

**SAFETY AND HANDLING**

**Danger! Harmful if swallowed, inhaled or absorbed through the skin.** Causes skin and severe eye irritation. May cause allergic respiratory response. **Reacts spontaneously and violently with water, alcohols, amines, acids and alkaline solutions. These substances should not be poured into a vessel containing PTSI.** Prolonged exposure of PTSI to elevated temperatures can result in violent decomposition. Temperatures above 170°C are to be avoided. Reaction with water results in generation of carbon dioxide. Reaction vessels should be vented to avoid pressure build-up. Vent through a calcium chloride tube to prevent moisture from entering vessels. **Do not get in eyes, on skin, or on clothing.** Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. If handled indoors, provide adequate mechanical exhaust ventilation or wear NIOSH/MSHA approved air-line respirator or SCBA. Wear impervious PVC or rubber gloves, goggles, and protective clothing. **PTSI must be stored in air-tight containers.**

**Thoroughly review this bulletin and the VanDeMark Material Safety Data Sheet prior to the use or acceptance of PTSI at your facility.**

**FIRST AID**

- Eye Contact:** Wash with copious amounts of water for at least 15 minutes. Consult a physician.
- Skin Contact:** Wash with copious amounts of soap and water. Remove all contaminated clothing. If any irritation exists, consult a physician.
- Ingestion:** Do not induce vomiting. Seek medical attention immediately.

**Inhalation:** Remove victim to fresh air. Give oxygen. Treat victim symptomatically. Seek medical attention.

**SPILLS AND DISPOSAL**

**Contact with water must be avoided.** Contain spills and recover as much of the liquid as possible. Absorb remaining material using vermiculite or other non-reactive chemical absorbent. Place liquid and absorbed material in an **open-headed** polyethylene container. Do not seal containers containing contaminated PTSI. The contaminated PTSI will react with moisture in the air or in the absorbent materials generating CO<sub>2</sub>, which, if trapped in a closed container, could cause the container to rupture.

Protect contaminated product from water. Any residual product can be disposed of as follows:

- Containers should be emptied as completely as possible. **Do not rinse containers with water.**
- Clean empty containers using the solution described below. They can also be left open in a dry location for a few days. The PTSI residue in the container will gradually react with atmospheric humidity to form a solid, white mass.

	<u>Solution (Wt%)</u>	<u>Paste (Wt%)</u>
t-Butyl Alcohol	15	4
<b>Mineral Spirits</b>	<b>65</b>	<b>10</b>
<b>Butyl Acetate</b>	<b>20</b>	<b>4</b>
Sand	0	42
Diatomaceous Earth	0	30
Sawdust	0	10
	100	100

100 grams of the solution reacts with 34 grams PTSI

**STORAGE**

PTSI should be stored sealed in its original container in a dry location. When stored under proper conditions, it will remain stable for a minimum of 1 year. Protect containers from moisture and elevated temperatures.

**PACKAGING AND SHIPPING**

PTSI is shipped in accordance with USA DOT regulations as Chemicals NOS.

Packaging options include:

- 20 kg pails
- 225 kg drums
- 925 kg totes
- Bulk trailer loads

**EMERGENCY RESPONSE**

**\*Contact CHEMTREC 1-800-424-9300 in case of a transportation incident.**

**\*Contact VanDeMark 1-716-433-6764 for all other incidents.**

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