










# Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
    	<b>EXPLOSIVE MATERIAL WHEN IN DRY (IF LESS THAN 30% WATER BY WEIGHT)</b> <b>Flammable material; keep away from heat, flame, and all other sources of ignition.</b> <b>Highly toxic; do not ingest or inhale.</b> <b>Irritating to skin, eyes, and the respiratory system.</b>	   

## Section I. Chemical Product and Company Identification

Chemical Name	<b>1,3,5-Trinitrobenzene</b> <b>(wetted with ca. 40% Water)</b>		
Catalog Number	T0496	Supplier	TCI America 9211 N. Harborage St. Portland OR 1-800-423-8616
Synonym	Symmetric Trinitrobenzene		
Chemical Formula	C <sub>6</sub> H <sub>3</sub> (NO <sub>2</sub> ) <sub>3</sub>		
CAS Number	99-35-4, 7732-18-5	In case of Emergency Call	<b>Chemtrec®</b> <b>(800) 424-9300 (U.S.)</b> <b>(703) 527-3887</b> <b>(International)</b>

## Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
1,3,5-Trinitrobenzene (wetted with ca. 40% Water)	99-35-4, 7732-18-5	60%, 40%	TWA: 1 (ppm) from ACGIH [1994] SKIN TWA: 1 (ppm) from OSHA/NIOSH [1992] SKIN TWA: 1 (ppm) from MSHA [1992] SKIN  Consult local authorities for acceptable exposure limits.	Rat LD <sub>50</sub> (oral) 275 mg/kg Mouse LD <sub>50</sub> (oral) 572 mg/kg Rabbit LD (dermal) 72 mg/kg Mouse LD <sub>50</sub> (intravenous) 32 mg/kg

## Section III. Hazards Identification

Acute Health Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. NITROBENZENE IS TOXIC BY ALL ROUTES OF EXPOSURE. The mean adult lethal oral dose has been estimated to be 1 to 5 grams. Symptoms associated with methemoglobinemia such as headache, nausea, lethargy, depressed respiration, and cyanosis may be delayed for 1 to 4 hours after initial exposure. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	<b>CARCINOGENIC EFFECTS</b> : Not available. <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Not available. <b>DEVELOPMENTAL TOXICITY</b> : Not available. The substance is toxic to blood, the nervous system, liver. Repeated or prolonged exposure to the substance can produce target organs damage.

## Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Flush eyes with running water for a minimum of 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention. Treat symptomatically and supportively.
Skin Contact	After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. Seek medical attention. Treat symptomatically and supportively. Wash any contaminated clothing before reusing.
Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform artificial respiration. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention. Treat symptomatically and supportively.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt, or waistband. If the victim is not breathing, administer artificial respiration. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

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Emergency phone number (800) 424-9300

**Section V. Fire and Explosion Data**

Flammability	Flammable.	Auto-Ignition	Not available.
Flash Points	Not available.	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO, NO <sub>2</sub> ...).		
Fire Hazards	Dried out material MAY EXPLODE VIOLENTLY when placed near an ignition source. STORE IMMERSED WITH WATER TO AVOID FIRES AND EXPLOSIONS. Extremely flammable in presence of open flames and sparks, of shocks, of heat. Highly flammable in presence of oxidizing materials, of reducing materials.		
Explosion Hazards	Dried out material MAY EXPLODE VIOLENTLY when placed near an ignition source. STORE IMMERSED WITH WATER TO AVOID FIRES AND EXPLOSIONS. Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. No specific information is available in our database regarding the product's risks of explosion in the presence of various materials.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO <sub>2</sub> , water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.		


**Section VI. Accidental Release Measures**

Spill Cleanup Instructions	Explosive. Spontaneously combustible solid. Toxic material. Irritating material. Dried out material MAY EXPLODE VIOLENTLY when placed near an ignition source. STORE IMMERSED WITH WATER TO AVOID FIRES AND EXPLOSIONS. Stop leak if without risk. DO NOT touch damaged container or spilled material. DO NOT clean-up or dispose except under supervision of a specialist. DO NOT operate radio transmitters within 100 m of an electric detonator. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Obtain advice on use of water as spilled material may react with it. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Cover with WET earth, sand or other non-combustible material. Consult federal, state, and/or local authorities for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.
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**Section VII. Handling and Storage**

Handling and Storage Information	FLAMMABLE. TOXIC. IRRITANT. Dried out material MAY EXPLODE VIOLENTLY when placed near an ignition source. STORE IMMERSED WITH WATER TO AVOID FIRES AND EXPLOSIONS. Handle with caution and minimize exposure. Reactive with strong oxidizers; may be ignited by heat, sparks, or flames. Vapors may travel to source of ignition and flash back. Tightly seal container and store in a cool place. Closed containers may explode from heat of a fire. Empty containers may pose a fire risk. Evaporate residue under a fume hood if possible. Ground all equipment containing material. Keep away from heat and sources of ignition. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Avoid contact with skin and eyes. Always store away from incompatible compounds such as oxidizing agents, reducing agents.
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**Section VIII. Exposure Controls/Personal Protection**

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Lab coat. Dust respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. 
Exposure Limits	TWA: 1 (ppm) from ACGIH [1994] SKIN TWA: 1 (ppm) from OSHA/NIOSH [1992] SKIN TWA: 1 (ppm) from MSHA [1992] SKIN  Consult local authorities for acceptable exposure limits.

**Section IX. Physical and Chemical Properties**

Physical state @ 20°C	Crystalline granules.	Solubility	Easily soluble in methanol, diethyl ether, n-octanol, acetone. Partially soluble in hot water. Very slightly soluble in cold water.
Specific Gravity	1.76	Partition Coefficient	The product is more soluble in oil; log(oil/water) = 1.1
Molecular Weight	213.11	Vapor Pressure	0.0000032 mm of Hg (@ 20°C)
Boiling Point	315°C (599°F)	Vapor Density	Not available.
Melting Point	122.5°C (252.5°F)	Volatility	Not available.
Refractive Index	Not available.	Odor	Almond-like.
Critical Temperature	Not available.	Taste	Not available.
Viscosity	Not available.		

**Continued on Next Page****Emergency phone number (800) 424-9300**

**Section X. Stability and Reactivity Data**

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Dried out material MAY EXPLODE VIOLENTLY when placed near an ignition source. STORE IMMERSED WITH WATER TO AVOID FIRES AND EXPLOSIONS. Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents, reducing agents.

**Section XI. Toxicological Information**

RTECS Number	DC3850000
Routes of Exposure	Eye contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LD <sub>50</sub> (oral) 275 mg/kg Mouse LD <sub>50</sub> (oral) 572 mg/kg Rabbit LD (dermal) 72 mg/kg Mouse LD <sub>50</sub> (intravenous) 32 mg/kg
Chronic Toxic Effects	<b>CARCINOGENIC EFFECTS</b> : Not available. <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Not available. <b>DEVELOPMENTAL TOXICITY</b> : Not available. The substance is toxic to blood, the nervous system, liver. Repeated or prolonged exposure to the substance can produce target organs damage.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. NITROBENZENE IS TOXIC BY ALL ROUTES OF EXPOSURE. The mean adult lethal oral dose has been estimated to be 1 to 5 grams. Symptoms associated with methemoglobinemia such as headache, nausea, lethargy, depressed respiration, and cyanosis may be delayed for 1 to 4 hours after initial exposure. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.


**Section XII. Ecological Information**

Ecotoxicity	ENVIRONMENTAL FATE (HSDB) <b>Release into Soils:</b> 1,3,5-Trinitrobenzene is expected to be moderately to highly mobile in soils. This compound may photolyse on soil surfaces. Volatilization is expected to be an insignificant fate process. <b>Release into Water:</b> In water, this compound will experience direct photolysis. Bioaccumulation, adsorption to suspended solids and sediments, and volatilization are not expected to be important fate processes. <b>Release into the Atmosphere:</b> This product will exist partly in the vapor phase and partly adsorbed to particulate matter.
Environmental Fate	1,3,5-Trinitrobenzene may be released to the environment in wastewater from the manufacture of 2,4,6-trinitrotoluene (TNT) or from the disposal of some TNT wastes. If released to soil, 1,3,5-trinitrobenzene is expected to be moderately to highly mobile. This compound has the potential to photolyse on soil surfaces. Volatilization from soil surfaces is predicted to be an insignificant fate process. Insufficient data are available to predict the significance of biodegradation in soil or water. If released to water, 1,3,5-trinitrobenzene may be subject to direct photolysis. Bioaccumulation in aquatic organisms, adsorption to suspended solids and sediments, and volatilization are not expected to be environmentally important fate processes. If released to the atmosphere, 1,3,5-trinitrobenzene is expected to exist partly in the vapor phase and partly adsorbed onto particulate matter. Direct photolysis and wet deposition are potential removal mechanisms. (HSDB)

**Section XIII. Disposal Considerations**

Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state, and local regulations when disposing of this substance.
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**Section XIV. Transport Information**

DOT Classification	DOT CLASS 4.1: Flammable solid.
PIN Number	UN1354
Proper Shipping Name	Trinitrobenzene, wetted
Packing Group (PG)	I
DOT Pictograms	

**Section XV. Other Regulatory Information and Pictograms**

TSCA Chemical Inventory (EPA)	This compound is <b>ON</b> the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).
EINECS Number (EEC)	Not available.
EEC Risk Statements	R12- Extremely flammable. R22- Harmful if ingested. R39- Danger of very serious irreversible effects. R46- May cause heritable genetic damage. R36/38- Irritating to eyes and skin.
Japanese Regulatory Data	Not available.

**Section XVI. Other Information**

**Version 1.0**  
**Validated on 12/13/2006.**  
**Printed 12/13/2006.**

**Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.

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