TCI AMERICA

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	**Flammable material; avoid heat and sources of ignition.**	

Section I. Chemical Product and Company Identification

Chemical Name: **Terpinolene**
(mixture of relative compound for perfumary)

Catalog Number	T0817
Synonym	Terpinolen
Chemical Formula	$C_{10}H_{16}$
CAS Number	586-62-9

Supplier: TCI America
9211 N. Harborgate St.
Portland OR
1-800-423-8616

In case of Emergency Call: **Chemtrec®**
(800) 424-9300 (U.S.)
(703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Terpinolene (mixture of relative compound for perfumary)	586-62-9	Min. 85.0 (GC)	Not available.	Rat LD_{50}(oral) 4390mg/kg

Section III. Hazards Identification

Acute Health Effects

No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.

Chronic Health Effects

CARCINOGENIC EFFECTS : Not available.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Not available.
Toxicity to the reproductive system: Not available.
There is no known effect from chronic exposure to this product. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

Section IV. First Aid Measures

Eye Contact

Check for and remove any contact lenses. 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

If the chemical gets spilled on a clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical touches the victim's exposed skin, such as the hands: 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. Seek medical attention. Treat symptomatically and supportively.

Ingestion

Remove dentures if any. Watch for an obstruction in the victim's mouth. Remove if possible what is causing the obstruction but do not force fingers or a hard object between the victim's teeth. Have conscious person drink several glasses of water or milk. INDUCE VOMITING by sticking finger in throat. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	Not available.
Flash Points	38°C (100.4°F)	Flammable Limits	Not available.

Combustion Products

These products include toxic carbon oxides (CO,CO_2)

Fire Hazards

Reactive with strong oxidizers. Vapors may travel to source of ignition and flash back. Closed containers may explode from the heat of a fire. Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards

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 additional information is available regarding the risks of explosion.

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Emergency phone number (800) 424-9300

Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO_2, 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	Flammable material. Keep away from heat and sources of ignition. Mechanical exhaust required. Stop leak if without risk. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information	FLAMMABLE. 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. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. Do not breathe gas, fumes, vapor or spray. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Treat symptomatically and supportively. Avoid contact with skin and eyes. Always store away from incompatible compounds such as oxidizing agents.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Splash goggles. Lab coat. Vapor 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	Not available.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid.	Solubility	Insoluble in cold water, hot water.
Specific Gravity	0.86		
Molecular Weight	136.24	Partition Coefficient	Not available.
Boiling Point	185°C (365°F)	Vapor Pressure	Not available.
Melting Point	Not available.	Vapor Density	Not available.
Refractive Index	Not available.	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with strong oxidizing agents.

Section XI. Toxicological Information

RTECS Number	WZ6870000
Routes of Exposure	Eye contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LD_{50}(oral) 4390mg/kg No additional remark.
Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Not available. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : Not available. Toxicity to the reproductive system: Not available. There is no known effect from chronic exposure to this product. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.
Acute Toxic Effects	No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.

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Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Terpinolene is released to the environment as a result of its production and emission by plants, especially certain types of trees. It also may be released as a result of its manufacture and/or isolation from plants and subsequent use as a solvent for resins and its use in the manufacture of synthetic resins and flavors. If released to soil, it will be expected to be immobile due to strong adsorption to soil, based upon an estimated Koc. The strong adsorption to soil is expected to greatly limit volatilization from near-surface soil. It will not hydrolyze in soil, but terpinolene may be subject to biodegradation in soil based upon limited data from a study of the treatment of wastewater from kraft wood pulp mills. If released to water, it will not be expected to bioconcentrate in aquatic organisms (based upon an estimated BCF), hydrolyze or directly photolyze. It will be expected to be subject to rapid volatilization based upon an estimated half-life of 3.4 hr for volatilization from a model river one meter deep flowing 1 m/sec with a wind velocity of 3 m/sec. Adsorption to sediment and suspended particulate matter may attenuate the loss of terpinolene from water via volatilization. The half-life for volatilization from a model pond has been estimated to be 41 days. Terpinolene which does not volatilize, will be expected to adsorb to sediment and suspended particulate matter, based upon an estimated Koc. No data were located that demonstrates biodegradation of terpinolene in environmental media, laboratory screening tests or biological treatment plants or simulators. However, data from a study of the treatment of wastewater from kraft wood pulp would suggest that the compound may be biodegradable in natural water. If released to the atmosphere, it will be expected to exist almost entirely in the vapor phase based upon an extrapolated vapor pressure of 0.595 mm Hg at 25 deg C. It will be expected to rapidly degrade in the atmosphere via reactions with hydroxyl radicals ozone and nitrate radicals. The half-lives for vapor phase reactions with photochemically produced hydroxyl radicals and ozone have been calculated to be 1.4 hr and 1.7 to 23 min, respectively, based upon measured rate constants and atmospheric concentrations of 5X10+5 hydroxyl radicals per cu cm and 7X10+11 ozone molecules per cu cm. The half-life for the vapor phase reaction with nitrate radicals in nighttime air has been calculated to be 1.0 min, based upon a measured rate constant and an atmospheric concentration of 2.4X10+8 nitrate radicals per cu cm. It will not be expected to directly photolyze in the atmosphere. General population exposure to terpinolene may occur through the ingestion of contaminated food, especially fruits such as nectarines and mangoes, and from the inhalation of contaminated air, especially air in some forests. Occupational exposure may occur through the inhalation of contaminated air and dermal contact with solutions that contain the compound. (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.

Section XIV. Transport Information

DOT Classification	DOT CLASS 3: Flammable liquid.
PIN Number	UN2541
Proper Shipping Name	Terpinolene
Packing Group (PG)	III
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This product is **ON** the EPA Toxic Substances Control Act (TSCA) inventory.
WHMIS Classification (Canada)	WHMIS CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
EINECS Number (EEC)	Not available.
EEC Risk Statements	R12- Extremely flammable. R18- In use, may form flammable/explosive vapor-air mixture.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

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Notice to Reader

Printed 3/12/2005.