TRADEASIA INTERNATIONAL PTE LTD
133 Cecil Street # 12-03 Keck Seng Tower, Singapore 069535,
Republic Of Singapore
Tel. +65 6227 6365 - **Fax**. +65 6225 6286
www.tradeasia.com

Material Safety Data Sheet
Pentaerythritol Rosin Ester

Section 1: Chemical Product and Company Identification

Product Name : Pentaerythritol Rosin Ester
Chemical Formula : $C_{25}H_{34}O_2$
Company Identification : Tradeasia International Pte Ltd
Email : contact@chemtradeasia.com

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS#	% by Weight
Pentaerythritol Rosin Ester	8050-26-8	100

Toxicological Data on Ingredients: Pentaerythritol Rosin Ester: ORAL (LD50): Not available. (LC50): Not available.

Section 3: Hazards Identification

Classification: Product is not classified as hazardous under GHS criteria or OSHA Hazard Communication Standard.
Other Information: Product may form explosive dust/air mixture if high concentration of product dust is suspended in air. Static electric charges created by emptying product from ungrounded containers in or near flammable vapors may cause flash fire. Contact with molten product can cause thermal burns.

Section 4: First Aid Measures

Eye Contact: Immediately flush eyes with flooding amounts of cool, low-pressure water for at least 15 minutes. If irritation persists, get medical attention. If hot/molten product contacts eye, flush with water for at least 15 minutes and seek medical attention immediately.
Skin Contact: In case of skin contact, wash immediately with soap and water. If irritation develops or persists, get medical attention. If hot or molten product contacts skin, cool under running water. Do not attempt to remove the hot, molten or cooled product from the skin. Seek medical attention.
Inhalation: Move person to non-contaminated air. If affected person is not breathing, apply artificial respiration. Seek medical attention.
Ingestion: Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Section 5: Fire and Explosion Data

Products of Combustion: These products are carbon oxides (CO, CO_2).
Fire Hazards in Presence of Various Substances: Not available.
Explosion Hazards in Presence of Various Substances: 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.
Fire Fighting Media and Instructions: Carbon dioxide, dry chemical, or water. Wear full protective clothing, including self-contained positive pressure or pressure demand breathing apparatus, helmet, and protective clothing. Use water to cool fire-exposed containers and to protect personnel.
Hazardous Decomposition Products: Smoke, carbon monoxide, carbon dioxide, and other products of combustion.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Containment: Contain the discharged material. If airborne dust is generated, eliminate all sources of ignition that may come into contact with the dust.
Clean-up Procedures: Wear appropriate protective equipment and clothing during clean up. Avoid generation of dust during clean-up. Wear an approved respirator if dust is generated above exposure limits. Attempt to reclaim free product, if this is possible. Shovel material into appropriate container for disposal. Follow all Local, State, Federal and Provincial regulations for disposal.
Evacuation Procedures: Persons not wearing appropriate protective equipment should be excluded from area of spill until clean-up has been completed.
Special Instructions: Avoid contact with skin and eyes. Avoid skin contact with molten resins. Avoid inhalation of dust from spilled material. Avoid inhalation of fumes from molten product.

Section 7: Handling and Storage

Handling: Avoid eye and skin contact. Avoid breathing dusts from this material. Avoid breathing fumes if product is used at high temperatures. Maintain good housekeeping to prevent dust accumulation. Flaked or crushed material may cause a dust problem. If product is in dust form, it is classified as a dust explosion hazard class II. Handling of product in dust form should be in accordance with NFPA. If handling with flammable or combustible materials, the explosion hazard may increase. Avoid ignition sources such as sparks and flame. In addition, when emptying bags where flammable vapors may be present, blanket vessel with inert gas, assure proper grounding (NFPA 69 - Explosion Prevention Systems; NFPA 70 - National Electric Code; NFPA 77 - Recommended Practices on Static Electricity; NFPA 654 - Standard for the Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical and Plastics Industry), and pour material slowly into conductive grounded chutes. The light metal containers will not safely support the movement or transfer of the product in a hot, molten form. Do not chisel drums in areas where flammable liquids are stored or used. Wash thoroughly after handling. Never eat, drink or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet or applying cosmetics.
Storage: Store at ambient temperature and atmospheric pressure. Guard against dust accumulation of this material. Flaked or crushed product may be prone to oxidation, therefore, control inventory - use oldest material first. Suggest stainless steel construction for bulk storage.

Section 8: Exposure Controls/Personal Protection

Engineering Controls: Provide local exhaust and general ventilation systems to maintain airborne concentrations below OSHA, ACGIH, and manufacturer recommended exposure limits. Local exhaust ventilation is preferred because it prevents contaminant dispersion into work areas by controlling it at its source. Ventilation must be sufficient to effectively remove and prevent build-up of airborne dusts or vapors. Use electrically grounded, explosion-proof equipment for ventilation or any handling of this product.
Personal Protection:
Eye/Face: Wear chemical goggles and face shield if handling molten material. Ensure compliance with OSHA's personal protective equipment (PPE) standard for eye and face protection.
Skin: Use impervious gloves. Work clothing sufficient to prevent all skin contact should be worn, such as coveralls and long sleeves. For heated/molten product, use any type thermal insulating gloves and other clothing as necessary to protect from thermal burns. Ensure compliance with OSHA's personal protective equipment (PPE) standard.

Respiratory: Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard and ANSI's standard for respiratory protection. A written respiratory protection program, including provisions for medical certification, training, fit-testing, exposure assessments, maintenance, inspection, cleaning, and convenient, sanitary storage, must be implemented.
DUST/MIST: If concentrations are below the TLV and/or PEL, a NIOSH- approved disposable dust/mist respirator may be used for personal comfort. For concentrations above the TLV and/or PEL but less than 10 times these limits, a NIOSH-approved half-face piece respirator equipped with dustmist cartridges may be used.
For molten/heated product:
GAS/VAPOR: For concentrations above the TLV and/or PEL but less than 10 times these limits, a NIOSH approved half-face piece respirator equipped with appropriate chemical cartridges may be used.
General: Use good industrial hygiene practices in handling this material. Eye wash fountains and emergency showers are recommended. Launder contaminated clothing before reuse.

Section 9: Physical and Chemical Properties

Physical state and appearance	: Light Yellow Flakes or Semi-beads
Odor	: Mild
Taste	: Not applicable.
Molecular Weight	: 366.55 g/mole
pH (1% soln./water)	: Not applicable.
Boiling Point	: Decomposes.
Melting Point	: 100°C softening point typical
Critical Temperature	: Not available.
Specific Gravity	: > 1 (at 25°C Water = 1)
Vapor Pressure	: < 0.001 mm Hg at 20ºC (68ºF)
Vapor Density	: Not applicable
Volatility	: Not available.
Odor Threshold	: Not available.
Water/Oil Dist. Coeff.	: Not available.
Ionicity (in Water)	: Not available.
Dispersion Properties	: See solubility in water
Solubility	: 0.38 mg/L (at 20ºC)

Section 10: Stability and Reactivity Data

Stability: The product is stable under recommended storage conditions.
Conditions of Instability: Avoid strong oxidizing agents. Avoid dispersion of dust in air. Avoid ignition sources where dust is produced.
Incompatibility with various substances: May react with strong oxidizing agents.
Hazardous Decomposition Products: Smoke, carbon monoxide, carbon dioxide and other products of combustion.
Polymerization: Will not occur.

Section 11: Toxicological Information

Eye: Dust or powder from the product may cause eye irritation. Rubbing may cause abrasion of the cornea. Symptoms may include irritation, redness, scratching of the cornea, and tearing. If heated, product can cause thermal burns and vapors may cause eye irritation.
Skin: Product may cause mild skin irritation after prolonged or repeated contact. If heated, product can cause thermal burns.
Inhalation: Inhalation of dusts may cause respiratory irritation. Inhalation of vapors/fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing and difficulty breathing.
Ingestion: Ingestion of product may produce mild gastrointestinal disturbances.
Toxicity Data
Acute Toxicity: Oral, rat, LD50>2000 mg/kg**.** Oral, rat, LD50>5000 mg/kg. Dermal, rabbit, LD50>2000 mg/kg
Skin Corrosion/Irritation: Not found to be a skin irritant in rabbits
Eye Irritation: Not found to be an eye irritant in rabbits
Sensitization: Not found to be a skin sensitizer in the Guinea Pig Maximization Test.
Germ Cell Mutagenicity: Non mutagenic in the AMES Salmonella Assay. There was no evidence of carcinogenicity in a two year cancer bioassay in rats and this negative cancer bioassay was submitted under EPA HPV program as surrogate for genetic toxicity testing. A chemically similar substance was not clastogenic in cytogenetic test conducted in Chinese Hamster Ovary cells.
Carcinogenicity: This product is not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP or OSHA. Rosin, pentaerythritol ester has been tested for potential carcinogenicity in a two year bioassay conducted in rats in which there was no evidence of carcinogenicity.
Reproductive Toxicity: No obvious effects of treatment on fertility, pregnancy performance or pup development at any dose level in a Reproduction/Developmental

Section 12: Ecological Information

Ecotoxicity: Not available.
Acute Toxicity: Fish: 96-hr LL50>1000 mg/l loading rate WAF; NOEL 1000 mg/l loading rate WAF
Biodegradability: 0 % degradation after 28 days, not readily biodegradable
Bioaccumulative Potential: Partition Coefficient ($LogK_{ow}$) 3.6 at pH 7.5, 6.1-7.1 at pH 2, upper range indicated potential to bioaccumulate.

Section 13: Disposal Considerations

Waste Disposal: Waste material must be tested using methods described in 40 CFR 261 to determine if it meets applicable definitions of hazardous waste. No EPA Waste Numbers are applicable for this product's components. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material.
Identification: Not available.
Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

TSCA: This product is on the Toxic Substances Control Act (TSCA) Inventory.
SARA TITLE: None of this product's components are listed.
International Inventories: This product is either listed or exempt from listing on the following inventories: Canada DSL, Europe EINECS, Japan ENCS, Korea ECL, Australia AICS, China IECS and Philippines PICCS.

State Lists: None of this product's components are listed in CA, FL, MA, NJ or PA.
Other: This product contains antioxidants.

Section 16: Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Tradeasia International Pte. Ltd. Be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Tradeasia International Pte. Ltd. has been advised of the possibility of such damages.