GEO SPECIALTY CHEMICALS

TRIMET® TME (Trimethylolethane) Product Data

TRIMET® TME **TECHNICAL DATA SHEET**

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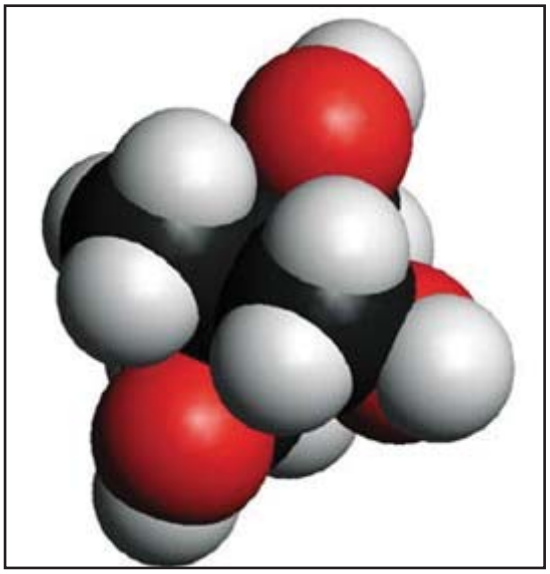
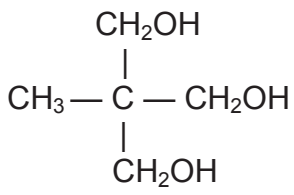


TRIMET® TME (Trimethylolethane), $C_5H_{12}O_3$



CAS Registry No.77-85-0

EINECS Registry No. 2010639

Introduction

TRIMET® TME Trimethylolethane, manufactured by GEO Specialty Chemicals, Inc., Paints & Coatings Group, is a high performance polyol containing three primary hydroxyl groups. Its compact neopentyl structure provides high hydroxyl content and excellent resistance to the effects of heat, light, hydrolysis and oxidation.

Typical TME applications include premium quality alkyd and polyester resins for paints, powder coating resins, polyol ester synthetic lubricants, plasticizers, stabilizers for plastics and titanium dioxide pigment coatings. The nitrate ester is used in explosives and propellants. TME may also be used as a solid phase heat storage medium. Resins prepared with trimethylolethane are noted for their superior weatherability and excellent colour, heat and alkali resistance.

TRIMET® TME is available in two grades: Technical and Pure, and in two forms: briquettes and granular. TRIMET® TME Tech is most often supplied in cake resistant briquettes. Granular TRIMET® TME Tech can be shipped on request. TRIMET® TME Pure is available in granular form only.

TRIMET® TME Technical is a high quality product widely used in the manufacture of alkyd and polyester liquid and powder coating resins. TRIMET® TME Pure is a special grade that has been processed to a higher purity.

Specifications	Tech	Pure
Hydroxyl Content, wt %	41.0 min	41.75 min
Ash as NA_2O, wt %	0.01 max	0.01 max
Moisture, wt % (Karl Fisher Method)	0.3 max	0.3 max
Water Insoluble, ppm	50 max	50 max
Colour, APHA	250 max	100 max

Typical Properties	Tech	Pure
Appearance	White Crystalline Solid	
Melting Point, °C	185 - 195	199 - 203
Density, Briquettes lbs / ft^3	47.1	-
Density, Granular lbs / ft^3	46.4	48.6
Combining Weight	41.0	40.5
Combining Weight, theory	40.05	
Molecular Weight	120.15	
Flashpoint, Cleveland open cup, °C	160	
Solubility, g / 100g solvent @ 25°C		
Water	40	
Methanol	75.2	
Ethanol	27.9	

Uses

TME is widely used as a raw material for alkyd and polyester resins. Because of their stable neopentyl structure, TME-based resins offer superior resistance to the destructive influences of heat, moisture and light. TME-based alkyds also exhibit faster drying times and better hardness than corresponding alkyds prepared with other polyols. Trimethylolethane has been shown to provide superior corrosion protection, improved gloss retention, better abrasion resistance, reduced discolouration and improved temperature resistance in coating resins compared to those made with trimethylolpropane (TMP).

Oil-free polyester resins made with TME are noted for their excellent colour retention. Siliconized polyesters made with TME offer improved heat resistance and weather resistance compared to other polyols. Both alkyd and polyester resins may be advantageously combined with melamine resins to produce outstanding baking enamels. Those made with TME retain their white colour and gloss exceedingly well even when subjected to severe overbake.

TME esters may be used as the lubricant base stocks of plasticizers. Short chain aliphatic esters may be used in polyol ester synthetic lubricants that must withstand high temperatures. Small amounts of antioxidants and corrosion inhibitors are incorporated in the finished lubricant. TME esters are also of value as textile lubricants and are reportedly useful as non-caloric shortenings for food. Due to improved stability, TME triacetate is preferred over triacetin as a specialty plasticizer. TME tribenzoate has been cleared by the US Food and Drug Administration as an additive for adhesives in contact with food.

TME is a preferred surface treatment for titanium dioxide and other inorganic pigments. Use of TME as a solid phase energy storage medium was studied. Typical applications include solar energy storage devices, insulating fabrics, heat storing building products and food warming devices.

Additional data on uses of TME and patent references can be found in “A Complete Guide to TRIMET® Brand of Trimethylolethane” which can be obtained through your GEO Specialty Chemicals, Paints & Coatings Group customer service representative.

Toxicity

TME is essentially non-toxic. The LD_{50} in mice is greater than 5000mg / kg. TME is mildly irritating to abraded skin with a score of 0.6 in the Draize test. TME is not irritating to the eye with a score of 0.0 in the Draize test. No toxicological or allergenic problems have been noted during our many years of production experience.

Shipping, Handling & Storage

TRIMET® TME is packaged in 50lb and 25kg multi-wall paper bags with HDPE liners. Super sacks containing 500kg / 1102lb and lined with antistatic LDPE are also available.

TME is a combustible solid with a flashpoint (Cleveland open cup) of 160°C. Store in a cool, dry area. Do not store near oxidizers.

Briquetted TRIMET® TME Tech and TRIMET® TME Pure granular can be stored indefinitely without change provided the packaging remains intact and is protected from water damage.

The moisture content of TRIMET® TME may increase slowly with extended storage.

Granular TRIMET® TME Tech storage should be limited to 6 months or less due to a tendency of the product to cake. To minimize caking, pallets should not be stacked on top of each other and storage temperatures should be minimized. High humidity conditions may accelerate caking especially if packaging has been opened.

The NPFA Hazardous Materials Identification System rating for TME is: Health Hazard - 0; Flammability - 1; Reactivity - 0. This rating indicates that TME is a minimal hazard substance.

Due to its granular nature, TME is not likely to form explosive dusts. Care should be taken to avoid accumulation of dusts.

Trimethylolethane is classified as "DOT not regulated" by the US Department of Transportation. No special labelling is required for shipment. The Harmonized Tariff Code is 2905.49.

TME may be disposed of in an approved disposal facility in accordance with applicable federal, state and local regulations. The nature and extent of contamination, if any, may require the use of specialized disposal methods.

Consult the Material Safety Data Sheet for current information on this product. Copies may be obtained through your Paints & Coatings Group customer service representative.

Trimethylolethane is listed on the Chemical Substance Inventory of Existing Chemicals Substance. The US and Canadian CAS Registry Number is 77-85-0 and the European EINECS Registry Number is 2010639.

The REACH pre-registration number for TRIMET® TME is 05-2114684052-52-0000.