# **DuPont<sup>™</sup> TYZOR<sup>®</sup>** Organic Titanates Product Information - TYZOR<sup>®</sup> TE

# **Description**

DuPont<sup>™</sup> TYZOR<sup>®</sup> TE, Triethanolamine Titanate, is diisopropyl di-triethanolamino titanate, CAS: 36673-16-2, a reactive organic titanium chelate with triethanolamine as chelating agent, containing 20 % of free isopropanol. TYZOR<sup>®</sup> TE is a yellowish organic flammable liquid. Main use of TYZOR<sup>®</sup> TE is as an esterification catalyst or for cross-linking in aqueous and non-aqueous systems. TYZOR<sup>®</sup> TE is soluble in or miscible with many organic solvents or products. It is miscible with water.

#### Typical Properties of TYZOR<sup>®</sup> TE \*

Property	Value	Unit
Molecular weight	462	g/mol
	(Active)	
TiO <sub>2</sub> content	ca. 14.0	%
Density (20 °C)	ca. 1.07	g/cm <sup>3</sup>
Viscosity (20 °C)	ca. 350	mPa*s
Refractive index (20 °C)	ca. 1.487	
Pourpoint	ca 47	°C
Flash point	ca. 20	°C

"This table gives typical properties. DuPont does not make any express or implied warranty that these products will continue to have these typical properties.

### Reactions

TYZOR<sup>®</sup> TE reacts with water under hydrolysis splitting off isopropanol and forming a reactive hydroxy titanium chelate. The chelate can be stable in water for some months. This chelate can form bonds with organic OH or COOH groups of for example polymers, carbohydrates (e.g. cellulose, starch, guar gum). Hereby in aqueous systems strong gels are formed by crosslinking. TYZOR<sup>®</sup> TE is decomposed by thermal treatment at > 350°C to TiO<sub>2</sub> forming TiO<sub>2</sub> coatings.

# **Applications**

TYZOR<sup>®</sup> TE is used an additive in formulations and as a catalyst for direct esterification of carboxylic acids with aliphatic alcohols and has the distinct advantage that the catalyst will not form solid polymeric TiO<sub>2</sub> in the final product. Other Examples of uses are:

#### **Direct Esterification**

Moderate rates, environmentally friendly, recyclable products

#### Oil fracturing

crosslinking of guar-gum dispersions for high viscous aqueous gels in oil drilling application

#### **Thixotropic Paints**

crosslinking of carbohydrate coated latex particles for high viscous thixotropic paints

#### Water borne Paints

crosslinking of water borne paints e.g. acrylic paints

### **Advantages**

YZOR<sup>®</sup> TE is mainly used as additive. and as a low toxicity, recyclable catalysts for making esters and polyesters and other polymerics. TYZOR<sup>®</sup> TE is added to the polymer or binder as the last ingredient in concentrations of ca. 0.5 - 5%. The time for gel formation depends on the type of carbohydrate polymers: it occurs within < 1 min. through 1 hour. When used as a catalyst, it is used at 0.5% or less.

### **Contact Information:**

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