



ELFAT – pETO™ (Pentaerythritol)

Technical Datasheet

1. Technical Datasheet

Property	Specification
Physical Properties	
Appearance	White crystalline powder
Physical Form	White crystalline powder
Odor	Odorless
Molecular Weight	136.15 g/mol
Density	1.396 g/cm ³
Specific Gravity	1.39 at 25°C
Viscosity	Not applicable (Solid)
Refractive Index	1.548 at 25°C
pH (aqueous solution)	3.5 - 4.5 (100 g/L at 35°C)
Assay / Purity	98% min
Authoritative Data	
CAS Number	115-77-5
Grade	98%
Molecular Formula	C ₅ H ₁₂ O ₄
Description	Used as a building block for alkyd resins in paints and coatings, as well as in explosives, plastics, and lubricants.
Known Applications	Resin Production, Plastic Stabilizers, Lubricant Additives, Explosives Manufacturing, Flame Retardants
Chemical Properties	
pKa	14.10
Ionic Nature	Non-ionic (polyol)
Incompatibilities	Strong oxidizing agents, strong acids, acid anhydrides, acid chlorides.
Hazardous Reactions / Decomposition Products	Hazardous decomposition products formed under fire conditions are carbon oxides (CO, CO ₂). Reacts violently with strong oxidants and strong acids, which generates an explosion hazard.
Thermal Properties	

Property	Specification
Melting Point	260 °C
Boiling Point	276 °C at 30 mmHg
Flash Point	240 °C (464 °F)
Autoignition Temperature	>400 °C at 1,013 hPa
Thermal Stability	Stable under normal conditions.
Solubility	
Solubility in Water	1 g / 18 mL (15°C)
Solubility in Ethanol	Soluble / Slightly Soluble
Solubility in Methanol	7.23 g / 100 g (25°C)
Solubility in Acetone	Insoluble
Solubility in Diethyl Ether	Insoluble
Solubility in Glycerol	Soluble
Solubility in Benzene	Insoluble

2. Processing Methods

Solvent-Free Alkyd Resin for Brush Paints

This formulation produces a clear, low-viscosity alkyd resin suitable for paints with low solvent content.

Key Ingredients	Indicative Dosage (% w/w)
Tall Oil Fatty Acid	61.0%
Pentaerythritol	12.8%
Hypophosphorous Acid	1.1%
Trimellitic Anhydride	25.1%

Synthetic Lubricant Base Stock (Aviation Grade)

This describes the reactants for a polyol ester (POE) base stock used in high-performance lubricants, such as aviation turbo oils. The exact percentages of the fatty acids are adjusted to achieve desired properties like viscosity and low-temperature performance.

Key Ingredients	Indicative Dosage (% w/w)
Technical Pentaerythritol	Polyol (85-92% monopentaerythritol, 8-15% dipentaerythritol)
C5-C10 Carboxylic Acids	Acid Reactants (blend of linear and branched acids)

3. Dosing by Application



Application	Recommended / Max Dosage
Alkyd Resins for Paints	7.00% - 16.25%
Synthetic Lubricants (Polyol Esters)	Stoichiometrically reacted with fatty acids; technical grade contains 85-92% monopentaerythritol.

The information and data contained herein are believed to be accurate but may not be all inclusive and should only be used as a guide. The information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the product for his particular use and on condition that they assume the risk of the use thereof.

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