Milliken®

DDSA

(TPSA) Tetrapropenyl Succinic Anhydride

TECHNICAL DATA

DDSA (Dodecenyl Succinic Anhydride) or more accurately called TPSA is a liquid mixture of several isomeric alkenyl succinic anhydrides. It is the product resulting from the reaction between a hydrocarbon distillate and maleic anhydride. The hydrocarbon distillate is predominantly the C12 branched-olefin derived from propylene tetramer. The large alkenyl side chain and the mixture resulting from the higher and lower fractions in the distillate give a liquid product.

Side chain unsaturation is retained in the "ene" reaction, therefore TPSA undergoes all the reactions typical for an internal double bond as well as those of a carboxylic anhydride.

Uses and Applications

- **Resin Intermediate**
  - Increases flexibility in paints, lacquers, and drying oils
  - Increases resin toughness over maleic anhydride alone
- **Corrosion Inhibitor**
  - Water scavenger in lubricants and greases
  - Anticorrosion agent and water remover in fuels
- **Curing Agent for Epoxy Resins**
  - Increases flexibility while reducing shrinkage
  - Improves dielectric performance in electronic potting
- **Chemical Intermediate**
  - Precursor in surfactant and wetting agent formation
  - Starch modifier in cellulose ester preparation

Resin Intermediate

TPSA can be used in the preparation of alkyd or unsaturated polyester resins to replace some, or all, of the dicarboxylic acid in order to produce materials more flexible and tougher than those obtained with maleic anhydride only. The alkenyl side chain acts as an "internal plasticizer". Alkyds made from TPSA offer better chemical resistance and are used in the following applications:

- **Specialty primer and varnishes**
- **Leather and textile finishes**
- **Moisture and grease resistant coatings**
- **Industrial coatings**

Curing Agent for Epoxy Resins

TPSA is a low viscosity liquid curing agent for epoxy resins. Epoxies cured with TPSA are harder and exhibit more flexibility with less shrinkage than epoxies cured with other anhydrides. These properties make TPSA especially suitable in encapsulating and potting applications. The addition of TPSA increases epoxy pot life over typical anhydride curing agents, even in the presence of amine accelerators, which improves handling. Excellent dielectric characteristics enable a low power factor making epoxy resins cured with TPSA widely used in electronic embedment.

Corrosion Inhibition

TPSA is used as a corrosion inhibitor in non-aqueous systems such as oils, lubricants, hydraulic fluids, greases, and protective coatings. TPSA at 0.5-1.0% concentration prevents corrosion by removing water through hydrolysis of the anhydride group to a free dicarboxylic acid. The resulting dicarboxylic acid is also an effective corrosion inhibitor. TPSA is effective in inhibiting corrosion of non-ferrous metals such as lead, bronze, copper and various other alloys used in engines, turbines and other equipment.

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TECHNICAL DATA

Specifications

CAS Number	26544-38-7
APHA Color	400 Maximum
Purity %	97 Minimum
Neutralization Number	400-427
Residual Maleic Anhydride %	0.1 Maximum

Physical Properties

Form @ 25°C	Viscous Liquid
Solubility In Water	None
Molecular Weight	266 (Theoretical)

Safety & Handling

For safety, handling, and toxicity information please refer to the current safety data sheet.

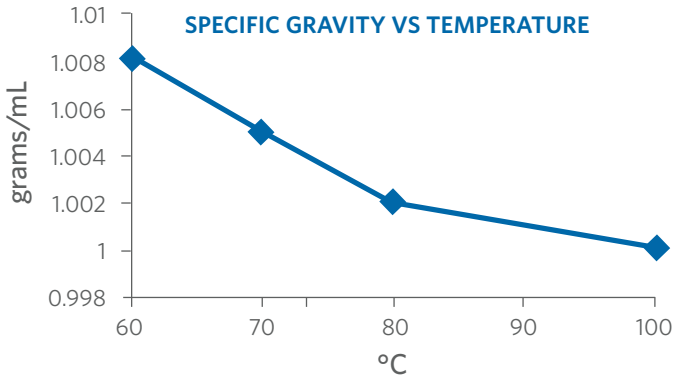
Shipping Information

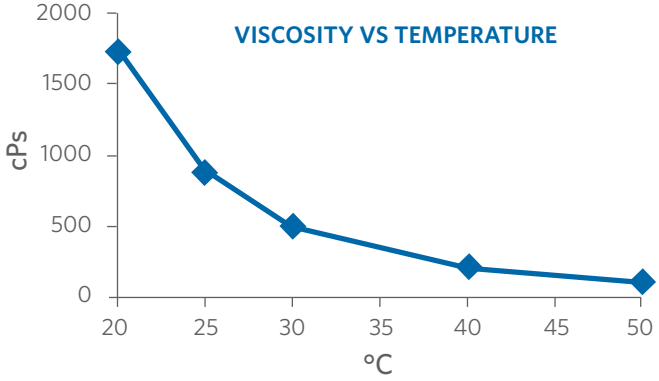
Container: Rail Car (upon request)
Bulk Tanker
450# Lined Steel Drum
2200# Totebins

Shipping: Drums (Non Hazardous)
Bulk (Hazardous only if shipped above 100°C)

Storage and Shelf Life

Shelf life is 2 years from the date of manufacture.





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Please contact your Milliken representative for further product information including chemical registrations, food contact status, and other regulatory details.

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