

EMERY® E 6401

Description: EMERY® E 6401 is a bio-based fatty acid ester. The product has low color, good color stability, and low odor. It is based on renewable carbon sources and has good biodegradability. This ester is used in the formulation of a wide range of industrial systems, including as a functional alternative to nonyl phenol and nonyl phenol ethoxylates.

Characteristics:

Parameter	Typical Value
Appearance	Clear, yellowish liquid
Acid value, mg KOH/g [‡]	≤ 2.0
Iodine Value [‡]	≤ 1.0
Hydroxyl value, mg KOH/g [‡]	140 - 180
Color, Gardner [‡]	≤ 4
[‡] - specification	
Saponification value, mg KOH/g	90 - 130
Water content, % (m/m)	≤ 0.2
Flash point, °C (open cup)	> 180
Biobased content, %	> 60
Viscosity, (cP @ 25°C)	100

Forms of Delivery: Liquid in drums, totes and bulk containers

Storage Information: Product stored in original closed packaging under ambient conditions should be stable for at least 2 years. This product is not damaged by freezing. The product may begin to become solid at approximately 5°C. This physical property is specific to the product and is reversible when warmed under mixing. This has no influence on the product application properties.

Health and Safety Information: Review our Safety Data Sheet (SDS) for best practices when using this material.

Applications: EMERY® E 6401 is recommended as a solvent, bio-diluent, or plasticizer in coating, ink, adhesive, sealant and encapsulant applications. It is an alternative to nonyl phenol diluent in two component amine-cured epoxy systems (see page 2).

The product's characteristics allow use as additives in specialty plastic applications; lubricants in textile processing, cutting oils and metalworking fluids; emulsifiable degreasers; co-emulsifier for polymer latex production and formulations; and plasticizers/viscosity modifiers in mastics, adhesives, and PVC plastisol systems.

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Applications (cont.):

Nonylphenol(NP), a common member of the alkylphenol family, has attracted government regulatory attention due to its prevalence in the environment, and its potential role as an endocrine disruptor. NP has been used as an ingredient in two component epoxy formulations for more than fifty years. Because of the health and environmental concerns, alternatives to NP are needed.

A study was undertaken to evaluate compatibility of EMERY® E 6401 with several common epoxy raw materials at various weight ratios as an alternative to NP. Binary mixtures were allowed to equilibrate (overnight and after three days) before evaluation. Brookfield viscosities of materials were determined using a DV-II viscometer, LV 63 spindle at 20-100 s⁻¹ shear rate at 25°C. Compatibility was assessed visually. Results for EMERY® E 6401 are shown below.

	Diluent →	Nonyl Phenol (NP)	EMERY® E 6401
Resin / Curing Agent ↓	Viscosity (cP) @ 25°C	2000	100
Nonyl phenol	2000	-	Clear to 95% dilution
DGEBA (Liquid epoxy resin)	13,700	Clear to 75% NP dilution	Clear to 20% ester dilution*
DETA (Diethylene triamine)	10	Clear to 75% NP dilution	Clear to 25% ester dilution*
D230 Type (Polyether amine)	10	Clear to 75% NP dilution	Clear to 75% ester dilution
IPDA (Isophorone diamine)	15	Clear to 75% NP dilution	Clear to 75% ester dilution
DGEBA Viscosity Reduction	-	2400 cP @ 50% NP diluent loading	1600 cP @ 20% ester diluent loading

* Ester diluent homogeneous, but cloudy above 25% diluent loading

The use of EMERY® E 6401 as a diluent does not accelerate the cure rate of an epoxy-amine system. Introduction of a small amount of nonyl phenol in the formulation improves compatibility between the ester and liquid epoxy resin or curing agent.

**To request a sample or to find out more about EMERY® E 6401,
contact ob.americas@emeryoleo.com**

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