

Product Information

NANOPOX® A 410

PRODUCT DESCRIPTION

NANOPOX® A 410 is a high performance, versatile, silica reinforced Bisphenol A based epoxy resin for the use in adhesives. The silica phase consists of surface-modified synthetic SiO₂ nanospheres of very small size (average diameter of 20 nm) with a narrow particle size distribution (maximum diameter 50 nm).

Despite the high SiO₂ content of 40 wt%, NANOPOX® A 410 has a comparatively low viscosity due to the agglomerate-free colloidal dispersion of the nanoparticles in the resin.

Typical Properties

Property	Unit	Value
Appearance		opaque liquid
Base Resin		Bisphenol A diglycidyl ether
Density at 20 °C	g/cm ³	1.4
Epoxy Equivalent Weight	g/eq	295
Viscosity at 25°C	mPa·s	60000

The data represents typical values (no product specification)

TYPICAL APPLICATIONS

NANOPOX® A 410 is a versatile dispersion of colloidal silica in epoxy resin (DGEBA) for the use in (structural) adhesives. It enables highly filled, low viscosity adhesives and improves mechanical properties, such as fracture toughness, impact resistance and modulus. Further more it reduced cure shrinkage & thermal expansion. In comparison to NANOPOX® A 510 it inherently provides better mechanical properties.

Product Composition

Product Composition	Unit	Value
Silicon Dioxide (SiO ₂) Content	wt%	38-42

The data represents typical values (no product specification)

BENEFITS & ADVANTAGES

- Improved modulus and flexural strength, increase in toughness and compressive strength
- Enables extremely high loading levels in combination with suitable micron particles
- Significantly improved fatigue performance
- Lower CTE, reduced shrinkage
- Low viscosity, thus suitable for injection processes
- Improved surface quality, no fiber-printthrough (Class A)
- Suitable for underfill applications
- Nanoparticles do not sedimentate and stabilize co-fillers

HANDLING & PROCESSING

NANOPOX® A 410 can be used as any other Bisphenol A diglycidyl ether. However, the colloidal silica in NANOPOX® products tends to agglomerate if the stabilisation is affected by inappropriate formulation components like hydrocarbon solvents (e. g. xylene).

Therefore the compatibility between NANOPOX® A 410 and all other formulation components should be tested separately before starting formulation development.

NANOPOX® A 410 should be handled in accordance with good industrial practice. Detailed information is provided in the Material Safety Data Sheet.

PACKAGING

Steel drum, 25 kg

Steel drum, 250 kg

Other types on request

STORAGE

Keep container(s) tightly closed when not in use! Store in a dry, cool place. Product can be deep-frozen.

NANOPOX® A 410 tends to crystallize at ambient temperatures. The product can be easily re-melted by heating it up to 70°C for a short period of time.

SHELF LIFE

6 month if stored in the original unopened container.

The shelf life period can be subject to prolongations based on reapprovals in accordance with the established Evonik ISO 9001 quality management process.

HAZARDOUS SUBSTANCE

Information concerning

- Classification and labelling according to regulations for transport and for dangerous substances
- Protective measures for storage and handling
- Measures in case of accidents and fire
- Toxicity and ecological effects

is given in our material safety data sheets.

REGISTRATION LISTING SUMMARY

The relevant components of NANOPOX® A 410 are listed/registered or exempt in the following chemical inventories.

Registration Listings

Registry	Status
China (IECSC)	Yes
EU (EINECS/ELINCS)	Yes
Japan (ENCS)	Yes
South Korea (TCCL)	Yes
Taiwan (TCSI)	Yes
USA (TSCA)	Yes

Disclaimer

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