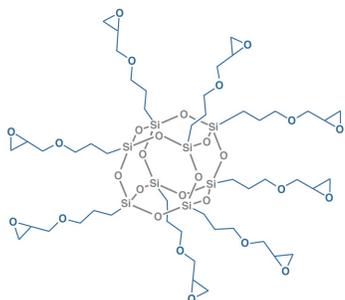


Glycidal POSS[®]

FEATURES

Clear, colorless, low viscosity liquid.



APPLICATIONS

EP0409 has found a diversity of uses. It is generally utilized as an additive at 2 wt% loading levels to impart adhesion and durability in coatings. It is also used as a compatibilizer and carrier of ingredients in coatings and resins. It can also be surfaced glassified under oxygen plasma, corona and UV to provide a tie-layer for coatings or to increase scratch and mar resistance.

BENEFITS

Affords 40-70% viscosity reductions. EP0409 is often formulated with aliphatic amines to provide low viscosity, room temperature cure and high HDT resins and adhesives. The "POSS-HDT-Effect" is recognized by an increased rubbery plateau modulus. It also provides UVC/B sorption and resistance to moisture, oxidation and corrosion. The incorporation of nano-silica improves reinforcement and durability of EP0409 while retaining excellence at wetting of carbon, basalt and glass fibers.

TYPICAL PROPERTIES

Appearance	Clear, colorless liquid
Viscosity (@25°C)	48 poise
Density	1.25 g/mL
Refractive Index	1.51
Formula Weight	1337.88
EEW	167

REGULATORY STATUS

INCI, REACH, TSCA, CAS 68611-45-0.
Not a primary dermal irritant.

HANDLING PRECAUTIONS

Product safety information required for safe use is not included in this document. Before handling, read product and safety data sheets and container labels for safe use, physical health and hazard information. For safety data information, contact Hybrid.



SUGGESTED FORMULATION

The rigidity of the POSS cage is similar to that provide by DBGE and an aromatic amine cross-link. Therefore, we suggest using EP0409 in combination with flexible amines to retain ductility in epoxy formulations.

PRODUCT FEATURES

EP0409 is an excellent compatibilizer, rheological diluent and carrier. It has a robust resistance to environmental degradation such as moisture and oxidation. It provides UV sorption. Additionally, EP0409 has outstanding dispersion characteristics for particles, ingredients and effects.

DESCRIPTION

EP0409 is a hybrid, 1.5 nm molecule with an inorganic silsesquioxane at the core, and organic glycidyl groups attached at the corners of the cage, which act as multifunctional cross-linkers and dispersant arms. EP0409 shows high compatibility and diluent properties in urethane, epoxy and acrylic resins. As a cross-linker, EP0409 retains modulus above glass transition and increases hardness.

COMPATIBILITY

Solvents	
PGMEA, ethanol, IPA, etc.	Soluble
Water, hexanes, etc.	Insoluble
Aliphatic Resins	
Nearly all urethane resins	Soluble
Nearly all epoxy resins	Soluble
Nearly all acrylic resins	Soluble
Aromatic Resins	
Nearly all urethane resins	Soluble
Nearly all epoxy resins	Soluble
Nearly all acrylic resins	Soluble

RELATED LITERATURE

1. Cross-linking of CTBN: DOI 10.1007/s10973-015-5019-9
2. Increase of POM thermal stability: DOI 10.1002/pc.21191
3. Decrease water uptake in epoxy resin: DOI 10.1007/s00289-015-1475-4
4. Impact improvement in epoxidized pine oil: DOI: 10.1002/app.42451

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