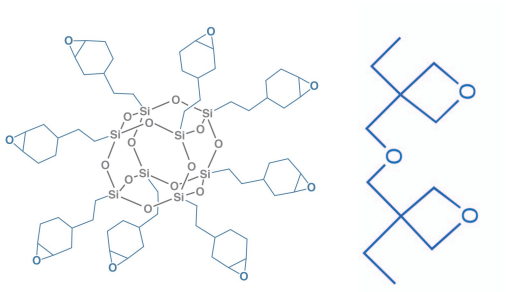
Epoxycyclohexyl POSS® Cage Mixture

EP4F08.03 features EP0408 POSS dissolved in 3-Ethyl-3-[[(3-ethyloxetane-3-yl)methoxy]methyl]oxetane for cationic-cure UV coating applications.



APPLICATIONS

Clear, colorless, low viscosity liquid.

DESCRIPTION

EP3F08.04 contains the active EP0408 POSS, with epoxycyclohexylethyl groups attached to the silicon vertices of the cage. The combination with bis-oxetane provides enhanced rate of cationic cure, high hardness, with modest flexibility.

APPLICATIONS

EP4F08.03 rapidly cures with cationic photo-initiators. EP4F08.03 is a film former however it is designed for use as an additive in UV coatings for high transparency and hardness.

In general, EP0408 provides increased use temperature as well as excellent water and solvent resistance. EP0408 provides chemical and thermal stability to coatings. It can also be surface glassified to a silica-like composition. Surface glassification then allows for use as a tie layer or for improved mar resistance.

EP3F08.04 PROPERTIES

Appearance	Clear low viscosity liquid
Viscosity (@25°c)	51.31 Pa-s
Density	1.02 g/mL
EEW	204-205
Resin Solubility	aromatic and aliphatic resins

REGULATORY STATUS

INCI, EP0408 CAS: 1213770-19-4.
EP0408 is not a primary dermal irritant.

3-Ethyl-3-[[(3-ethyloxetane-yl)methoxy]methyl]oxetane CAS: 18934-00-4.

HANDLING PRECAUTIONS

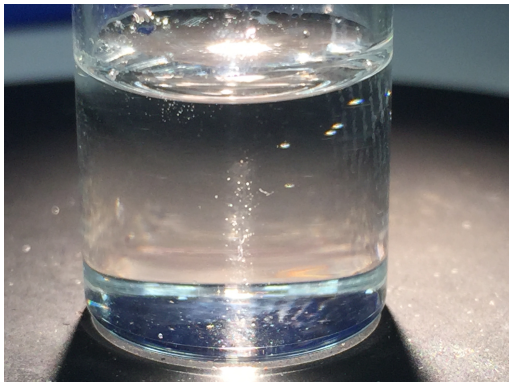
Product safety information required for safe use is not included in this document. Before handling, read product and safety data sheets and container labels for safe use, physical health and hazard information. For safety data information, contact Hybrid.

FEATURED IMAGE

The EP0408 octamer structure is shown.

PRODUCT BENEFITS

EP0408 is an excellent compatibilizer, rheological diluent and dispersant for particles, ingredients and effects. It has a robust resistance to environmental degradation such as moisture, oxidation and provides UV C/B absorption. In combination with bis-oxetane, stable clear films are realized with 7H hardness and modest flexibility.



EP0408 STRUCTURE AND FUNCTION

Compositionally, EP0408 is a mixture of cages having 8, 10 and 12 silicon atoms, along with cage-like oligomers. The EP0408 POSS octamer is a hybrid, 1.5 nm molecule with an inorganic silsesquioxane core and organic epoxy cyclohexyl ethyl groups attached at the corners of the cage, which act as multifunctional cross-links and dispersant arms. EP0408 shows high compatibility and diluent properties in urethane, epoxy and acrylic resins. As a cross-linker, EP0408 retains modulus above glass transition and increases hardness.

RELATED LITERATURE

1. **3-D Cationic Photoresist**: DOI: 10.1039/b901226e
2. **Crack-Free 3D Hybrid Microstructures from Photosensitive Organosilicates as Versatile Photonic Templates**: DOI: 10.1021/nn9007803