

Epoxy cyclohexyl POSS® Cage Mixture

EP0408.10.30 is a formulation that contains 30% cyclopentanone for coating applications. It features EP0408 POSS, which provides increased use temperature, excellent water and solvent resistance and enhanced thermomechanical performance.

APPEARANCE

Clear, colorless, low viscosity liquid.

DESCRIPTION

The reactive EP0408 POSS, is a hybrid molecule with an inorganic silsesquioxane core and organic epoxy cyclohexyl groups attached to the silicon vertices of the cage.

APPLICATIONS

EP0408 can be cured with aromatic, aliphatic amines, anhydrides and cationic photo-initiators. EP0408 can also be utilized for chain extension of polyethers and HXNBR rubber.

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

PROPERTIES

Appearance	Clear liquid
Viscosity (@25°C)	400- 600 mPa-s
Density	1.14 amu
Refractive Index	1.52
Formula Weight	1418.2 (octamer)
EEW for EP0408	177-182
Resin Solubility	aromatic and aliphatic resins

REGULATORY STATUS

INCI, EP0408 CAS: 1213770-19-4.

EP0408 is not a primary dermal irritant.

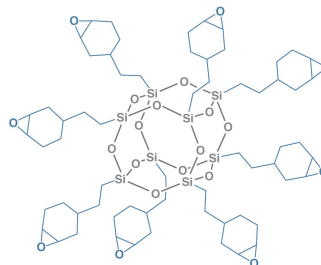
HANDLING PRECAUTIONS

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



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.



FEATURED IMAGE

The EP0408 octamer structure is shown.

EP0408 STRUCTURE AND FUNCTION

Compositionally, EP0408 is a mixture of cages having 8, 10 and 12 silicon atoms, along with cage-like oligomers. EP0408 POSS 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. **Cyanate ester resins:** <http://dx.doi.org/10.1016/j.eurpolymj.2015.03.022>
2. **Boron Nitride Dispersion:** DOI 10.1002/adfm. 201201824
3. **PBT Chain Extension:** *Journal of Applied Polymer Science* DOI 10.1002/app
4. **3-D Cationic Photoresist:** DOI: 10.1039/b901226e
5. **Photoresist:** DOI 10.1007/S11664-009-1031-9
6. **HXNBR Low K Curative:** DOI 10.3144
7. **SC15 Epoxy Additive:** DOI 10.3144/expresspolymlett. 2008.59