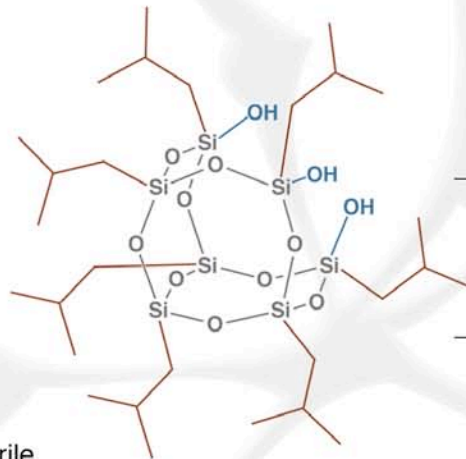


SO1450 as a Dispersion Aid for Titanium Dioxide

SO1450 is a hybrid molecule with an inorganic silsequioxane at the core, organic isobutyl groups attached at the corners of the cage and three active silanol functionalities. SO1450 can be used for surface modification of fillers, such as metal oxides and other materials. It is also effective as an additive to thermoplastics and thermoset polymers for improving moisture resistance and processibility. POSS silanols have successfully been used as dispersing agents for nano-TiO₂ particles in PP. POSS treatment reduced the TiO₂ agglomerate size in PP from 70 to 33 nm by functioning as a compatibilizing agent, in which the silanol groups of the POSS cage were bound to the TiO₂ particle and surrounded it with a high-surface-area structure of nonpolar isobutyl groups.

PHYSICAL PROPERTIES

Molecular/Chemical Formula:	C ₂₆ H ₆₆ O ₁₂ Si ₇
Molecular Weight:	791.42
Appearance:	white powder
Density:	1.13 g/mL
Refractive index:	1.48
Viscosity (@ 25°C):	18 Poise
Thermal Stability (5% weight loss):	210°C
Solvent Solubility:	THF, chloroform, hexane ethacetate
Solvent Insolubility:	water, methanol, acetonitrile
Resin Solubility:	aliphatic monomers, oligomers, PP, PE, PA



Average Particle Diameter for Nano-TiO₂ with Different Surface Treatments After Dispersion in the PP Matrix

	Sample		
	(a) Untreated TiO ₂	(b) POSS/TiO ₂ blend	(c) Chemically treated POSS/TiO ₂
Average particle diameter (nm)	70.4	50.1	33.2
Standard deviation	31.9	21.4	11.6

AVAILABILITY

SO1450, and its acrylate counterpart - SO1450, are available in R&D and bulk quantities. Contact info@hybridplastics.com for a quote.

WARRANTY

The information contained herein is believed to be accurate and reliable. However, the user is responsible for determining the suitability and use of the final formulations/products. Hybrid Plastics® warrants that its products will meet specifications, but not merchantability or fitness for use.

