MANTA

Technical Data Sheet

Version: 1.0

Manta AM311

Alpha-Functional Isocyanurate Silane

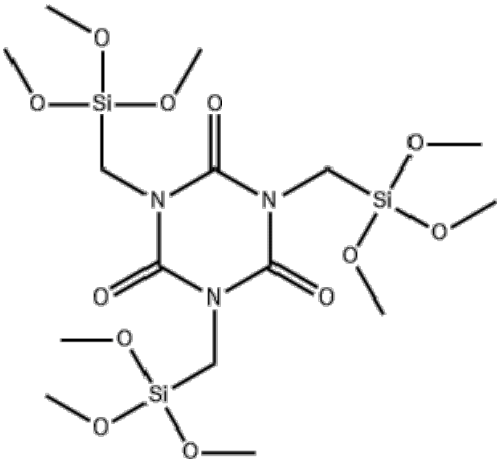
Description

Manta AM311 is a high-molecular-weight adhesion promoter that combines a highly stable isocyanurate ring with three alpha-functional trimethoxysilyl groups.

Because the silicon atom is separated from the nitrogen atom by only a single methylene group (–CH2–), this unique structure induces the powerful "alpha-effect." This results in extreme reactivity toward moisture, allowing for ultra-fast hydrolysis and crosslinking without the need for toxic heavy-metal (tin) catalysts.

It provides formulators with the ultimate solution: the exceptional thermal stability of an isocyanurate, combined with the rapid, tin-free curing kinetics of an alpha-silane.

Typical Physical Properties

Manta No.	AM311
Chemical Name	1,3,5-Tris(trimethoxysilylmethyl)isocyanurate; Tris[(trimethoxysilyl)methyl] isocyanurate;
CAS NO.	82199-95-9
EINECS NO.	
Molecular Formula:	$C_{15}H_{33}N_3O_{12}Si_3$
Molecular Weight:	531.74
Appearance	Colorless to pale yellowish transparent liquid
Density (ρ20°C, g/cm³)	1.160 ~ 1.200
Refractive Index (n25/D)	Approx. 1.4300
Purity (by GC, %)	95 min
Molecular Structure	

Features

1. Alpha-Effect (Ultra-Fast Cure): The methoxy groups are hyper-reactive due to the alpha-position

of the nitrogen atom, driving exceptionally fast moisture-curing kinetics at room temperature.
2. Tin-Free Formulation: Allows for the design of robust crosslinking systems without organotin catalysts, meeting the strictest global environmental and toxicity regulations.
3. Exceptional Thermal Stability: The robust isocyanurate core maintains structural integrity and adhesion even under sustained exposure to elevated temperatures (up to 200°C).
4. Zero Embrittlement: Enhances adhesion to difficult inorganic and organic substrates without over-crosslinking or stiffening the host polymer matrix.

Applications

Manta AM311 is specifically engineered for severe-duty and advanced eco-friendly polymer systems:
1. Tin-Free MS/STP Sealants: Functions as a highly reactive crosslinker and adhesion promoter for Silane-Modified Polymers (SMP) where fast curing and heavy-metal-free (tin-free) environmental profiles are strictly required.
2. High-Performance Hot Melt Adhesives (HMA): Acts as the premier silane additive in reactive polyolefin (POR) and polyurethane hot melts (PUR). It prevents vaporization losses during high-temp processing while providing explosive moisture-cure speed post-application.
3. Advanced Automotive & Aerospace Coatings: Utilized in high-temperature industrial coatings and structural adhesives that experience extreme thermal cycling and require uncompromising substrate adhesion.
4. Rapid-Cure Adhesives: Essential for assembly-line adhesives where immediate green strength and ultra-fast deep curing are critical for productivity.

Packaging

In 20kg pail, 180kg drum and 900kg IBC

Safety and Storage

Keep away from heat and open flame. When stored at or below 25 °C in the original unopened containers, this product has a usable life of 9 months from the date of production.

Contact Information

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