Solution Case Study

Formulate Highly Flexible and Durable SMP-Based Adhesives and Sealants thanks to Dynasylan® 1189 Aminosilane

Aminosilane: Dynasylan® 1189

Applications
Adhesives and sealants in Silane Modified Polyurethane/Polyether (SMP)

Markets
Construction

Key benefits
• High flexibility for adhesives and sealants
• Improved moisture resistance
• Enhanced chemical resistance

The challenge
Bonding dissimilar and/or flexible substrates is always challenging for end users. They need an adhesive solution which exhibits high flexibility and long term performance.

The solution
Dynasylan® 1189 is an accompanied adhesion promoter for moisture curable SMP-based adhesives and sealants. When exposed to moisture and incorporated into the final siloxane network, Dynasylan® 1189 exhibits specifically high flexibilities. Further important side effects of formulating Dynasylan® 1189 are better chemical and moisture resistance of the finished products.

Moreover, Dynasylan® 1189 is used to functionalize-polymers with amino-reactive groups such as isocyanate pre-polymers. This functionalization results in new and environmentally friendly moisture curable binders.
High flexibility for adhesives and sealants

As shown in the graph below, a STPU sealant formulated with Dynasylan® 1189 exhibits a low modulus (100 %) indicating that the sealant is not rigid:

In addition, thanks to Dynasylan® 1189, the final STPU sealant showed a high elongation at break highlighting the deformation capacity of the sealant:

As an example, Dynasylan® 1189 helps to improve the shear resistance of a STPU sealant even when a joint is immersed 6 days in water:

Lap shear strength of an STPU sealant after 6 days aging in water at RT (Test performed on aluminum at 23 °C)

Enhanced chemical resistance

Not only when exposed to humid environments but also when in contact with harsh chemicals, adhesives or sealants formulated with Dynasylan® 1189 maintain their performance. When used in STPU sealants, Dynasylan® 1189 helps to improve the shear resistance even when joints are immersed 22 days in Isopropanol:

Lap shear strength of an STPU sealant after 22 days aging in Isopropanol (Test performed on aluminum)

Improved moisture resistance

Dynasylan® 1189 enables formulators to keep adhesives or sealants overall performance (adhesion and other) even when they are exposed to a humid environment.
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