GENIOSIL® XB 502

Silane-Modified Polymers

GENIOSIL® XB 502 is a silane-terminated binder based on alpha-silane technology for the formulation of high-strength adhesives.

Properties

GENIOSIL® XB 502 is silicon reinforced polyether-based silane-terminated polymer suitable as a binder in moisture curing formulations. It is a transparent low-viscosity binder and the resultant adhesives display hardness in the high Shore D range when cured. This polymer complements the elastic binder range such as GENIOSIL® STP-E10 and can be readily mixed with this product group at various ratios in order to tailor the properties to the respective application. GENIOSIL® XB 502 based on alpha technology, which means a structural proximity of a nitrogen atom to the moisture active silicon atom. It hydrolyzes in the presence of moisture to finally form a stable siloxane network initiated by mild catalysis as opposed to heavy metal ions. Formulations are characterized by the following advantages.

- simple compounding with conventional auxiliaries
- plasticizer free if desirable
- transparent systems
- good mechanics
- long shelf life
- hardness in the Shore D range
- good adhesion to metals, glass and ceramics
- non-bubbling
- Isocyanate, tin and solvent-free - Formulation of water resistant products possible
- good heat stability

Technical data

Specification

Property	Condition	Value	Method
Appearance	-	clear	ASTM D 624
Color Index[(1)]	-	< 50	DIN ISO 6271

[1]Hazen

General Characteristics

Property	Condition	Value	Method
Density	25 °C | 1013 hPa	1.13 g/cm^3	DIN 51757
Flash point	-	> 100 °C	ISO 2719
Ignition temperature	-	380 °C	EN 14522

These figures are only intended as a guide and should not be used in preparing specifications.

Applications

- Adhesives
- Building & Construction Adhesives
- Do It Yourself
- Industrial Adhesives
- Wood-to-Wood Bonding

Application details

GENIOSIL® XB 502 dissolves readily in standard organic solvents. It is virtually insoluble in aqueous media, and reacts slowly releasing methanol and forming a resinous deposit. Despite its highly reactive terminal groups, uncatalyzed GENIOSIL® XB 502 is stable in air for several days. However, its reactivity with water or atmospheric humidity must be taken into account during storage and processing, since the material will slowly start to condense. GENIOSIL® XB 502 can be formulated by conventional methods and mixing processes. The formulation composition depends on the required property profile. GENIOSIL® XB 502 can be formulated with a variety of fillers. The range starts with oxides, such as aluminum hydroxide, quartz powders or pyrogenic silica, and extends to coated and uncoated chalks. The type and amount depends on the mechanical needs as well the desired thixotropy. Water scavengers can be added to stabilize the formulations against premature curing as this is moisture-curing technology. Therefore exclusion of moisture during compounding and storage is necessary. GENIOSIL® XL 10 or GENIOSIL® XL 70 are particularly suitable scavengers. Any type of plasticizer can be used to further lower the viscosity. In order to plasticize a GENIOSIL® XB 502 based formulation it is recommended to use any type of silane modified polymer e.g. GENIOSIL® STP-E10. Antioxidants, UV- and light-stabilizers are mandatory to ensure durable sealants and adhesives. The amount and type of stabilizer depends on application needs. Curing of GENIOSIL® XB 502 requires a catalyst that does not necessarily have to be organo-metallic. However dioctyl tin may be used if required. Catalysis can also be accelerated with titanium compounds as well as inorganic (phosphoric) or organic (tartaric) acids. Primarily, we recommend using an amine catalyst, and adjusting the skin-formation time by varying the amount of aminosilane used. GENIOSIL® GF 9 and GENIOSIL® GF 95 have proven particularly advantageous here. In particular, GENIOSIL® GF 95 can attain improved water resistance, which can further be increased by the addition of epoxy silanes. Surface Treatment Always apply the formulation to clean and dry surfaces.

GENIOSIL® XB 502 is used as a reactive binder for adhesives, potting compounds and coatings. Curing takes places at ambient temperature in the presence of both moisture and catalyst. Depending on the formulation, either prepared as one-part or two-part systems, it will give good adhesion to a wide variety of substrates even without pretreatment. Adhesives can be formulated having high lap-shear strength (< 15 N/mm^2) on a wide variety of substrates. With certain substrates, modifying the elasticity of the GENIOSIL® XB 502 containing binder is advisable. Based on the model formulation using a filler (1 : 1), with 2.5 % GENIOSIL® GF 9 as the catalyst, the lap-shear-strength of beech/beech and aluminum/aluminum test specimens was determined. While GENIOSIL® XB 502 is ideal for bonding wood, metals can be very readily bonded when GENIOSIL XB 502 is blended with GENIOSIL® STP-E10 at a ratio of 3 : 1. Further state-of-the art bonding:

- wood
- stone
- metal
- bonding of dissimilar substrates (e.g. wood/metal, metal/concrete)

Packaging and storage

Packaging

Information on available container sizes is obtainable from WACKER subsidiaries.

Storage

The 'Best use before end' date of each batch is shown on the product label. Storage beyond the date specified on the label does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.

Safety notes

Comprehensive instructions are given in the corresponding Material Safety Data Sheets. They are available on request from WACKER subsidiaries or may be printed via WACKER web site http://www.wacker.com.

QR Code GENIOSIL® XB 502

For technical, quality or product safety questions, please contact:

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