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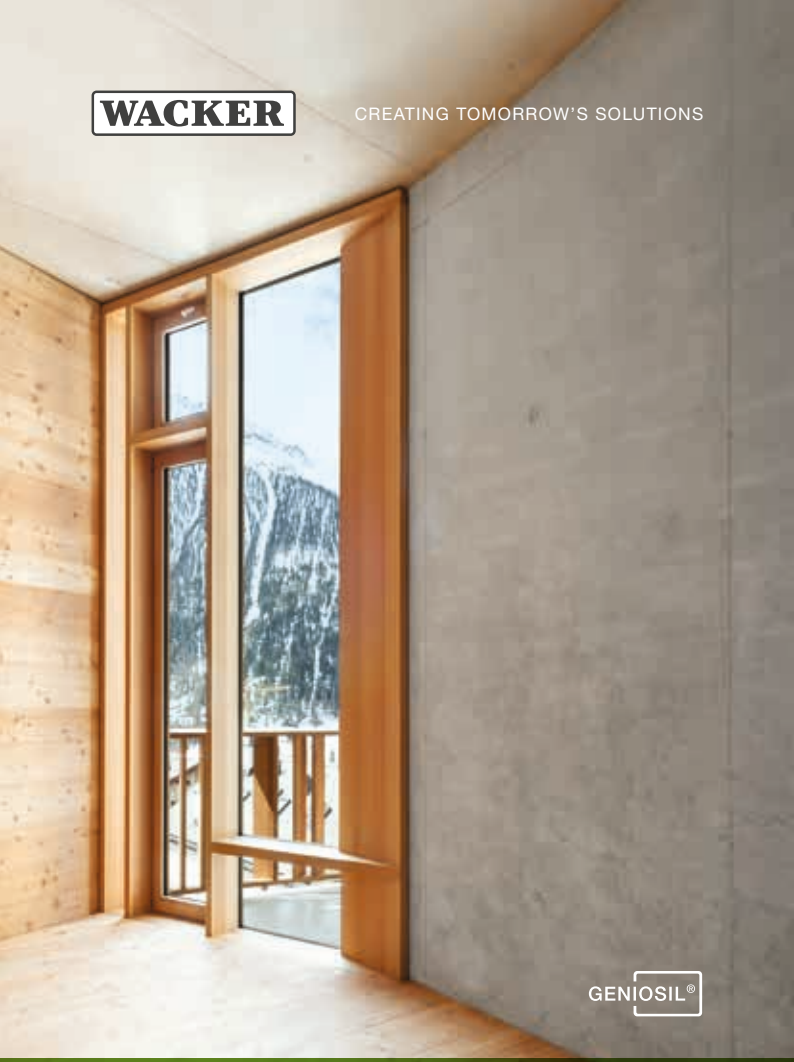
CREATING TOMORROW'S SOLUTIONS



GENIOSIL®

GENIOSIL® XM 20 & GENIOSIL® XM 25

NEW DIMENSIONS FOR ADHESIVES AND SEALANTS

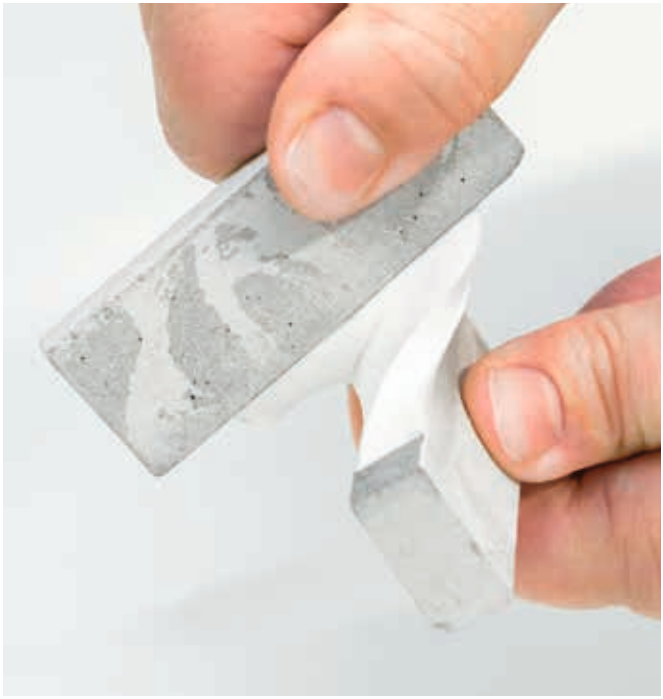
SILANE-MODIFIED POLYMERS FOR SOFT YET ELASTIC ADHESIVES AND SEALANTS

The SMPs GENIOSIL® XM 20 and GENIOSIL® XM 25 address application areas where, to date, compromises had to be made with conventional adhesive and sealant systems.

The two grades are monofunctional polymers that enhance performance properties without disrupting the existing characteristics of a silane-modified polymer formulation. When these grades are incorporated into adhesive and sealant formulations, conventional plasticizers – which can often disrupt the adhesion profile – need not be used.

Both grades display outstanding adhesion characteristics to many so-called difficult substrates – especially low-energy surfaces such as PVC, PS or EPDM.

These products are monofunctional with only one silane group at the chain end, which results in cross-linking only at that functionalized end.



GENIOSIL® XM 20 – THE ADHESIVE SPECIALIST

GENIOSIL® XM 20 is an alpha-silane-terminated polymer and especially targets adhesive applications. Used as a co-binder – in combination with one of the conventional silane-modified polymers (GENIOSIL® STP-E range) – this polymer will give outstanding adhesion to a variety of difficult substrates. Organic plasticizers (phthalates, polyethers and trimellitates) have the tendency to migrate to the surface from within an adhesive and will disrupt the adhesion properties. By replacing the organic plasticizer in an adhesive formulation with GENIOSIL® XM 20, this can be overcome. Typical application areas include flooring and many universal adhesive solutions, where flexibility and strength are sought.

Comparison of Property Values of Formulations Based on Conventional Plasticizers Versus GENIOSIL® XM 20

	Polyether	Trimellitate	GENIOSIL® XM 20
SOT [min]	15	10	40
Elongation %	~ 350	~ 250	~ 350
E 100 [N/mm²]	1.5	1.7	1.5
Tensile Strength [N/mm²]	2.6	2.5	2.5
Shore A	47	51	45

Adhesion Profile Values of GENIOSIL® XM 20 Versus Conventional Plasticizers

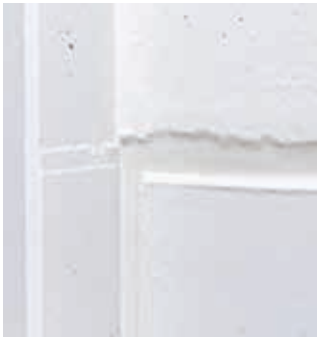
	Polyether		Trimellitate		GENIOSIL® XM 20	
Storage Conditions	**Dry**	**Wet**	**Dry**	**Wet**	**Dry**	**Wet**
PMMA	–	–	+	+	+	+
PMMA Filled	–	–	+	+	+	+
ABS	–	–	–	–	–	–
PVC	–	ϕ	–	–	+	+
PC	+	–	+	ϕ	ϕ	+
PS	–	–	–	–	+	+
PVC Kömadur ES White	–	–	–	–	+	+
PVC Simona CAW Dark Grey	–	–	–	–	+	+
PVC Rigid Transparent	–	–	–	–	+	+
PVC Flexible Transparent	–	–	–	–	+	–

The table gives values for a formulation based on conventional plasticizers versus GENIOSIL® XM 20, where adhesion was measured under dry and wet conditions – red indicates complete adhesion failure, orange indicates partial adhesion failure, and green indicates no adhesion failure.

GENIOSIL® XM 25 – THE SEALANT SPECIALIST

GENIOSIL® XM 25 is a gamma-silane-terminated polymer and particularly targets sealant applications, especially where low-modulus products with high recovery are desirable. Used as a co-binder – in combination with one of the conventional silane-modified polymers (GENIOSIL® STP-E range) – GENIOSIL® XM 25 will yield properties that conform to building specification DIN EN ISO 11600-25LM. Potential application areas include industrially pre-fabricated concrete panels, and connection joints between window frames and walls, where movement capability is a must.

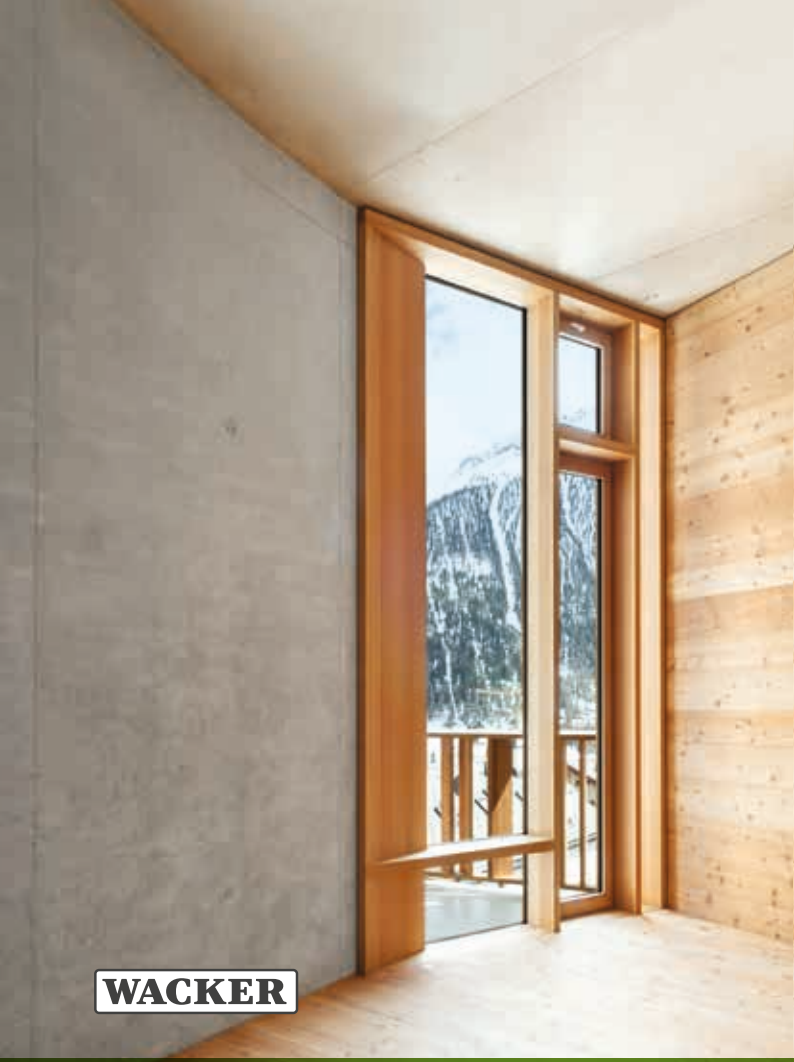
The Impact of Using GENIOSIL® XM 25 in a Low-Modulus Sn-Free Sealant Formulation	
Property / Characteristic	**Value**
SOT [min]	30
Shore A	25
Tensile Strength [N/mm^2]	1.5
Elongation %	900
Recovery, ISO 7389	A: > 60%, 0.36 N/mm^2
	B: > 80%, 0.36 N/mm^2



SILANE-MODIFIED POLYMERS OPEN UP NEW DIMENSIONS IN THE ADHESIVE AND SEALANT WORLD

As the adhesive and sealant world looks to displace toxic yet high-performance solutions, silane-modified polymers (SMPs) have increasingly found their position as the most viable alternative.
The GENIOSIL® XM range further complements the silane-modified-polymer portfolio under the GENIOSIL® brand. The GENIOSIL® STP-E product line constitutes the standard range – first introduced over 10 years ago – covering a wide area of elastic adhesive and sealant applications. GENIOSIL® XB, launched later, is, in contrast, ideal for extremely tough adhesives. In response to market needs, the GENIOSIL® XT range was designed to produce tough yet elastic adhesives and coatings. The latest addition to the SMP family, GENIOSIL® XM, now allows adhesive and sealant systems to be soft yet highly elastic. The resultant adhesive or sealant exhibits virtually universal adhesion to difficult, sometimes non-polar, substrates.
With our silicon chemistry expertise, many variations on a theme are possible – whether varying the backbone or the silane functionality.

The Structure of Silane-Modified Polymers



WACKER

Wacker Chemie AG
Hanns-Seidel-Platz 4
81737 München, Germany
Tel. +49 89 6279-1741
Fax +49 89 6279-1770
info@wacker.com

www.wacker.com

www.wacker.com/socialmedia

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