



STRUKTOSIL 45 MAM

1. Description

STRUKTOSIL 45 MAM is a special activated talc, produced by modifying the surface with a methacrylic functional group. The process parameters are selected in such a way that, on the one hand, anchoring to the surface takes place and, on the other hand, released by-products are removed as far as possible during production. Undesirable by-products, such as occur during in-situ mixing (i.e. during the direct addition of the additives), are therefore practically completely prevented and the material improves its hydrophobic properties.

During compounding, the methacrylic groups of STRUKTOSIL 45 MAM provide good wetting and very good dispersion in the matrix polymer. During vulcanization in elastomers or crosslinking of unsaturated polymers, the methacrylic groups of STRUKTOSIL 45 MAM react with the polymer in the presence of radicals.

Characteristics

Color CIELAB scale:	L*	98
	b*	0.6
Volatile matter at 105 °C		0.2 %
Density		2.9 g/cm ³
Bulk density		0.21 g/cm ³
Particle size distribution	D ₅₀	4 µm
	D ₉₇	11 µm
BET		9 m ² /g
pH-value		9,5
Air-jet screening > 125 µm		0 %
Oil absorption		55 g/100 g

Packaging

Paper bags	á 12.5 kg
Big bags	on demand

Shelf life

2 years if stored properly under dry conditions.



2. Applications

STRUKTOSIL 45 MAM is used in elastomers and thermoplastics as well as in paints and coatings, thermosets, reactive resins and adhesives.

Within elastomers, the main application are compounds for gaskets with very good compression set and very low swelling in hot water as well as very good barrier behavior to gases.

Due to the modification with a methacrylic functional group, a better integration of the filler platelets into the polymer matrix is possible, which leads to an improvement of the compound properties.

Fields of application

STRUKTOSIL 45 MAM is potentially suitable for the following applications:

Elastomers:

preferably peroxide-cured compounds, e.g. EPDM, HNBR, etc.

Thermoplastics:

- Polycarbonate (PC)
- PC blends
- Polybutylene terephthalate (PBT)
- in principle also other engineering thermoplastics and radically crosslinkable polymers such as PE, PE/EVA

Paints and varnishes:

Anti-corrosion coatings and UV-curing varnishes

Thermosets, reactive resins, adhesives:

UP resins and other unsaturated resins such as vinyl ester and acrylic resins

Dosage:

up to 150 phr or 50% (m/m) depending on use



3. Benefits

Advantages of STRUKTOSIL 45 MAM in blend with talc compared to talc without surface functionalization, based on EPDM molding formulation with peroxide cure:

- lower tangent delta at the end of vulcanization
- strongly increased moduli
- higher tensile strength
- strongly reduced compression set
- slightly increased tear resistance (Graves)
- improved abrasion resistance
- better hot-air resistance: lower increase in modulus and hardness, lower decrease in elongation at break
- better hot water resistance: lower water absorption and higher tensile strength

These advantages are already achieved with only 25% STRUKTOSIL 45 MAM in a blend with 75% talc without functionalization.

Advantages of STRUKTOSIL 45 MAM in blend with talc compared to pure competitor's talc with amino-functional group, based on an EPDM molding formulation with peroxide cure:

- lower tangent delta at the end of vulcanization
- higher moduli
- slightly higher tensile strength
- slightly higher tear resistance (Graves)
- significantly lower compression set
- improved abrasion resistance
- better hot air resistance: lower modulus and hardness increase, lower elongation at break decrease
- better hot water resistance: lower water absorption and higher tensile strength

These advantages are already achieved with only 25% STRUKTOSIL 45 MAM in blend with 75% talc without functionalization.

Also see number 4.



4. Effects of STRUKTOSIL 45 MAM

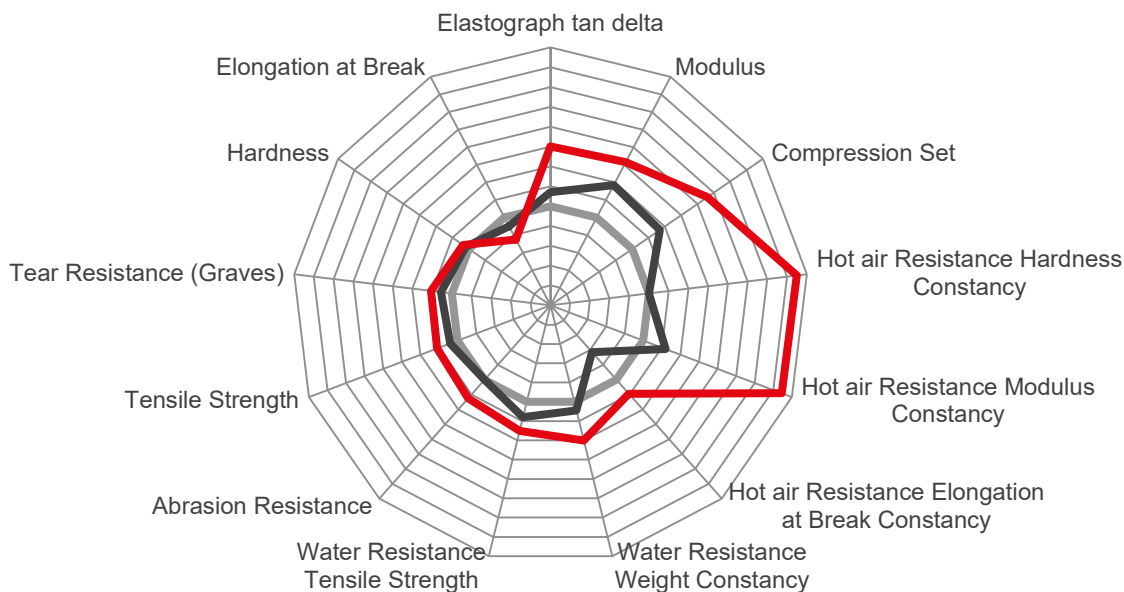
Example in an EPDM formulation for molded parts, 120 phr filler, peroxide cured

**Performance Index,
Talc without surface modification = 1, higher = better**

— Mistron R10 (talc without functionalisation)

— Mistrobond R10 C

— STRUKTOSIL 45 MAM 25% in blend with Mistron R10 75%



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