

GLOXIL iM16k MAM

1. Description

GLOXIL iM16k MAM is a micro hollow glass sphere whose surface has been modified with a special 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.

During compounding, the methacrylic groups of GLOXIL iM16k MAM provide good wetting and very good dispersion in the matrix polymer. During curing of the unsaturated polymers the methacrylic groups of GLOXIL iM16k MAM react in the presence of redicals with the polymer.

Characteristics

Color CIELAB scale:	L*	98
Volatile matter at 105 °C RT 20 °C/RH 50		0.1 %
True Densitiy		0.46 g/cm ³
Bulk density		0.17 g/cm ³
Particle size distribution	D ₅₀ D ₉₇	20 µm 40 µm
BET		2 m ² /g
Air-jet screening > 125 µm		0.1 %

Packaging

Paper bags		á 12,5 kg
Big Bags		150 kg

Shelf life

2 years if stored properly under dry conditions.



2. Application

The main areas of application for GLOXIL iM16k MAM are thermoplastics, thermosets and elastomers, mostly for weight reduction or volume cost reduction.

Within thermoplastics, compounds based on thermoplastic polyesters (PET and PBT) and polycarbonate (PC incl. blends), as well as thermosets (UP, vinyl ester and acrylic resins) with reduced density and thus low weight represent potential applications.

In the elastomers sector, GLOXIL iM16k MAM is primarily suitable for rubbers in the higher price segment that are crosslinked with peroxides, such as FKM and HNBR. In addition to weight savings, the main focus here is on reducing volume costs.

Dosage:

- up to 25 % (m/m) or 45 % (v/v), depending on the targeted density reduction
- in FKM mostly up to 12 phr.

Compounding Notes:

see 3M link: https://multimedia.3m.com/mws/media/compounding_notes

3. Benefits

Basic advantages of using the hollow glass sphere:

- Density reduction
- weight reduction
- volume cost reduction

Advantages of GLOXIL iM16k MAM over the hollow glass sphere without surface modification:

Thermoplastics (potential)

- increase of yield stress / tensile strength
- increase of yield strain / elongation at break
- increase of the flexural strength
- increase of the flexural strain
- increase of impact strength and notched impact strength

Elastomers

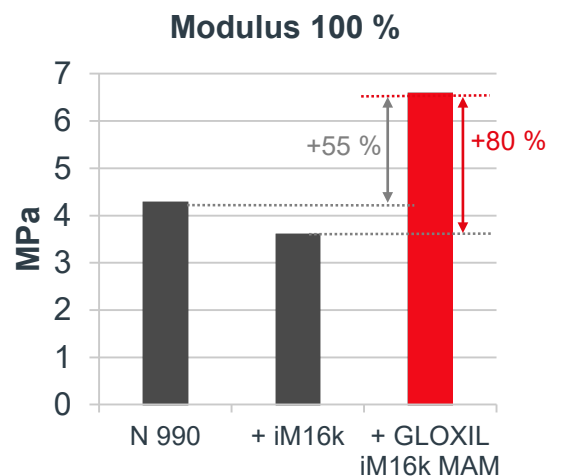
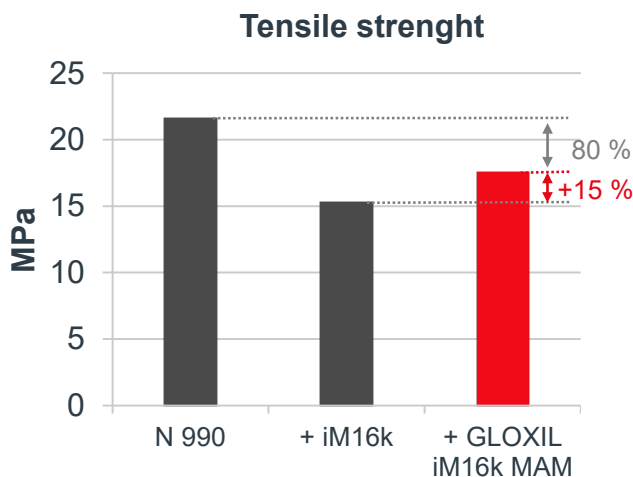
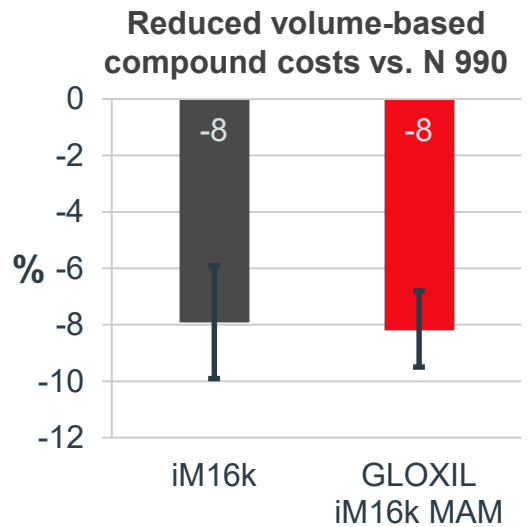
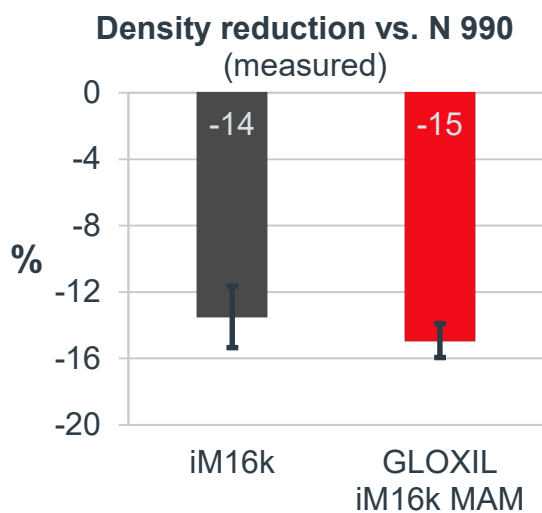
- increased tensile strength
- increased moduli
- improved resistance to hot air, water, fuel and oil



4. Effects of GLOXIL iM16k MAM

Example FKM peroxide cured

	phr		
Carbon black N 990	30	12	12
3M™ Glass Bubbles iM16k	-	12	-
GLOXIL iM16k MAM	-	-	12



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