GLOXIL iM16k A

1. Description

GLOXIL iM16k A is a micro hollow glass sphere whose surface has been modified with a special amino 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 amino groups of GLOXIL iM16k A provide good wetting and very good dispersion in the matrix polymer. Furthermore, it achieves high bond strengths in polymers with suitable functional group by hydrogen bonding or covalent bonding.

Characteristics

Color CIELAB scale:	L*	98
Volatile matter at 105 °C RT 20 °C/RH 50		0.3 %
True Densitiy		0.46 g/cm³
Bulk densitiy		0.19 g/cm³
Particle size distribution	D_{50} D_{97}	20 µm 40 µm
BET		2 m²/g
pH-value		10
Floatation rate		96 %

Packaging

Paper bags	á 12.5 kg
Big Bags	150 kg

Shelf life

2 years if stored properly under dry conditions.

2. Applications

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

Within thermoplastics, polyamide and polypropylene compounds with lower density and thus lower weight represent a main application. Due to the modification with an amino functional group, a better integration of the lightweight filler into the polymer matrix is possible, which leads to an improvement of the compound properties.

Fields of application

GLOXIL iM16k A is suitable for the following thermoplastics:

- Polyamides (PA)
- Aliphatic polyketone (PK)
- PP (with addition of PP-g-MAH)
- ABS, PPS, TPU, PE/EVA

In addition, further surface functionalizations for thermoplastics are available, which are suitable for PC, PC blends and PBT.

In the area of thermosets and reactive resins, GLOXIL iM16k A is primarily suitable for epoxies and polyurethanes.

In the area of elastomers, GLOXIL iM16k A is primarily suitable for rubbers in the higher price segment in which amino groups have a positive effect, such as FKM, HNBR, ACM, AEM.

Dosage:
up to 25 % (m/m) or 45 % (v/v) depending on the density reduction aimed at, see also reverse side of this sheet.

Compounding Instructions:
See 3M™, link: 3M glass bubbles compounding and injection molding guidelines.pdf

3. Benefits

Basic advantages of using the hollow glass spheres
- density reduction
- weight reduction
- volume cost reduction

Advantages of GLOXIL iM16k A compared to the hollow glass sphere without surface modification:

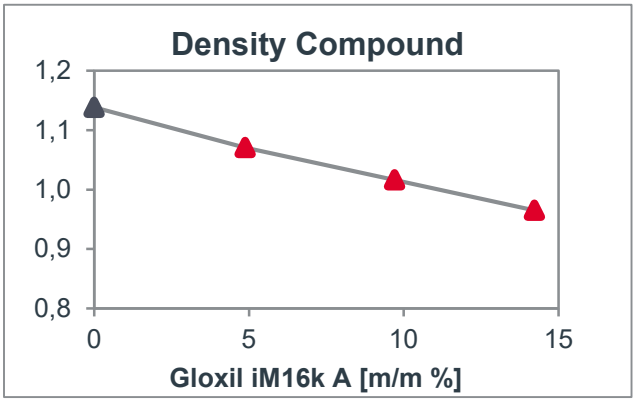
Polyamide
- increase in tensile strength, up to the comparable level of PA 6 without hollow glass sphere
- increase of elongation at break
- increase in flexural strength, up to the comparable level of PA 6 without hollow glass sphere
- increase of flexural elongation at max, even increase compared to PA 6 without hollow glass sphere possible
- increase in impact strength and notched impact strength

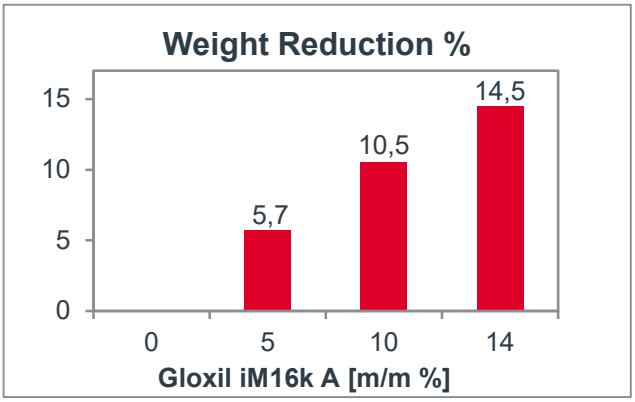
Polypropylene*
- increase in tensile strength, up to the comparable level of the PP copolymer without hollow glass sphere
- increase in elongation at yield
- increase in flexural strength, even increase compared to PP copolymer without hollow glass sphere possible
- increase of impact strength and notched impact strength

* tested with 5 % PP-g-MAH as compatibilizer

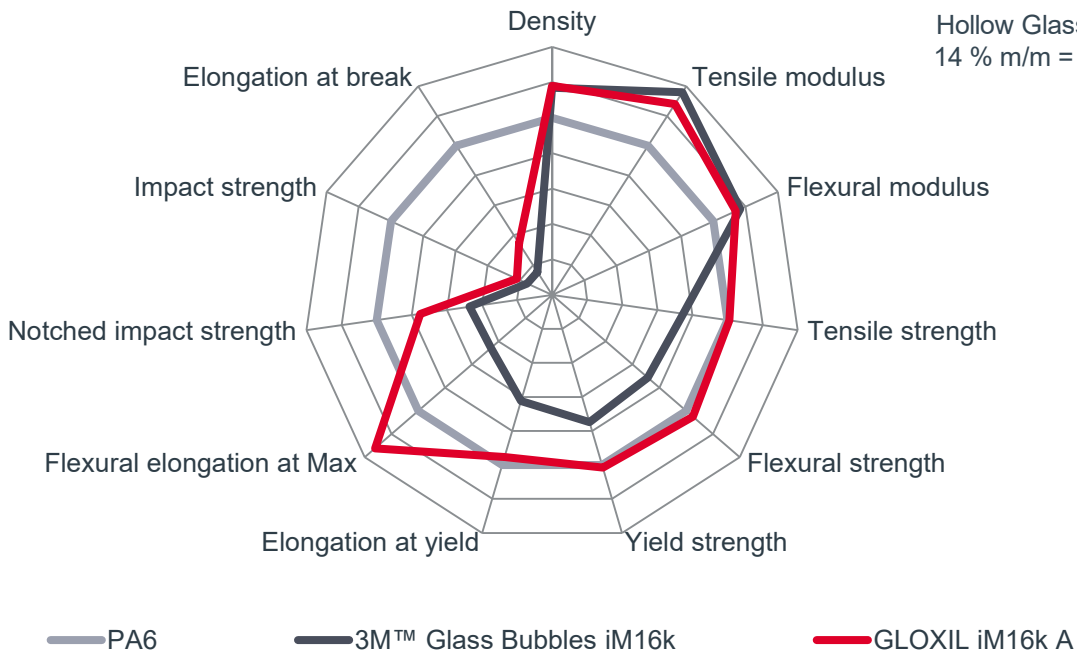
4. Effects of GLOXIL iM16k A, based on data from 3M™ *

Example in PA 6 dry as molded (Ultramid® B3K)



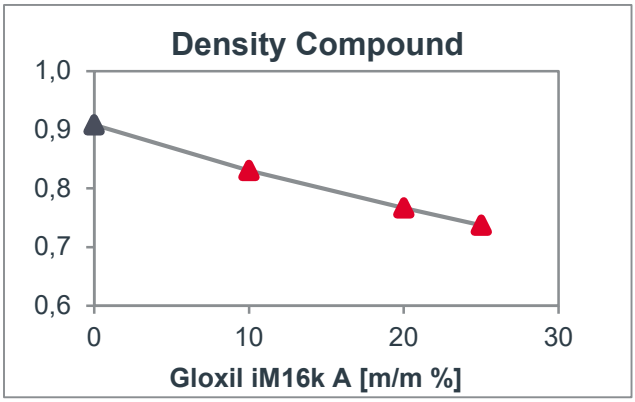


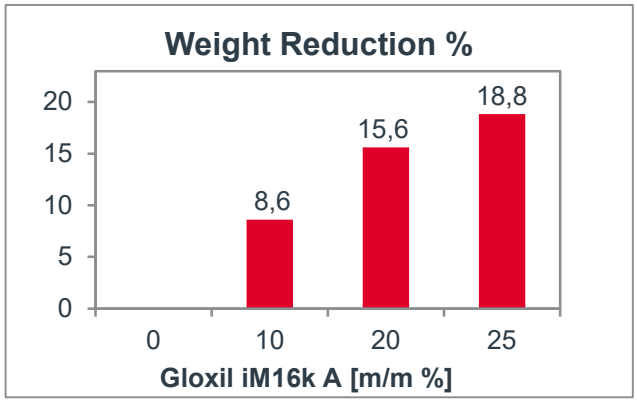
Performance Index, PA without GB = 1, higher = better



* Data determined by 3M Advanced Materials Division, Specialty Additives Laboratory

Example in Polypropylene Copolymer
(Bormod BF970MO, GLOXIL iM16k A compounds contain 5 % PP-g-MAH, Scona TPPP 2112 GA)





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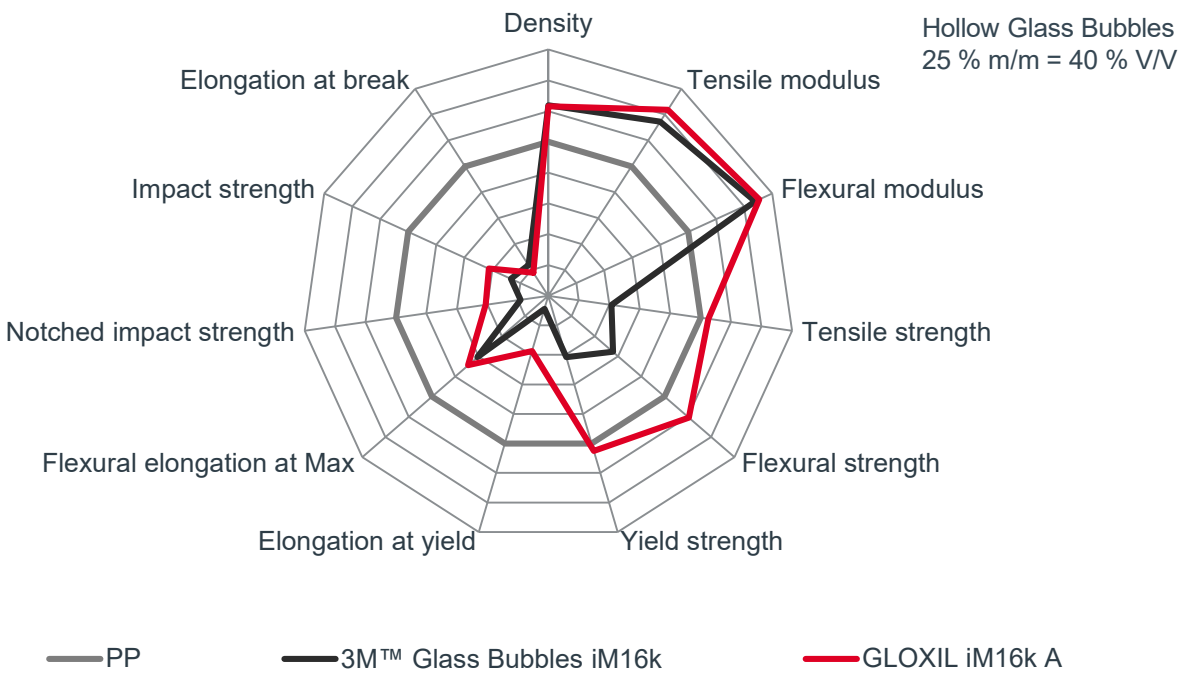

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