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HOFFMANN MINERAL
Unternehmensgruppe Hoffmann

GLOXIL iM16k A

TECHNICAL DATA SHEET

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
Air-jet screening >125 µm	0.2%
Volatile matter at 105°C	0.3%
pH-value	10
True density	0.46 g/cm³
Bulk density	0.19 g/cm³
Particle size distribution	
D_{50}	22 µm
D_{97}	45 µm
BET-Surface	2 m²/g
Floatation rate	96 %

Delivery forms:

- Paper Bags	à 12,5 kg
- Big Bags	150 kg

Shelf life:

12 months if stored properly in a dry place.

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.

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
Translated with www.DeepL.com/Translator (free version)

3. Advantages

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

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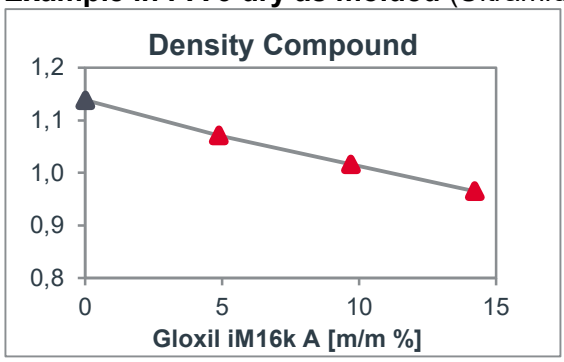
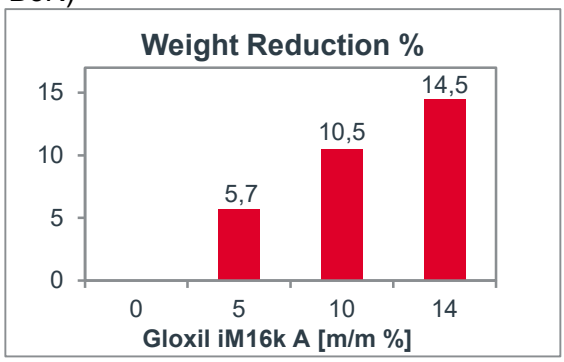
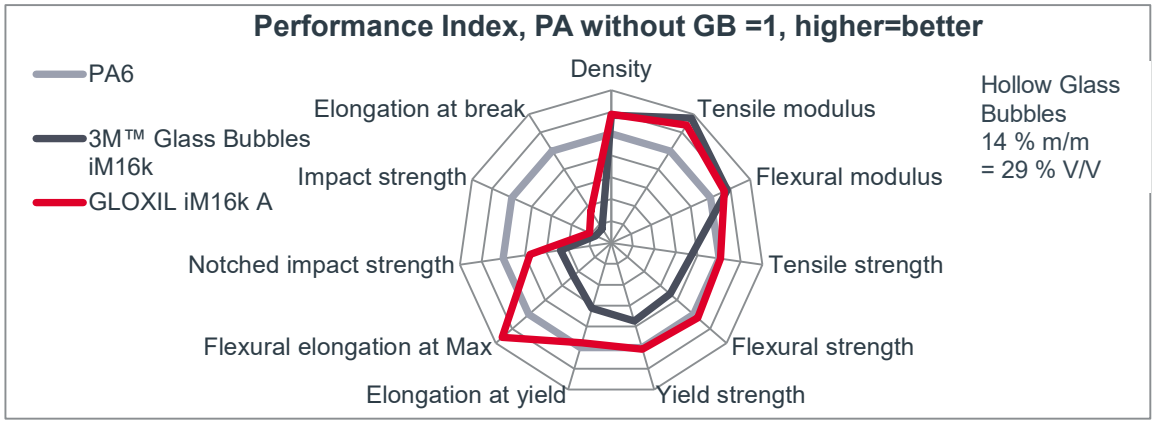
4. Effects of GLOXIL iM16k A, based on data from 3M™

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

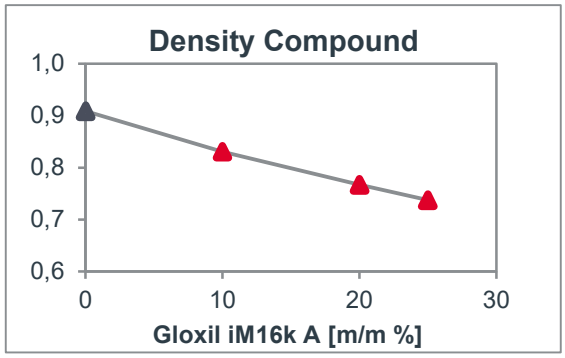


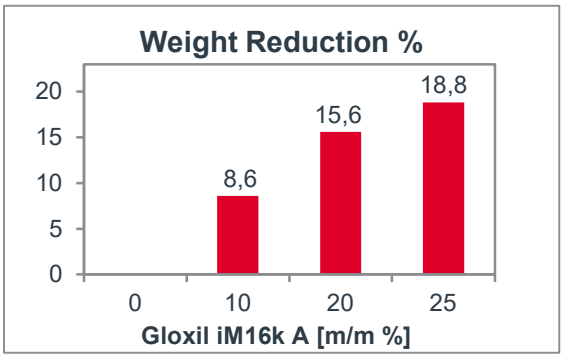


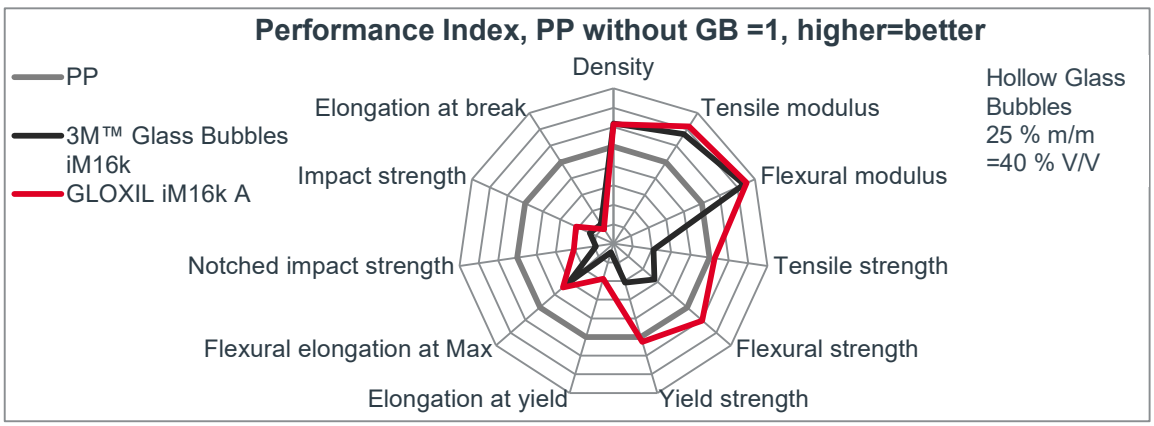


Example in Polypropylene Copolymer

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







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