



## 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 Density		0.46 g/cm <sup>3</sup>
Bulk density		0.19 g/cm <sup>3</sup>
Particle size distribution	D <sub>50</sub> D <sub>97</sub>	20 µm 40 µm
BET		2 m <sup>2</sup> /g
pH-value		10
Air-jet screening > 125 µm		0.2 %
Floatation rate		96 %

### Packaging

Paper bags		á 12.5 kg
Big Bags		150 kg

### Shelf life

12 month 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\***

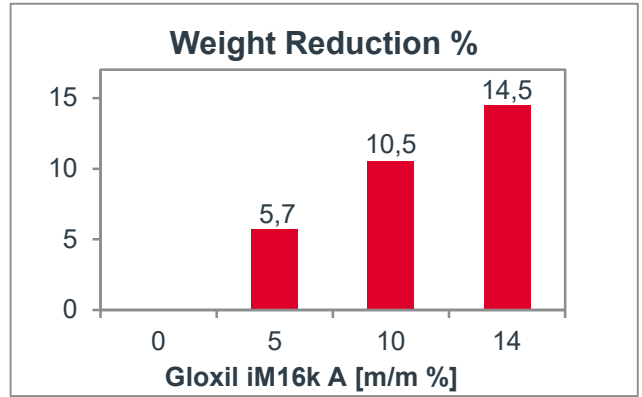
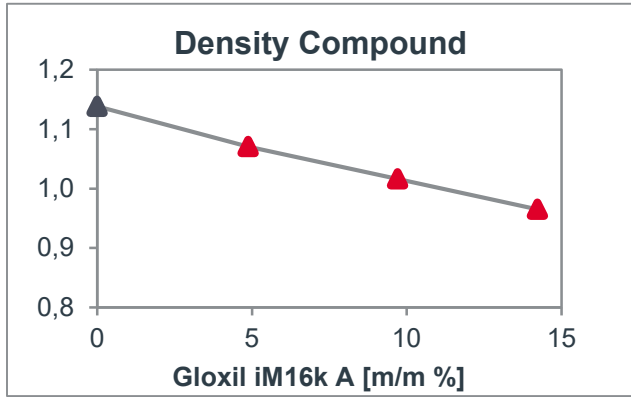
- increase in tensile strength, up to the comparable level of the PP copolymer without hollow glass sphere
- increase in elongation at yield
- increase in flexural strength, even increase compared to PP copolymer without hollow glass sphere possible
- increase of impact strength and notched impact strength

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

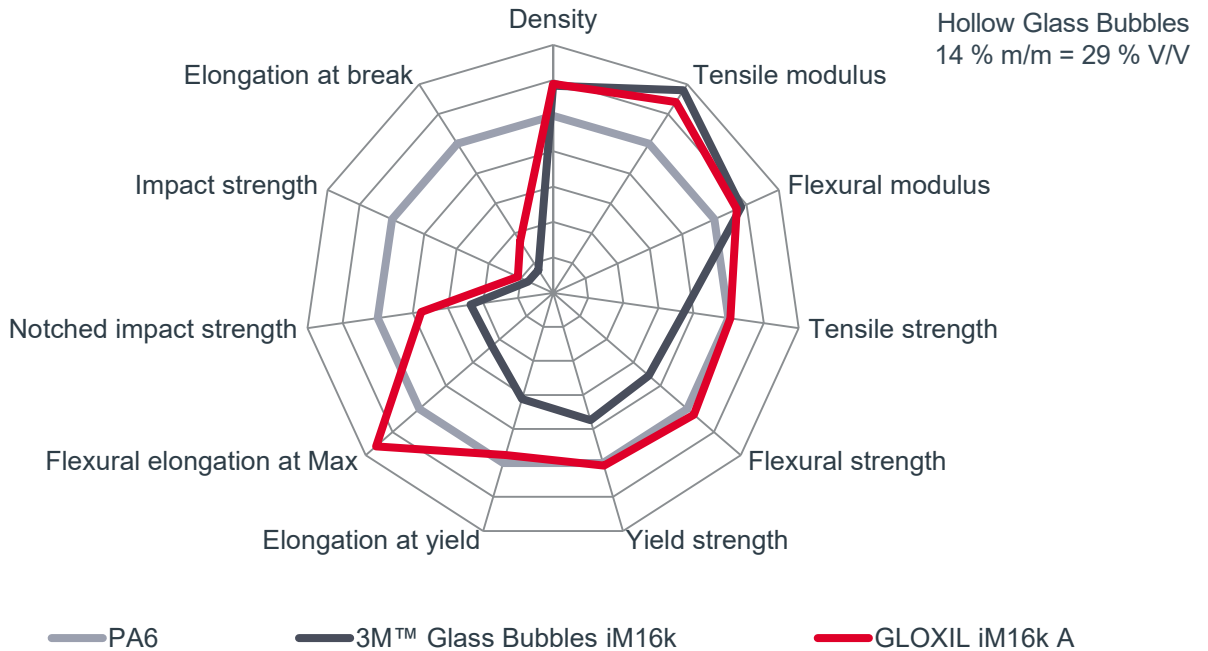


4. Effects of GLOXIL iM16k A, based on data from 3M™ \*

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



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

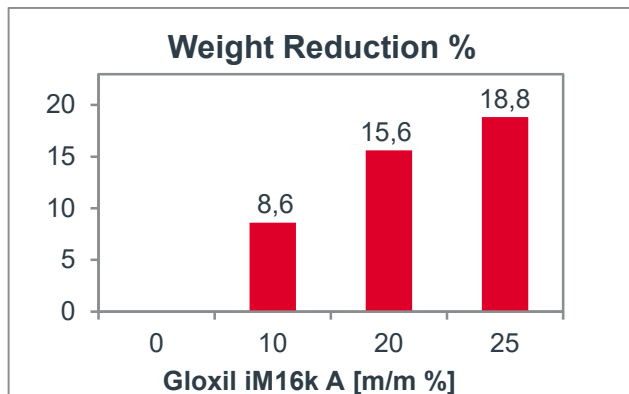
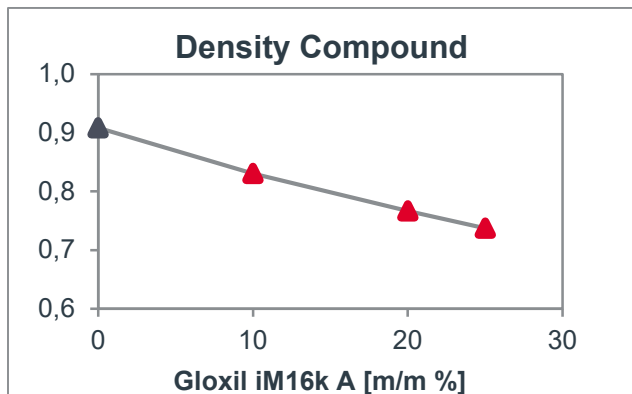


\* Data determined by 3M Advanced Materials Division, Specialty Additives Laboratory

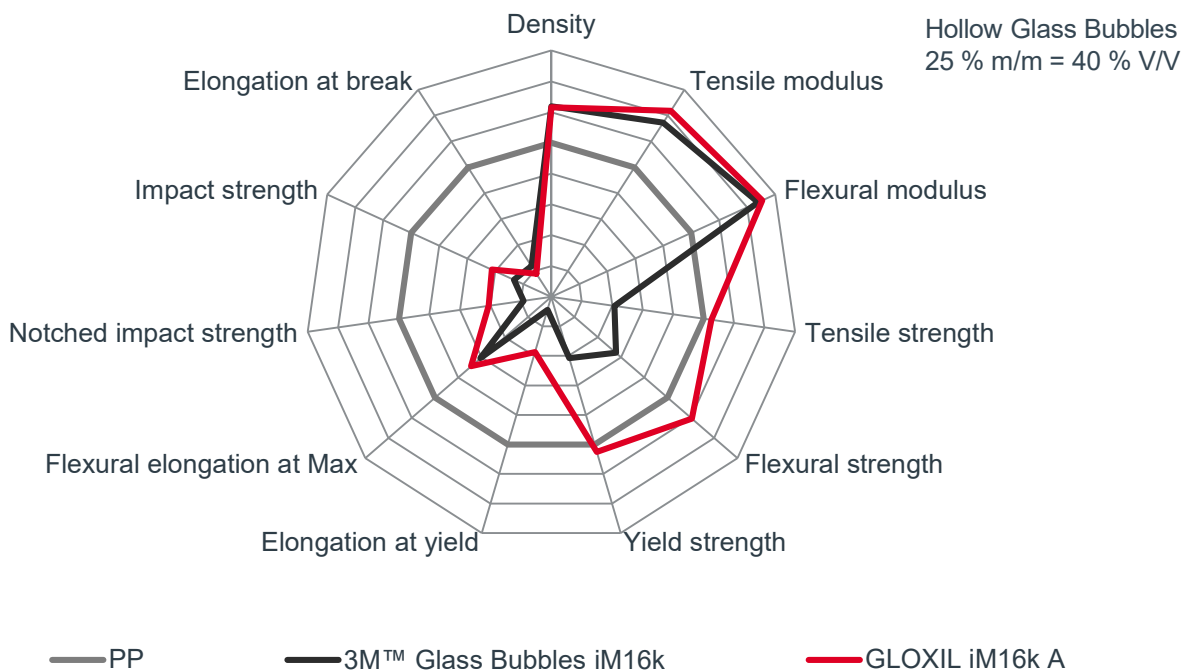


**Example in Polypropylene Copolymer**

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



**Performance Index, PP without GB = 1, higher = better**



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