

TAILORED FILLER SOLUTIONS

HOFFMANN
MINERAL®

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HOFFMANN MINERAL EXPANDS ITS RANGE

HOFFMANN MINERAL is known worldwide through its activities in the distribution of Neuburg Siliceous Earth. The products SILLITIN and AKTISIL, and the calcined versions SILFIT and AKTIFIT, are well known to our customers and are used as functional fillers.

The TAILORED FILLER SOLUTIONS are now expanding this portfolio in order to give customers the opportunity to differentiate themselves from the competition with tailored products in existing applications.

We at Hoffmann Mineral will continue to invest our entire expertise also in the new business division to be able to offer our customers the best possible product on the best possible terms. We will use our know-how of Neuburg Siliceous Earth and transfer it to new base materials, combined with innovative modifications for further improvement.

In close cooperation with our Research & Development and Application Technology, products are being developed that the market needs and which give our customers a lead over the competition.



TAILORED FILLER SOLUTIONS

GLOXIL®

GLOXIL iM16k A

Based on hollow glass microspheres from 3M, this product brings further improvements in plastics where weight reduction is an important issue thanks to its surface modification.

GLOXIL matt SL

The aqueous dispersion-based on modified silica for use in matt water-based coatings, improves incorporation, transparency and resistance.

GLOXIL[®] iM16k A

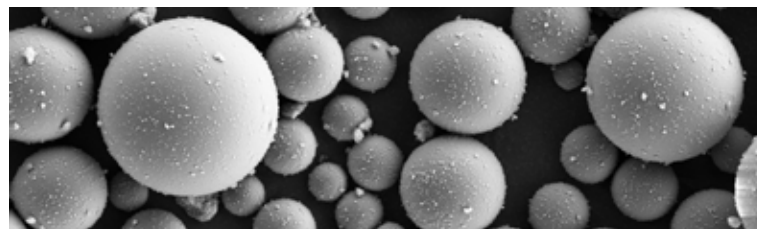
PRODUCT CHARACTERISTICS

HOFFMANN MINERAL has been working in cooperation with 3M for years to develop products based on hollow glass microspheres. The product is based on the iM16k, modified with an amino function. The main field of application is the production of thermoplastics with demands for low density and low weight of the finished product. The functionalization allows a better integration of the lightweight filler, leading to an improvement in the strength of the finished product.

Thanks to the exclusive cooperation with 3M, it is also possible to use other grades (size and stability) of 3M's hollow glass microspheres. Different functional groups such as vinyl, alkyl, etc. can be applied to the base material for surface modification.

Characteristics	unit	GLOXIL iM16k A
Particle size, D ₅₀	µm	22
Particle size, D ₉₇	µm	45
BET-Surface	m ² /g	approx. 2
Floatation rate	%	96
True density	g/cm ³	0.46
Bulk density	g/cm ³	0.19
Air-jet screening > 125 µm	%	0.2
Color value L*		98
pH-value		10
Volatile matter at 105 °C RT 20 °C / RH 50 %	%	0.3

The values shown in the table are to be considered as guidelines only. Material specifications for each product are binding and are available on our website www.hoffmann-mineral.com.



FIELDS OF APPLICATION

Thermoplastics

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

Thermosetting plastics

- Epoxy resins
- Polyurethanes

Elastomers

- FKM
- HNBR
- ACM, AEM

BENEFITS

- Reduced density
- Reduced weight
- Reduced costs per unit volume
- Resistance to chemicals
- Water resistance

Compared with base material:

Polyamide (PA):

- Increase of
- tensile strength¹
 - elongation at break
 - flexural strength¹
 - flexural strain²
 - impact resistance

Polypropylene (PP)³:

- Increase of
- tensile strength⁴
 - yield stress⁴
 - elongation
 - flexural strength⁵
 - impact resistance
 - notched impact strength

¹ up to the comparable level for PA6 without hollow glass microspheres possible

² increase even compared with PA6 without hollow glass microspheres possible

³ tested with 5% PP-g MAH as compatibilizer

⁴ up to the comparable level for PP copolymer without hollow glass microspheres possible

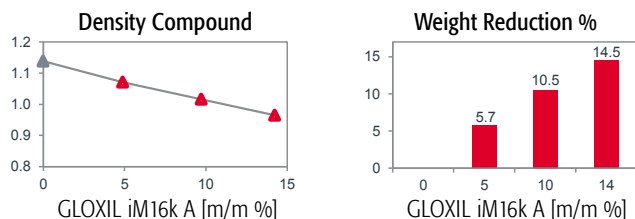
⁵ increase even compared with PP copolymer without hollow glass microspheres possible

GLOXIL® iM16k A

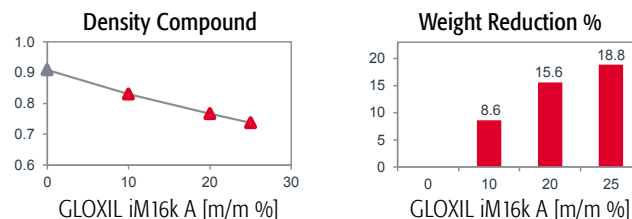
TECHNICAL RESULTS

GLOXIL iM16k A was tested in a PA6 and a PP copolymer formulation and compared with the base grade and the unfilled compound.

PA6, dry as molded
(Ultrad® B3K)

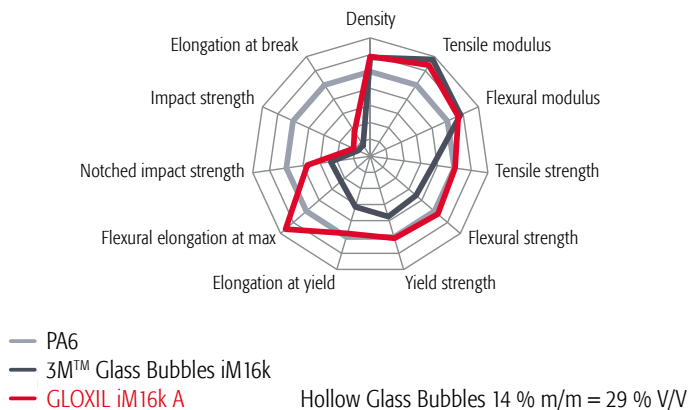


PP-Copolymer (Bormod™ BF970MO, GLOXIL iM16k A compounds contain 5 % PP-g-MAH, Scona TPPP 2112 GA)



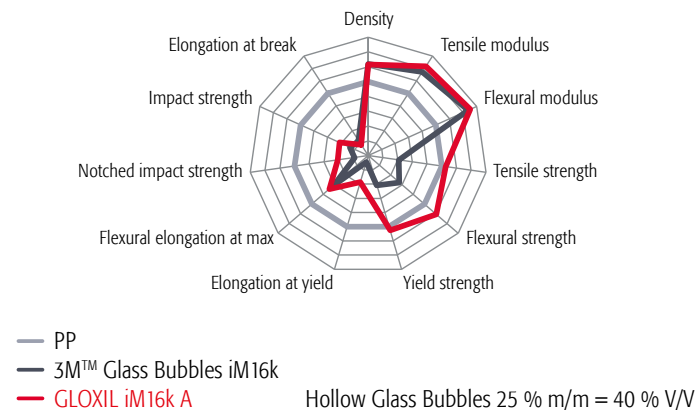
OVERALL PERFORMANCE

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



OVERALL PERFORMANCE

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



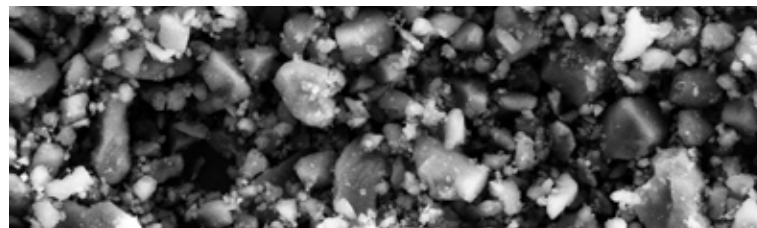
Data determined by 3M™ Advanced Materials Division, Specialty Additives Laboratory.

GLOXIL[®] matt SL

PRODUCT CHARACTERISTICS

With GLOXIL matt SL, Hoffmann Mineral has developed the first functional filler that is not based on Neuburg Siliceous Earth. The product is a 15% aqueous silica dispersion modified with special additives adapted to the matting agent and the intended application. The formation of films from the dispersion improves the incorporation of the matting agent particles. This results in films with good water and stain resistance as well as excellent matting properties.

Characteristics	unit	GLOXIL matt SL
Particle size, D ₅₀	µm	8 - 11
pH-value		6 - 7.5
Sieve residue > 40 µm	mg/kg	< 5
Silica content	%	15
Appearance		white, pasty



APPLICATIONS

- Matt dispersion-based coating, primarily clear wood varnishes, especially acrylic-based varnishes
- Substitution of matting agents for improved handling as well as water, alcohol and stain resistance

BENEFITS

- No dust formation
- Significantly improved dosing and incorporation
- Faster and easier incorporation without high shear forces
- Foam inhibiting effect
- Improved early blocking resistance
- Very high transparency without color cast and good long-term stability
- Strong matting effect
- Good wood grain, especially on dark wood
- Outstanding early water and stain resistance
- Subsequent addition to modify the degree of matting possible without loss of performance or problems
- Excellent metal marking resistance (ring resistance)

The values shown in the table are to be considering as guidelines only. Material specifications for each product are binding and are available on our website www.hoffmann-mineral.com.

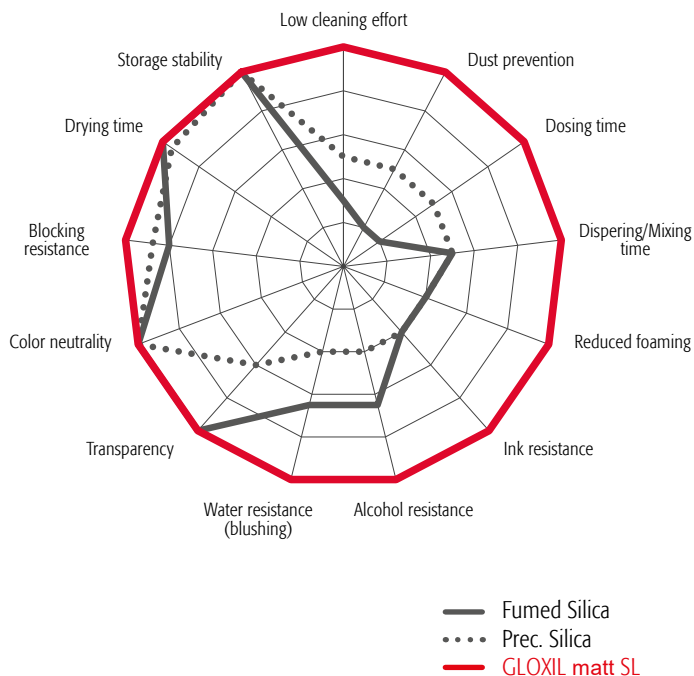
GLOXIL[®] matt SL

TECHNICAL RESULTS

GLOXIL[®] matt SL was tested in an aqueous clear coat formulation against common matting agents. The results were compared with those of a fumed and a precipitated silica.

OVERALL PERFORMANCE

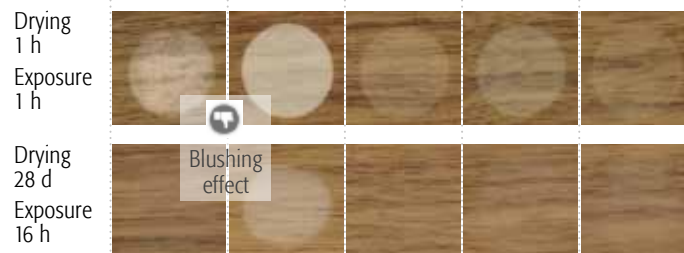
Performance at gloss 60° ~ 10 units
15.4 GT = 14.3 % GLOXIL matt SL
higher = better



DOSSAGE AND VOLUME



WATER RESISTANCE



INK RESISTANCE

