

THE GAME-CHANGING INDUSTRY SYSTEM
SWARCOFORCE



SWARCO | The Better Way. Every Day.



THE POWER OF INNOVATION

Processing and refining flat glass cullet into micro glass beads is SWARCO Indusferica' core competence. With over five decades of experience and continuous research and development activities at the Competence Center for Glass Technology in Amstetten, Austria, SWARCO has always been the front runner, setting new standards in the glass bead industry.

SWARCOFORCE glass filler beads are high-grade filling agents that contribute to improving the physical properties of plastics, resins, paints, varnishes, coatings and building materials. Here, soda-lime glass cullet is melted to produce the glass beads.



OUR PHILOSOPHY



OUR MISSION

Using SWARCOFORCE glass beads as filling agents enhances product functionality.

OUR VISION


SWARCOFORCE – your first choice for industrial glass beads as filling agents

OUR VALUES

Competence, Reliability,
Sustainability

OUR MOTTO

The game-changing
industry system



SWARCOFORCE
glass filler beads
impact the properties
of the end product,
such as:

- rigidity and pressure resistance
- warping and shrinking behaviour
- fluidity
- abrasion resistance
- tensile strength
- impact resistance
- colour
- scratch resistance
- surface gloss



Energy Efficiency

SWARCO Indusferica production facilities in Europe are ISO 50001 certified. We track and document each production unit's energy consumption. We strive to further develop state-of-the-art technology to reduce our energy consumption and our emissions and to achieve better recycling rates in the raw materials we use. At SWARCO Indusferica, we pride ourselves on having some of the greenest glass bead factories in the world.



Circular Economy

Instead of producing flat glass by melting primary raw materials, SWARCO Indusferica sources high-grade recycled glass from the flat glass industry, which uses 50% less energy. The recycled material used consists solely of cuttings and scraps from high-quality industrial glass (post-industrial waste). At SWARCO Indusferica, we have the necessary know-how to produce high-grade glass beads from these recycled products. Also, the origin and trajectory of the glass can be traced. To avoid transporting the raw materials over large distances, we purchase them in the region near the different production facilities.



50%
ENERGY
SAVINGS

DIVERSITY



With their outstanding precision and first-class quality, SWARCO micro glass beads make a compelling case in a broad range of applications.



Glass Filler Beads for Paints, Varnishes and Coatings

Glass filler beads can be used as filling agents for paints, varnishes and coatings to rely on different physical properties of glass, such as surface improvement and scratch resistance.



Glass Filler Beads for Plastics

Glass filler beads are added to the materials used for compounding/processing plastic granulate in order to enhance the required qualities. For injection moulding materials, glass filler beads reduce warping and shrinking thanks to their isotropy. They are typically used in technical components, interior and exterior automotive parts, and 3D printed materials.

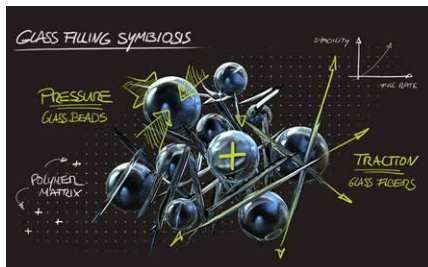


Glass Filler Beads for Building Materials

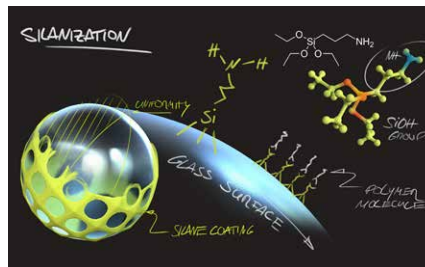
In the building materials industry, glass filler beads are used, among others, in translucent joint sealants, which break light in addition to reflecting it. This enhances the colours of glass mosaics and glass tiles and gives them a shimmering effect. Surface structures compacted with SWARCOFORCE glass filler beads are waterproof and easy to clean.

SWARCOFORCE GLASS FILLER BEADS

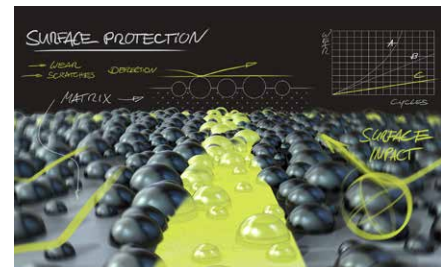
Technical potentials of using glass beads as filling agents for plastics, building materials, paints, varnishes and coatings:



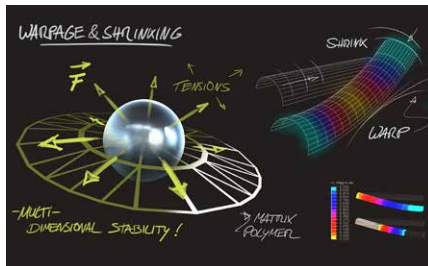
Hybrid combinations of glass beads and glass fibres combine the advantages of both reinforcement materials.



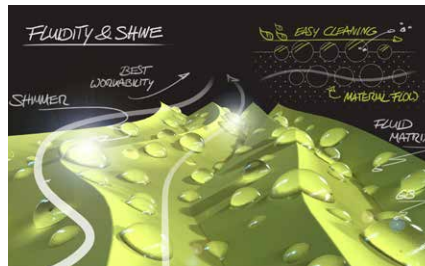
Silanizing the surface of glass beads enhances adhesion to the embedding matrix.



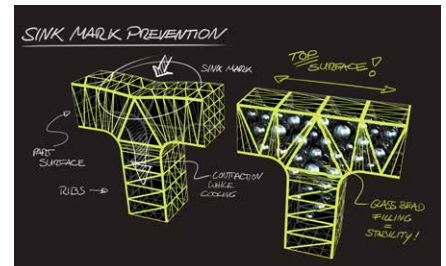
Glass beads increase scratch and abrasion resistance of product surfaces.



Glass beads improve warping and shrinking properties of thermoplastics.



Surface properties, such as product gloss level and haptics, can be influenced and enhanced with glass beads.



In plastics processing, the use of glass beads reduce sink marks.

The raw materials used for SWARCOFORCE glass filler beads are subject to EU guidelines on chemicals and hazardous substances and comply with the REACH regulation and the RoHS directive. For an external verification of the quality and environmental focus of its work, SWARCO Indusferica uses an ISO 9001 certified quality management system.

Technical Data

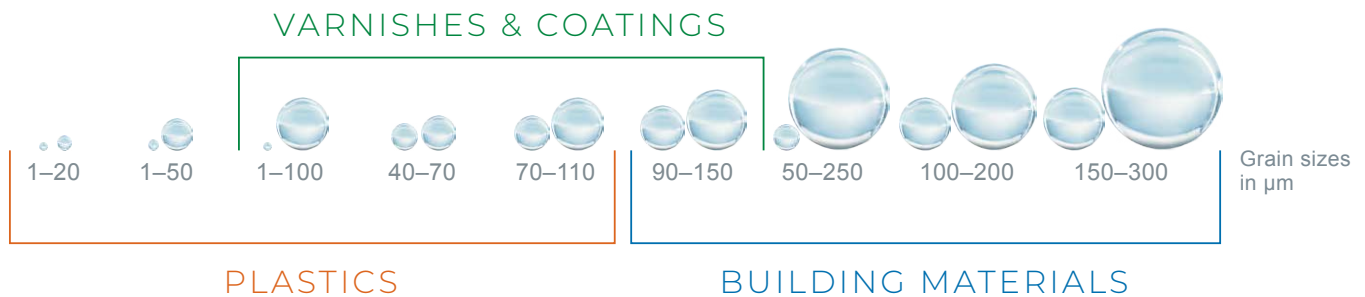
Material	Specific weight	Bulk weight	Roundness	Hardness
The glass filler beads are made from melted soda-lime glass cullet. Impurities are permissible only up to a max. of 0.1 percentage by weight.	~ 2.5 g/cm ³	~ 1.5 kg/l	> 80%	acc. to Mohs ~ 6 acc. to Rockwell ~ 46 acc. to Vickers ~ 645

Chemical Composition

SiO ₂	68.0–75.0%	CaO	7.0–12.0%
Al ₂ O ₃	0–2.5%	Na ₂ O	12.0–18.0%
MgO	0–5.0%	Other	max. 2.0%

Sievings and Applications

SWARCO Indusferica is your competent partner for tailor-made solutions using micro glass beads as filling agents in industrial applications. Many different grain sizes are available, and the production process ensures narrow tolerance ranges. Further customized particle-size distributions are possible upon request.



Silanization

SWARCOFORCE glass filler beads can be used with a very wide variety of coatings, which defines the interaction between the glass and the matrix material used (e.g. the adhesion between glass and plastic).

Embedding material/Matrix material		Recommended silane type
Thermosets/ Elastomers	Epoxy	C2/C3
	Melamine	C2/C3
	Phenol	C4
	Polyester	C1
	Polyurethane (PU)	C2/C3
	Silicone	C3
Thermoplastics	Acrylic resin, unsaturated	C1
	Acrylic resin, saturated	C3
	Acrylonitrile-butadiene-styrene (ABS)	C2
	Polyamide (PA)	C3
	Polybutylene terephthalate (PBT)	C2/C3
	Polycarbonate (PC)	C3
	Polyethersulfone (PESU)	C3
	Polyethylene (PE)	C1
	Polymethylmethacrylate (PMMA)	C3
	Polyoxymethylene (POM)	C3
	Polypropylene (PP)	C1
	Polystyrene (PS)	C2/C3
	Polysulfone (PSU)	C3
	Polyvinyl chloride (PVC)	C3
	Styrene acrylonitrile (SAN)	C3
	Thermoplastic Polyurethane (TPU)	C3

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WELL ROUNDED

In 1969 we started out with the manufacture of tiny reflective glass beads for road markings. Today, we have grown into one of the world's leading manufacturers of micro glass beads, with production facilities in Europe, the United States and Saudi Arabia. Micro glass beads serve as high-grade filling agents for industrial applications and as blasting media for surface treatment applications. In traffic technology, micro glass beads which are embedded in the marking materials reflect the beam from the headlight back to the driver, making road markings visible; this enhances road safety, especially at night.

SWARCOFORCE is a product family of the business segment SWARCO Indusferica. As part of the international SWARCO group, SWARCO Indusferica leverages the universal benefits of glass beads for special industry applications.

www.swarco.com/indusferica

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