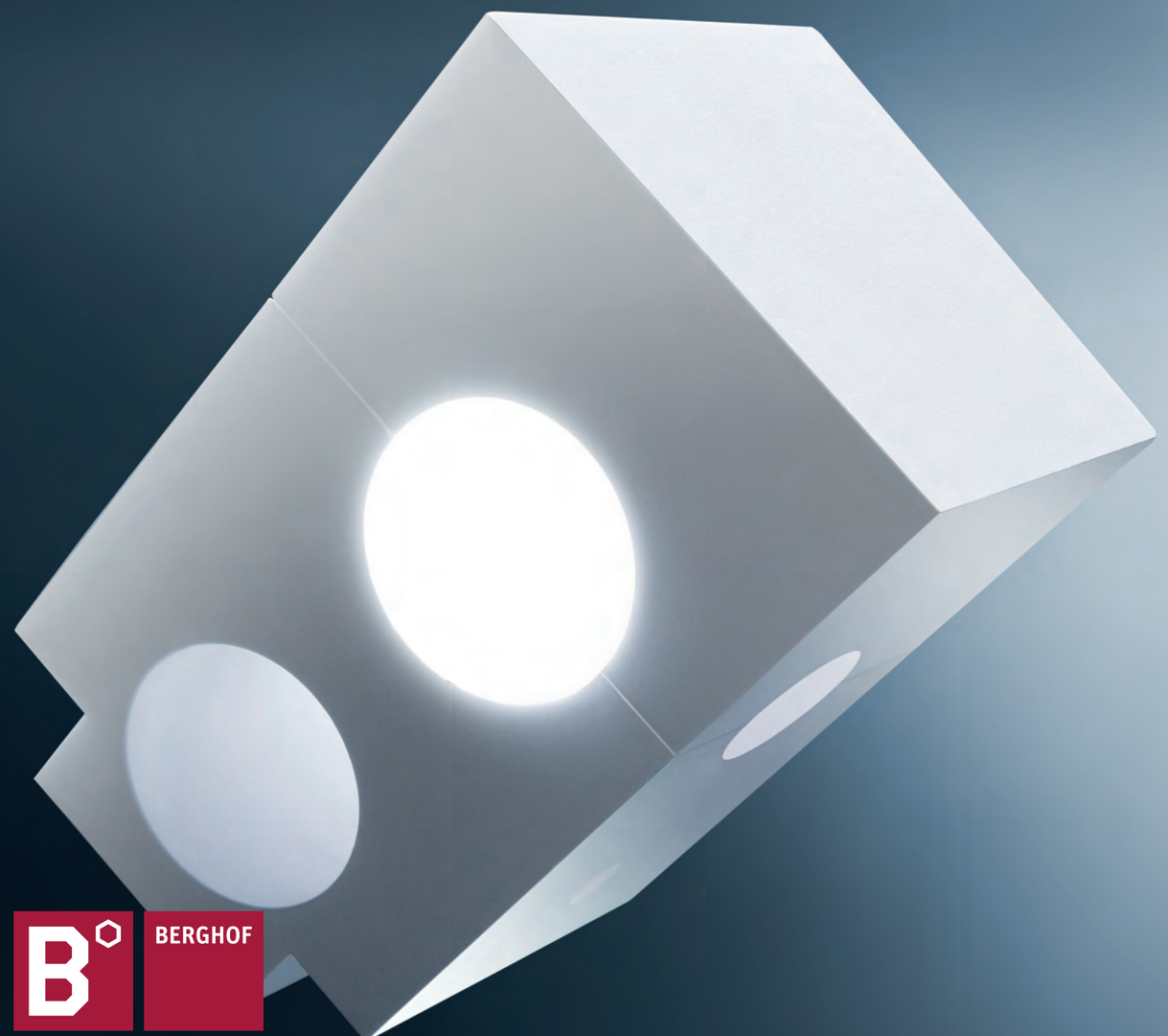
Physical-technical specifications

Optopolymer®, 98 % reflectance	
Reference thickness	**10.0 mm**
Material	Berghof Optopolymer® – granulate made of porous, virgin polytetrafluorethylene (PTFE); symmetrically porous structure Free of PFOA; conforms to FDA standards Free of heavy metals
Manufacturing process	Material compression by isostatic compaction and sintering followed by mechanical processing
Colour	White
Hardness	30 to 40 Shore D
Degree of reflectance	98 % in the visible wavelength range of 380 to 780 nm 93 % in the wavelength range of 250 to 2,500 nm
Temperature resistance	-200 to +260°C
Water solubility	Insoluble in water The reflective properties alter with damp material
Chemical resistance	Virtually universal
Physiological properties **SAFETY NOTE**	Physiologically harmless At temperatures of >400°C the harmful gaseous by-products from thermal decomposition need to be taken into account.
Transport and storage	Non-hazardous materials in terms of the transport regulations, Water Hazard Classes WGK (0) The product is easily statically chargeable; avoid friction Can be stored for an unlimited time at room temperature
Processing note	No predefined direction of installation since it is symmetrically porous and carrier-free Special processing notes apply to the self-adhesive version
Conformity	→ Directive 10/2011/EC on plastic materials and articles intended to come into contact with food (implemented in Germany by the Consumer Goods Ordinance BedGgstV), complemented by directives 2011/8/EC, 2007/19/EC and 2002/72/EC → Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) → Directive 2003/11/EC regarding restrictions on the marketing and use of certain dangerous substances and preparations (pentabromodiphenyl ether, octabromodiphenyl ether) **Note:** The producer is responsible for making sure that the end product complies with the standards named here.

Berghof Fluoroplastic Technology GmbH
Eningen Site | Arbachtalstraße 26 | 72800 Eningen | Germany | T +49.7121.894-0 | F +49.7121.894-300 | ptfe@berghof.com |

PTFE PRODUCTS

Optopolymer®
The reference for light



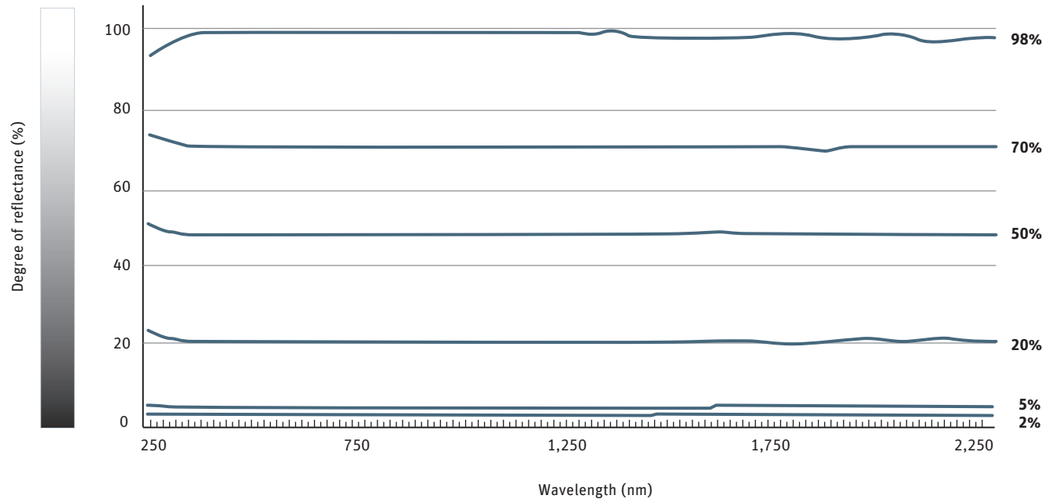
BERGHOF

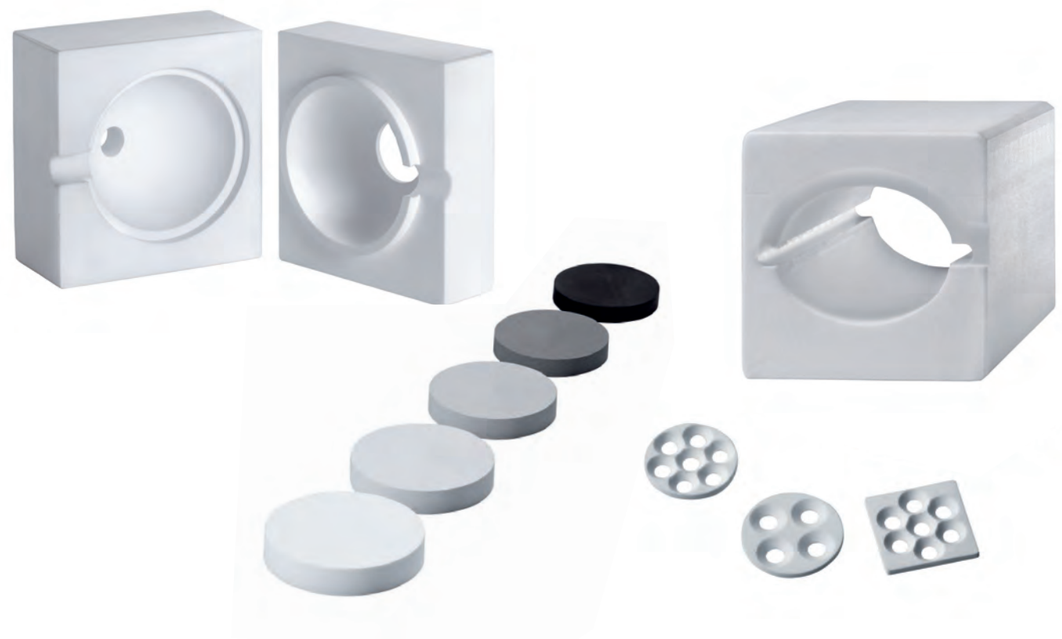
Optopolymer®

The reference for light owing to the greatest diffuse reflection possible

Optopolymer® by Berghof is employed from optical measurement engineering, where particularly diffusely reflecting so-called Lambertian surfaces are required, right through to conventional lighting technology in which considerable light efficiency and natural colour rendition are critical. Regardless of the application, as a material with the greatest diffuse reflectance PTFE maximises the efficiency of light sources by spreading the light evenly.

Degree of reflectance from Optopolymer®





Manufacture

Berghof Optopolymer® consists of pure poly-tetrafluorethylene (PTFE). As a result of its incomparable whiteness and purity Berg-hof optical PTFE achieves virtually ideal Lambertian reflectance properties with a reflection coefficient of up to 98 % in the broad wavelength range of 250 to 2,500 nm. Here the special manufacturing pro-cess, the isostatic compression of the raw material, ensures an absolutely diffuse reflection over the whole surface of the component. In addition, the outstanding properties of the PTFE such as its high thermal stability of -200°C to +260°C and its UV resistance protect the components against discolouration and embrittlement. This guarantees permanent dimensional stability and functionality throughout its long lifespan.

Optical PTFE

At a glance	Advantages
Extremely diffuse reflection up to >98 % (~250 - 2,500 nm)	Maximum and uniform light output with less expenditure of energy
Purest porous PTFE	Significantly higher reflectance than components made of e.g. ceramic; free of perfluorooctane acid (PFOA)
High temperature resistance up to +260°C	No embrittlement or deformation
High UV stability and universal chemical resistance	No reflection losses as a result of discolouration
Should the surface become contaminated it can be easily cleaned or mechanically treated	Simplified maintenance. No need for recoating with e.g. barium sulphate
Reduced speckle effect by lasers on the surface	Increased contrast with laser projection
Dimensionally stable and flexible in design	Individual customisation
Can be supplied in various shades of grey	Defined degrees of reflectance for optical standards

Can be used in a wide variety of applications

- → Diffusely reflecting material
- → Reflectance and fluorescent standards in gradations
- → Lambertian reflectors and diffusers
- → Laser cavities
- → Ulbricht spheres
- → UV drying chambers
- → UV air and water sterilisers
- → Background lighting for displays
- → Reflectors and mixing chambers for LED and OLED
- → Photobioreactors

PTFE – the outstanding fluoroplastic

The raw material for Berghof Optopolymer® is the high-performance plastic PTFE (Teflon®). What is impressive about this material is its resistance to virtually all media as well as UV radiation and high temperatures. By using a special technology to process the plastic Berghof has succeeded in augmenting its outstanding characteristics with unique optical reflective properties. Berghof uses pure s-PTFE which, unlike e-PTFE, is obtai-ned from a suspension and which therefore does not require emulsifiers. This means that Berghof Optopolymer® is entirely free of foreign matter such as pore-forming material or the emulsifier perfluorooctane acid (PFOA), which is suspected of being carcinogenic.