

Material Data Sheet UHMW-PE

UHMW-PE – white (FDA)

General

UHMW-PE (ultra high molecular weight Polyethylene), also known as PE-1000, is a thermoplastic polymer in white translucent colour. The material has excellent chemical properties as well as good sliding properties and oxidation resistance. The minimum service temperature of -200°C makes it an optimal material for low temperature applications. Due to the minimal moisture absorption it is mainly used for applications in water. UHMW-PE – white is approved for the use of applications in contact with foodstuff.

Physical properties

Density:	DIN 53479	g/cm ³	0,93
Hardness:	DIN 53505	Shore D	60 - 65
Tensile strength:	DIN 53455	N/mm ²	40
Elongation at break:	DIN 53455	%	50
Ball Hardness H132/6:	DIN 53456	N/mm ²	38
Coefficient of friction (dyn.):	ASTM D1894	μ	0,25
Therm. Exp. Coeff. 25°C – 200°C	ISO 11359	10 ⁻⁶ /K	200
Water absorption 23°C	DIN 53495	%	0,01
Min. service temperature:	°C		- 200
Max. service temperature:	°C		80

Chemical resistance

Water up to 80°C	R	Vegetable Oils	R
Sea Water	R	Silicone Oils	R
Steam	R	Biodegradeable Oils	R
HFA, HFB fluids	R	Fuels	R
HFC fluids	R	Ozone	U
HFD fluids	S	Chlorine	U
Mineral Oils	S	Air up to 80°C	R
Sulfuric acid	U		

Key to chemical resistance: R = resistant S = suitable U = unsuitable

Main application

Piston / Rod seals with spring or elastomere energizer, back-up rings, special seals in water hydraulics and similar applications, low temperature applications, low friction applications.

Analysis and Evaluation

The properties relate to fundamental values for polyurethane products. Values mentioned above are corresponding to ASTM or DIN standards and have been tested on standardized plates in the laboratory. All immersion tests are made under laboratory conditions.