



Polyethylene (PE) [HMW-PE500]

High molecular weight low pressure polyethylene (PE-HMW) with a molecular weight of approximately 0.5 g/mol. Thanks to the use of specially selected additives it is possible to enhance the material St 500@ according to the respective specific demands. This is primarily accomplished by the use of lubricants..

Standard Colours: Black / White

Mechanical Properties		
Density DIN53 479	g/cm ³	0.95
Yield Stress DIN53 455	MPa	28
Elongation at break DIN53 455	%	300
Modules of elasticity resulting from tensile test DIN53 457	MPa	850
Modules of elasticity resulting from bending test DIN53 457	MPa	850
Flexural strength DIN53 452	MPa	40
Impact strength DIN53 453	KJ/m ²	o. B.
Notched-bar impact strength DIN 53 453	KJ/m ²	50
Ball indentation Hardness H _{358/30} DIN53 456	MPa	45
Creep rate stress at 1% elongation DIN53 444	MPa	3
Sliding friction coefficient against steel (dry running) ³	-	0.29
Sliding wear against steel (dry running) ³	µm/km	1.0
Thermal Properties		
Melting temperature DIN53 736	°C	+133
Thermal conductivity DIN52 612	W/(k m)	0.38
Specific thermal capacity	J/(g K)	1.88
Coefficient of linear expansion	10 ⁻⁵ - K ⁻¹	18
Operating temperature range (long-term)	°C	-50
Operating temperature range (short-term)	°C	+80
Fire behaviour after UL 94 IEC 60695	-	HB
Electrical Properties		
Dielectric constant DIN53 483	-	2.9
Dielectric loss factor DIN53 483	-	0.0002
Specific volume resistance DIN53 482	Ω-cm	>10 ¹⁶
Surface resistance DIN53 482	Ω	10 ¹⁴
Dielectric strength DIN53 481	KV/mm	44
Creep resistance DIN53 480	-	KA 3c KC> 600
Miscellaneous data		
Moisture absorption in natural Rubber until saturated DIN53 715	W(H ₂ O)%	<0.01
Water absorption until saturated DIN53 495	W _s %	<0.01
Specific properties		as PE-HD, but far more abrasion resistant

Polyethylene is a semi-crystalline thermoplastic with high toughness and chemical resistance, but rather low mechanical strength in comparison to other plastics and cannot be used at high temperatures. The different polyethylene's differ in regard to their molar mass (molecular weight), which is important for the respective physical properties. This means that in addition to the common properties that all types have, certain ones have type-specific properties.

Fields of Application:

Excellent wear properties and good sliding properties
 Highly resistant to bending and impact
 Highest resistance to cold
 Cutting table surfaces
 Agitator blades
 Wall linings in refrigeration rooms
 Impact bands
 Knife blocks

Steelplast CC
 Reg. No. 2010/113200/23
 VAT No. 4240263444
 P.O. Box 11099
 Selcourt, 1567
 www.steelplastsa.com

Johannesburg - Head Office
 Cnr Innes & Shorten Roads,
 Shop 6, Nuffield, Springs
 Phone: +27 (0) 11 363-3722/23
 Fax: +27 (0) 86 725 0725
 E-mail: henkl@steelplast.co.za

Cape Town Branch
 10 Garden Street, Hopefield
 Western Cape
 Phone: +27 (0) 22 723 1301
 Fax: +27 (0) 86 563 6649
 E-mail: annemarie@steelplast.co.za

Members:
 Annemarie De Meyer
 Laurens Van Zanten
 Henk Lourens



www.steelplastsa.com

Properties:

- Good sliding properties
- High bending- and impact strength
- Easy to machine, easy for welding
- Anti-bacterial
- Good chemical and electrical resistance
- No humid or water absorption
- Wear and impact resistance is high
- low coefficient of friction



Sliding properties

PE-HMW (PE 500; molar mass approx. 500,000 g/mol) has better sliding properties because of its higher molar mass and is also more abrasion resistant than PE-HD. In combination with its good level of toughness, it is suitable for use in low load components that are not subject to any high degree of sliding abrasion.

Chemical resistance - All PE types are resistant to acids, alkaline solutions, salts and salt solutions, alcohols, oils, fats, waxes and many solvents. Aromatics and halogenated hydrocarbons cause swelling. All PE types are not resistant to strong oxidising materials (e.g. nitric acid, chromic acid or halogens), and there is a danger of stress corrosion cracking.

Weathering effects - As a general rule, no PE types are resistant to UV rays. This does not apply to the black coloured types, which are resistant to UV rays also in combination with atmospheric oxygen.

Behaviour in fire- All PE types are rated as normal flammable. When the source of ignition is removed, they continue to burn and form droplets. However, apart from carbon dioxide,

carbon monoxide and water, only small quantities of carbon black and molecular constituents of the plastic develop as conflagration gases. The oxygen index (the oxygen concentration required for combustion) at 18% is low compared to other plastics.

Machining - In addition to the good welding properties of PE-HD and PE-HMW, all PE types can also be machined on machine tools. The semi-finished products can be drilled, milled, sawed, planed and turned on a lathe. It is also possible to cut a thread into the material or insert a threaded element. As a rule, no cooling or lubricating emulsion is necessary



This product data sheet and any data or specifications presented on our website shall provide promotional and general information about Steelplast CC products and shall serve as a preliminary guide. All data and descriptions relating to our products are of an indicative nature only. Neither this data sheet nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation. It solely remains the customer's responsibility to test and assess the suitability and compatibility of Steelplast CC products for its intended applications, processes and uses. The customer undertakes all liability in respect of the application, processing or use of the aforementioned information or product.