MATERIAL PROPERTIES

	Polystyrene	Polypropylene	Polyethylene
Abbreviation	PS	PP	HD-PE High Density LD-PE Low Density
Optical properties	transparent, shiny surface, 90% light transmission (at 400 - 800 nm)	translucent, shiny surface	translucent to opaque, waxy surface
General mechanical properties	low elongation at break and heat resistance, excellent electrical insulation properties, not suitable for high centrifugal acceleration	high breaking strength resistant to stress cracking, dimensionally stable, high stiffness.	tensile strength and surface hardness relatively low, high toughness, soft to stiff sensitive to stress cracking, water-repellent
Autoclavability	not suitable	Products made of PP can be autoclaved to 121°C without significant loss of mechanical properties. The user must check whether other product properties are affected with regard to the desired application.	not suitable
Maximum continuous service temperature	60 - 70°C	100 - 110°C	HD-PE 70 - 80°C LD-PE 60 - 75°C
Short-term maximum service temperature [1]	75 - 80°C	120 - 140°C	HD-PE 90 - 120°C LD-PE 80 - 90°C
Use in minus temperature range [2]	not really suitable	limited suitability [1]	limited suitability [1]
Density g/cm³	1.05	0.90	HD-PE 0.95 LD-PE 0.92
Flammability	flammable	flammable	flammable
Ignition temperature	300 - 400°C	300 - 360 °C	350 - 360 °C
Moisture absorption	< 0.1 %	< 0.1 %	< 0.1 %
General chemical resistance	PS is resistant to salt solutions, lyes, non-oxidising acids, alkalis and alcohols. Petrol, essential oils, highly oxidising agents and flavouring agents attack PS with the formation of stress cracks	PP is resistant to aqueous solutions of inorganic salts, acids, alkalis and organic solvents up to 60°C. Alcohols, esters and ketones do not attack PP either. Aromatic and halogenated hydrocarbons, oxidising substances such as concentrated nitric acid and at higher temperatures, fats, oils and waxes swell PP.	PE has a high resistance to chemicals. The chemical resistance of HD-PE is generally higher than that of LD-PE. Aqueous acids, lyes, alcohol, oil, water and salt solutions do not attack PE. Concentrated oxidising acids such as nitric acid and halogens cause decomposition.
Disposal	PS is a pure hydrocarbon compound and therefore environmentally neutral for disposal. In controlled combustion no harmful substances are produced.	PP is a pure hydrocarbon compound and therefore environmentally neutral for disposal. In controlled combustion no harmful substances are produced.	PE is a pure hydrocarbon compound and therefore environmentally neutral for disposal. In controlled combustion no harmful substances are produced.

[1] The suitability depends on the type of plastic used in each case and the type of load.

[2] Note: The plastics become more brittle at low temperatures. Use of products in the negative temperature range should be fully tested beforehand with the appropriate application. This information is intended to serve as a guideline and does not represent a guarantee of product properties.