

# Physical properties POM-H

Properties	Test methods	Units	Values
Colour	-	-	natural (white) / black
Density	ISO 1183-1	g/cm <sup>3</sup>	1.43
Water absorption:			
- after 24/96 h immersion in water of 23°C	ISO 62	mg	18 / 36
- at saturation in air of 23°C / 50% RH	ISO 62	%	0.21 / 0.43
- at saturation in water of 23°C	-	%	0.20
	-	%	0.80
<b>Thermal Properties</b>			
Melting temperature (DSC, 10° C/min.)	ISO 11357-1/-3	°C	180
Glass transition temperature	ISO 11357-1/-2	°C	-
Thermal conductivity at 23°C	-	W/(K.m)	0.31
Coefficient of linear thermal expansion:			
- average value between 23 and 60°C	-	m/(m.K)	95 x 10 <sup>-6</sup>
- average value between 23 and 100°C	-	m/(m.K)	110 x 10 <sup>-6</sup>
Temperature of deflection under load:			
- method A: 1.8 MPa	ISO 75-1/-2	°C	110
Max. allowable service temperature in air:			
- for short periods	-	°C	150
- continuously: for 5'000 / 20'000 h	-	°C	105 / 90
Min. service temperature	-	°C	-50
Flammability:			
- „Oxygen Index“	ISO 4589-1/-2	%	15
- according to UL 94 (3 / 6 mm thickness)	-	-	HB / HB
<b>Mechanical Properties at 23°C</b>			
Tension test:			
- tensile stress at yield / tensile stress at break	+ ISO 527-1/-2	MPa	NYP / 78
	++ ISO 527-1/-2	MPa	NYP / 78
- tensile strength	+ ISO 527-1/-2	MPa	78
- tensile strain at yield	+ ISO 527-1/-2	%	NYP
- tensile strain at break	+ ISO 527-1/-2	%	25
	++ ISO 527-1/-2	%	25
- tensile modulus of elasticity	+ ISO 527-1/-2	MPa	3700
	++ ISO 527-1/-2	MPa	3700
Compression test:			
- compressive stress at 1 / 2 / 5% nominal strain	+ ISO 604	MPa	29 / 49 / 85
Charpy impact strength - unnotched	+ ISO 179-1/1eU	kJ/m <sup>2</sup>	ohne Bruch
Charpy impact strength - notched	+ ISO 179-1/1eA	kJ/m <sup>2</sup>	10
Ball indentation hardness	+ ISO 2039-1	N/mm <sup>2</sup>	160
Rockwell hardness	+ ISO 2039-2	-	M 88
<b>Electrical Properties at 23°C</b>			
Electrical strength	+ IEC 60243-1	kV/mm	20
	++ IEC 60243-1	kV/mm	20
Volume resistivity	+ IEC 60093	Ohm.cm	> 10 <sup>14</sup>
	++ IEC 60093	Ohm.cm	> 10 <sup>14</sup>
Surface resistivity	+ IEC 60093	Ohm	> 10 <sup>13</sup>
	++ IEC 60093	Ohm	> 10 <sup>13</sup>
Relative permittivity $\epsilon_r$ :			
- bei 100 Hz	+ IEC 60250	-	3.8
	++ IEC 60250	-	3.8
- bei 1 MHz	+ IEC 60250	-	3.8
	++ IEC 60250	-	3.8
Dielectric dissipation factor $\delta \tan$ :			
- bei 100 Hz	+ IEC 60250	-	0.003
	++ IEC 60250	-	0.003
- bei 1 MHz	+ IEC 60250	-	0.008
	++ IEC 60250	-	0.008
Comparative tracking index (CTI)	+ IEC 60112	-	600
	++ IEC 60112	-	600

Note: 1 g/cm<sup>3</sup> = 1000 kg/m<sup>3</sup>; 1 Mpa = 1 N/mm<sup>2</sup>; 1 kV/mm = 1 MV/m.

NYP: No Yield Point

+ : Values referring to dry material  
 ++ : Values referring to material in equilibrium with the standard atmosphere 23°C / 50% RH (mostly derived from literature)

This table is a valuable help in the choice of a material. The data listed here fall within the normal range of products properties, but they should not be used to establish material specification limits nor used alone as the basis of design.

## POM-C / POM-H

These are virgin copolymer and homopolymer acetal grades. The acetal copolymer is more resistant against hydrolysis, strong alkalis and thermal-oxidative degradation than the acetal homopolymer. The latter, however, has higher mechanical strength, stiffness, hardness and creep resistance as well as a lower thermal expansion rate and often it also presents a better wear resistance.

Main characteristics:

- high mechanical strength, stiffness and hardness
- excellent resilience
- good creep resistance
- high impact strength, even at low temperatures
- very good dimensional stability
- good sliding properties and wear resistance
- excellent machinability
- good electrical insulating and dielectric properties
- physiologically inert (suitable for food contact)
- not self-extinguishing

POM is very well suited for machining on automatic lathes and is particularly recommended for mechanical precision parts.