POKETONE™
HYOSUNG POLYKETONE

Thermal resistant extrusion grade

POKETONE Polymer M730R

POKETONE Thermoplastic Polymers are aliphatic polyketones, a revolutionary new class of semi-crystalline thermoplastics. Hyosung developed new catalyst to produce this unique polymer in 2013 and constructed commercial plant in 2015, in Ulsan, Korea.

POKETONE Polymer M730R is a thermal resistant extrusion grade with mechanical properties that classify it as an engieering thermoplastic. This grade combines high melt strength and viscosity with high chemical resistance and barrier performance. Moreover, this material exhibits a high impact resistance, both at room temperature and at lower temperatures, and good creep performance. POKETONE Polymer M730R can also withstand short-term exposure to elevated temperatures.

POKETONE Polymer M730R has been designed for demanding extrusion procceses. This grade should be considered for liners, pipes and large blow mouldings.

Applications for POKETONE Polymer M730R may be found in the industrial, oil&gas, and automotive markets.

TABLE 1 : TYPICAL MECHANICAL PROPERTIES OF POKETONE POLYMER M730R – Measured at 23℃

	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Tensile strength at yield	D638	527-1	56 MPa	56 MPa
Tensile modulus	D638	527-1	1,400 MPa	1,300 MPa
Tensile elongation at yield	D638	527-1	24%	24%
Tensile elongation at break	D638	527-1	250%	250%
Flexural strength	D790	178	50 MPa	50 MPa
Flexural modulus	D790	178	1,250 MPa	1,200 MPa
Unnotched Charpy impact strength	-	179/1eU	-	N.B.
Notched Charpy impact strength	-	179/1eA	-	16 kJ/m^2
Unnotched Izod impact strength	D256	180/U	N.B.	N.B.
Notched Izod impact strength	D256	180/A	138 J/m	10 kJ/m^2

TABLE 2: TYPICAL PHYSICAL PROPERTIES OF POKETONE POLYMER M730R – Measured at 23℃

	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Specific gravity	D792	1183	1.24 g/cm^3	1.24 g/cm^3
Shore D hardness	D2240	868	-	71
Hardness Rockwell	D785	-	105	-
Water absorption equilibrium at 50% RH	D570	62	0.5%	0.5%
Water absorption at saturation	D570	62	2.2%	2.2%

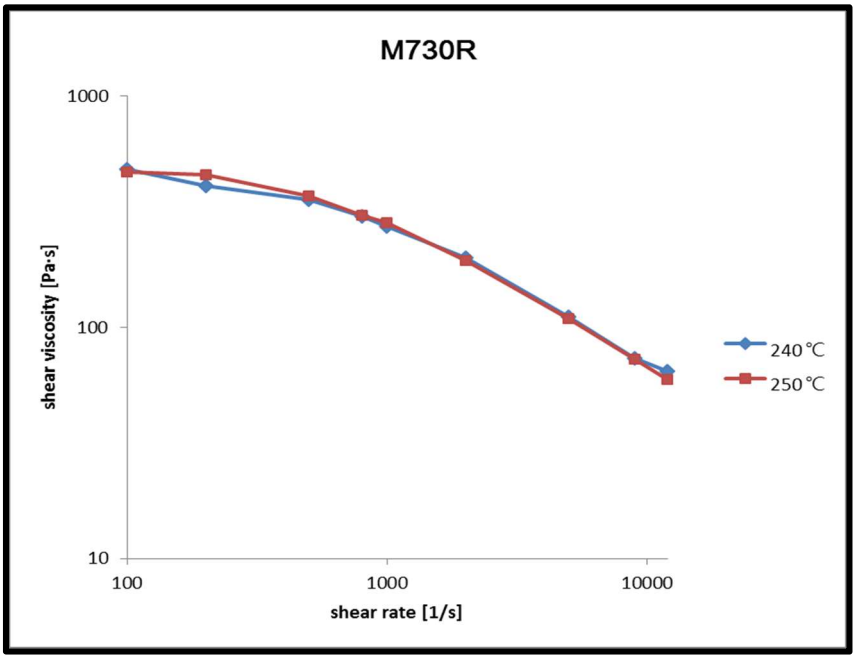
TABLE 3: TYPICAL THERMAL PROPERTIES OF POKETONE POLYMER M730R

	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Melting temperature	D3418	11357	222℃	222℃
Coefficient of linear thermal expansion 25℃ to 55℃	E831 TD MD	-	9.4*10^{-5} 1.0*10^{-4}	-
Vicat softening point	D1525 5kg	306/B50 50N	190℃	190℃
Heat deflection temperature (Start Temp. : 25℃)	D648 66psi 264psi	75 0.45 MPa 1.8 MPa	190℃ 90℃	185℃ 80℃

TABLE 4: TYPICAL PROCESS RELATED PROPERTIES OF POKETONE POLYMER M730R				
	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Melting temperature	D3418	11357	222℃	222℃
Melt flow index 240℃ /2.16kg	D1238	1133	3 g/10 min	2.8㎖/10min
Mould shrinkage	D955 MD, 3mm TD,3mm	-	 2.2% 2.1%	-

TABLE 5: TYPICAL ELECTRICAL PROPERTIES OF POKETONE POLYMER M330A		
	Test Method & Conditions	ASTM Values
	ASTM	SI
Dielectric sterngth, Short term	D149 3 mm 2 mm	 16 kV/mm 20 kV/mm
Volume resistivity	D257	10^{14} ohm cm
Surface resistivity	D257	10^{17} ohm/sq.
Dielectric constant at 60Hz	D150	6.2
Dissipation factor at 60Hz	D150	0.014

Typical Flow Behavior of POKETONE Polymer M730R



Hardware pointers for POKETONE Polymer M730R

The extrusion machine

POKETONE Polymers have been extruded with screw diameters in the range 20 mm to 75 mm and screw lengths 20 to 30D. This material shows good feeding without the use of grooved barrels, feed zone typically 6 to 8D. Gradual compression, ratio 2:1 to 3:1, over more than 7D is preferable with a metering zone typically more than 7D.

Typical operating conditions

A typical barrel temperature profile would be from 220°C at the feed throat to 240°C at the die. Reverse- and flat-temperature profiles may also be used. Excessively high or low local temperatures should be avoided.

General suggestions

Normal “good extrusion practice” should be followed. Avoid areas of stagnation for example, in breaker plates, adapters and at changes of flow direction.

Smooth polished flow channels and high-chrome steels or chrome plating are beneficial to process consistency.

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