

Food&drug extrusion grade

POKETONE Polymer M710F

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 M710F is extrusion grade with mechanical properties that classify it as an engineering 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 M710F can also withstand short-term exposure to elevated temperatures.

POKETONE Polymer M710F has been designed for demanding extrusion processes. This grade should be considered for liners, pipes and large blow mouldings.

Applications for POKETONE Polymer M710F may be found in the food, drug, industrial and consumer appliance markets.

TABLE 1 : TYPICAL MECHANICAL PROPERTIES OF POKETONE POLYMER M710F – Measured at 23 °C				
	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Tensile strength at yield	D638	527-1	43 MPa	43 MPa
Tensile modulus	D638	527-1	950 MPa	900 MPa
Tensile elongation at yield	D638	527-1	19%	19%
Tensile elongation at break	D638	527-1	300%	300%
Flexural strength	D790	178	40 MPa	40 MPa
Flexural modulus	D790	178	900 MPa	850 MPa
Unnotched Charpy impact strength	-	179/1eU	-	N.B.
Notched Charpy impact strength	-	179/1eA	-	14 kJ/m ²
Unnotched Izod impact strength	D256	180/U	N.B.	N.B.
Notched Izod impact strength	D256	180/A	120 J/m	9 kJ/m ²

TABLE 2: TYPICAL PHYSICAL PROPERTIES OF POKETONE POLYMER M710F – Measured at 23 °C				
	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Specific gravity	D792	1183	1.22 g/cm ³	1.22 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 M710F				
	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Melting temperature	D3418	11357	197 °C	197 °C
Heat deflection temperature	D648	75		
	66psi	0.45 MPa	155 °C	140 °C
	264psi	1.8 MPa	75 °C	65 °C

TABLE 4: TYPICAL PROCESS RELATED PROPERTIES OF POKETONE POLYMER M710F

	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Melting temperature	D3418	11357	197°C	197°C
Melt flow rate 220°C /2.16kg	D1238	1133	3 g/10 min	2.8ml/10min
Mould shrinkage	D955			
	MD, 3mm TD, 3mm	-	1.7% 1.7%	-

TABLE 5: TYPICAL ELECTRICAL PROPERTIES OF POKETONE POLYMER M710F

	Test Method & Conditions	ASTM Values
	ASTM	SI
Dielectric strength, Short term	D149	
	3 mm 2 mm	15 kV/mm 19 kV/mm
Volume resistivity	D257	10 ¹⁴ ohm cm
Surface resistivity	D257	10 ¹⁷ ohm/sq.
Dielectric constant at 60Hz	D150	6.4
Dissipation factor at 60Hz	D150	0.014

Hardware pointers for POKETONE Polymer M710F

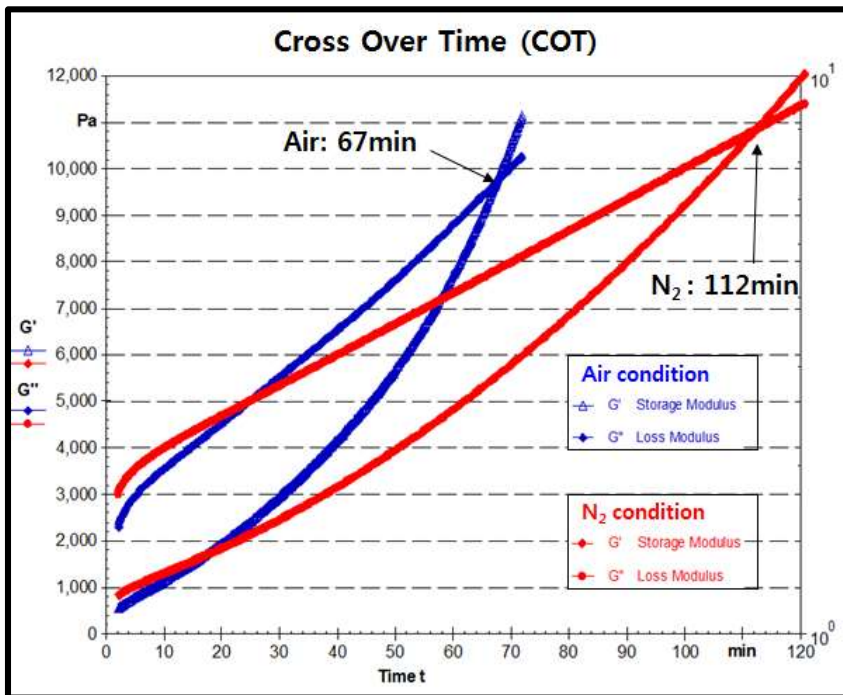
The extrusion machine POKETONE Polymers have been extruded with screw diameters in the range 20 mm to 75 mm and screw lengths 20 to 30D. This material shows good feeding without the use of grooved barrels, feed zone typically 6 to 8D. Gradual compression, ratio 2:1 to 3:1, over more than 7D is preferable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

Typical operating conditions

A typical barrel temperature profile would be from 200°C at the feed throat to 220°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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