

General-purpose injection moulding grade

POKETONE Polymer M630A

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 M630A is a general-purpose injection moulding grade with mechanical properties which classify it as an engineering thermoplastic. This grade has an excellent balance of stiffness and toughness over a broad temperature range, high resilience and good wear resistance. This grade exhibits very good processability, good impact resistance, high resilience and good creep performance. POKETONE Polymer M630A can also withstand short-term exposure to elevated temperatures. Moreover this polymer exhibits a high resistance to hydrocarbons, solvents, salt solutions, weak acids and weak bases.

POKETONE Polymer M630A is easy to process on standard injection moulding equipment. Cycle times are generally short. Parts show good mould definition with glossy mar-resistant surfaces. POKETONE Polymer's low moisture-sensitivity means that no conditioning of parts before assembly or use is necessary.

Applications for POKETONE Polymer M630A may be found in the automotive, electrical, electronics, industrial and consumer appliance markets.

TABLE 1 : TYPICAL MECHANICAL PROPERTIES OF POKETONE POLYMER M630A – Measured at 23 °C (74 °F)				
	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Tensile strength at yield	D638	527-1	58 MPa	58 MPa
Tensile modulus	D638	527-1	1,450 MPa	1,350 MPa
Tensile elongation at yield	D638	527-1	22%	22%
Tensile elongation at break	D638	527-1	300%	300%
Flexural strength	D790	178	53 MPa	53 MPa
Flexural modulus	D790	178	1,350 MPa	1,250 MPa
Unnotched Izod impact strength	D256	180/U	N.B.	N.B.
Notched Izod impact strength at				
23 °C			220 J/m	15 kJ/m ²
-10 °C	D256	180/A	65 J/m	6 kJ/m ²
-30 °C			52 J/m	4 kJ/m ²
Unnotched Charpy impact strength	-	179/1eU	-	N.B.
Notched Charpy impact strength at				
23 °C			-	17 kJ/m ²
-10 °C	D256	179/1eA	-	4 kJ/m ²
-30 °C			-	3 kJ/m ²
Falling Dart impact strength at 23 °C	-	6603-2	-	50J

TABLE 2: TYPICAL PHYSICAL PROPERTIES OF POKETONE POLYMER M630A – Measured at 23 °C (74 °F)				
	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Specific gravity	D792	1183	1.24g/cm ³	1.24g/cm ³
Shore D hardness	D2240	868	-	73
Hardness Rockwell	D785	-	110	-
Water absorption equilibrium at 50% RH	D570	62	0.5%	0.5%
Water absorption at saturation	D570	62	2.1%	2.1%

TABLE 3: TYPICAL THERMAL PROPERTIES OF POKETONE POLYMER M630A				
	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Melting temperature	D3418	11357	222 °C	222 °C
Coefficient of linear thermal Expansion, 25 °C to 55 °C	E831 TD MD	-	8.4*10 ⁻³ 1.0*10 ⁻⁴	-
Vicat softening point	D1525 5 kg	306/B50 50 N	192 °C	190 °C
Heat deflection temperature (Start Temp. : 25 °C)	D648(6.4mm) 66psi 264psi	75 (4mm) 0.45 MPa 1.8 MPa	195 °C 102 °C	185 °C 90 °C

TABLE 4: TYPICAL WEAR & ABRASION RESISTANCE
 OF POKETONE POLYMER M630A – Measured at 23°C (74°F)

	Test Method & Conditions		Pin on Disk Valus	Thrust Washer Values
	Pin on Disk	Thrust Washer	SI	SI
Dynamic coefficient of Friction agatinst self	1.3 MPa 0.06 m/sec	0.4 MPa 0.12 m/sec	0.15	0.34
Dynamic coefficient of Friction against steel	1.3 MPa 0.06 m/sec	0.4 MPa 0.12 m/sec	0.36	0.60
Wear factor against self (mm ³ /N·km)	1.3 MPa 0.06 m/sec	0.4 MPa 0.12 m/sec	0.0074	0.0044
Wear factor against steel (mm ³ /N·km)	1.3 MPa 0.06 m/sec	0.4 MPa 0.12 m/sec	0.0732	0.04
Taber abrasion 1 kg load, CS-17 wheel	D1044		12 mg/1,000cycle	

 TABLE 5: TYPICAL PROCESS RELATED PROPERTIES
 OF POKETONE POLYMER M630A

	Test Method & Conditions		ASTM Values	ISO Values
	ASTM	ISO	SI	SI
Melting temperature	D3418	11357	222°C	222°C
Melt flow index 240°C /2.16kg	D1238	1133	6 g/10 min	5.6mℓ/10min
Mould shrinkage	D955			
	MD, 3mm		2.1%	
	TD, 3mm	-	2.1%	-
	MD, 2mm		1.6%	
	TD, 2mm		1.5%	

 TABLE 6: TYPICAL ELECTRICAL PROPERTIES
 OF POKETONE POLYMER M630A

	Test Method & Conditions	ASTM Values
	ASTM	SI
Dielectric sternghth, Short term	D149	
	3 mm	15 kV/mm
	2 mm	19 kV/mm
Volume resistivity	D257	10 ¹⁴ ohm cm
Surface resistivity	D257	10 ¹⁷ ohm/sq.
Dielectric constant at 60Hz	D150	6.1
Dissipation factor at 60Hz	D150	0.009

 TABLE 9: TYPICAL FLAMMABILITY
 PROPERTIES
 OF POKETONE POLYMER M630A

	Test Method & Conditions	Values
Flame resistance	UL94	HB

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