

Thermal resistant extrusion/injection Molding grade

POKETONE Polymer M640A

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 M640A is a thermal resistant(High HDT) extrusion/injection molding 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 M640A can also withstand short-term exposure to elevated temperatures.

POKETONE Polymer M640A has been designed for demanding extrusion processes. This grade should be considered for liners, pipes and large blow mouldings.

Applications for POKETONE Polymer M640A may be found in the industrial, oil&gas, and automotive markets.

TABLE 1 : TYPICAL PROPERTIES OF POKETONE POLYMER M640A
– Measured at 23 °C

	Test Method & Conditions	Values
	ASTM	SI
Specific gravity	D792	1.24g/cm ³
Melting temperature	D3418	235 °C
Melt flox index 255°C/2.16kg	D1238	7 g/10 min
Tensile strength at yield	D638	67 MPa
Tensile elongation at break	D638	270 %
Flexural strength	D790	600 Kg/cm ²
Flexural modulus	D790	16,300 Kg/cm ²
Notched Charpy impact strength	ISO-179/1e	19 kJ/m ²
Head deflection temperature	ISO 0.45MPa	218 °C
	ISO 1.8MPa	130 °C

TABLE 2 : TYPICAL INJECTION GUIDE OF POKETONE POLYMER M640A

	Nominal Value	Unit
Drying Temperature	80	°C
Drying Time	3.0 to 4.0	hr
Suggested Max Moisture	0.20	%
Rear Temperature	210	°C
Middle Temperature	225 to 230	°C
Front Temperature	235	°C
Nozzle Temperature	245	°C
Processing (Melt) Temp	235 to 245	°C
Mold Temperature	60 to 80	°C
Back Pressure	0.294 to 0.686	MPa
Screw Speed	50 to 100	rpm

Advanced Injection process guide for POKETONE

Nozzle design of Injection machine

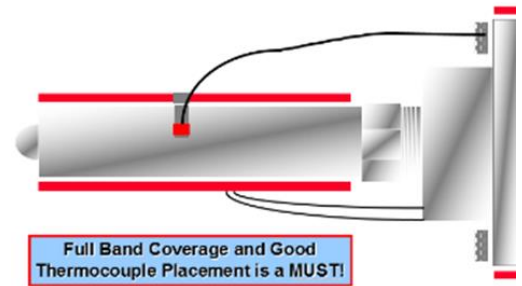
Well-controlled heated nozzles as using enough capacity heater and Separated thermocouple are strongly recommended to prevent freeze-off issue at nozzle due to small sized nozzle orifice or rapid solidification of POKETONE.

Recommended nozzle orifice size

Small sized m/c (200T less): min. \varnothing 3.5mm

Mid sized m/c (200~450T): min. \varnothing 4.0mm

Mid~Large m/c (500T over): min. \varnothing 5.0mm



Purging

Strongly recommend immediate thoroughly purged before or after injection of POKETONE Polymers at processing temperature with purging material such as PCTG, HDPE, GPPS or other commercially available purging compounds.

Shut-down Procedure

At the completion of the molding run at normal barrel temperature (about 230~240°C), all traces of POKETONE should be thoroughly purged at processing temperature from the barrel with purging material such as PCTG, high viscosity-PP, HDPE, GPPS or other commercially available purging compound. (Should be immediately purged after POKETONE molding) After the purge appears clean, the screw is left in the forward position. Barrel and nozzle heats can then be turned off. (Can be purged several times at higher barrel temperature of 270~300°C for better cleaning of POKETONE, then purge again at the normal barrel temperature (about 240 °C) till purging clears.)

Color master-batch, pigment Blending

Color additives dry blending, we recommend check the color guide leaflet in POKETONE homepage contacting us and discussing about it

Hot runner

While most of crystalline engineering thermoplastics polymer including POKETONE Polymer is more heat-sensitive than amorphous polymer, careful treatment in hot runner system is needed.

- The manifold should be well-balanced without dead spot (hold-up) on flow path, and externally heated manifolds are preferred versus internally heated ones, as they allow better streamlining at intersections and generate less shear for the polymer.
- Direct gating on the part surface is not recommended to avoid aesthetic issue on surface such as flow mark, cold slug and other quality issues.
- The hot runner manifold channels should be unrestricted without sharp corners or flow obstructions. Flow restrictions will increase the shear on the material and may result in discoloration or degradation of the melt resin.
- Any hold-up spot in flow path, which will tend to thermally degrade due to excessive residence time, should be avoided, and also needed to be polished in flow path. Excessive residence time in the hot runner manifold should be avoided as it can result in material degradation which can make poor surface issue and easily part broken.
- Separate temperature controllers for each drop and each location on the manifold is essential. The controlling thermocouple for each heat source in the manifold should be close to the melting resin.
- More precisely heat controlling at nozzle tip both in hot runner and cold runner is strongly recommended due to fast solidification at Tc for POKETONE Polymers, as using separated thermocouple and full covered heater (enough capacity of heater) on hot drop or nozzle tip.)

*POKETONE is a Hyosung Corporation Trademark

All products purchased from or supplied by Hyosung Corporation are subject to terms and conditions set out in the contract, order acknowledgement and/or bill of loading. Hyosung warrants only that its product will meet those specifications designated as such herein or in other publications. All other information, including that herein, supplied by Hyosung is considered accurate but is furnished upon the express condition that the customer shall make its own assessment to determine the product's suitability for a particular purpose. Hyosung makes no other warranty, either express or implied, including those regarding such other information, the data upon which the same is based, or the results to be obtained from the use thereof; that any product shall be merchantable or fit for any particular purpose; or that the use of such other information or product will not infringe any patent. Any references in this brochure to "Hyosung" refer to the collectivity of Hyosung engaged in the manufacture and sale of chemical products. Particular contracts are entered into by any such company individually and any warranty, representation or any other commitment provided by Hyosung is the commitment of such individual company only.