POKETONE™
HYOSUNG POLYKETONE

30% Glass-reinforced Enhanced aesthetics injection moulding grade

POKETONE Polymer M33AG6M

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 M33AG6M is a 30 percent short glass-fiber-reinforced injection moulding grade with mechanical properties that classify it as an engineering thermoplastic. This grade shows enhanced aesthetics with a unique balance of toughness and high modulus combined with good creep performance, strength and elevated temperature performance.

This grade exhibits very good processability, good impact resistance, high resilience and good creep performance. POKETONE Polymer M33AG6M can also withstand short-term exposure to elevated temperatures. Moreover this polymer exhibits high resistance to hydrocarbons, solvents, salt solutions, weak acids and weak bases.

POKETONE Polymer M33AG6M is a high-flow, low-viscosity polymer that should be considered for mouldings with long flow paths or thin walls. This grade is very easy to process on standrad injection moulding equipment. Cycle times are generally short and parts show good mould definition. POKETONE Polymer's low moisuture sensitivity means that no conditioning of parts before assembly or use is necessary.

Applications for POKETONE Polymer M33AG6M may be found in the automotive, electrical, electronics, undustrial and consumer applicance markets.

TABLE 1 : TYPICAL PROPERTIES OF POKETONE POLYMER M33AG6M – Measured at 23℃

	Test Method & Conditions	ASTM Values
	ASTM	SI
Specific gravity	D792	1.47g/cm^3
Melting temperature	D3418	222℃
Melt flox index 240℃/2.16kg	D1238	18 g/10 min
Tensile strength at yield	D638	112 MPa
Tensile elongation at break	D638	3.9 %
Flexural strength	D790	173 MPa
Flexural modulus	D790	6,300 MPa
Notched Charpy impact strength	ISO 179e1	9.9 kJ/m^2

TABLE 2 : TYPICAL INJECTION GUIDE OF POKETONE POLYMER M33AG6M

	Nominal Value	Unit
Drying Temperature	80	℃
Drying Time	3.0 to 4.0	hr
Suggested Max Moisture	0.20	%
Rear Temperature	210	℃
Middle Temperature	215 to 220	℃
Front Temperature	230	℃
Nozzle Temperature	240	℃
Processing (Melt) Temp	225 to 240	℃
Mold Temperature	60 to 80	℃
Back Pressure	0.294 to 0.686	MPa

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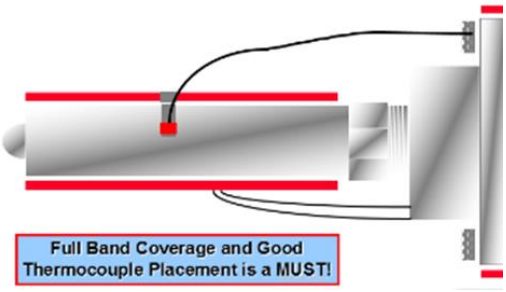
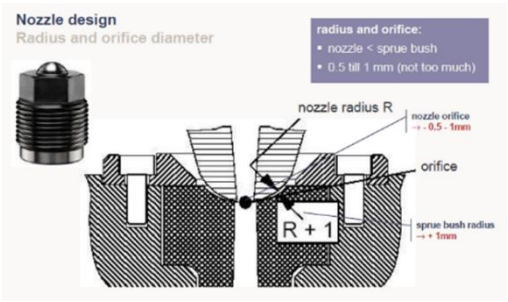
Advanced Injection process guide for POKETONE

Nozzle design of Injection machine



Well-controlled heated nozzles as using enough capacity heater and Separated thermo-couple 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. Ø 3.5mm
Mid sized m/c (200~450T): min. Ø 4.0mm
Mid~Large m/c (500T over): min. Ø 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℃), 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℃ for better cleaning of POKETONE, then purge again at the normal barrel temperature (about 240 ℃) 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.)

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