

## 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 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 M730R can also withstand short-term exposure to elevated temperatures.

POKETONE Polymer M730R has been designed for demanding extrusion processes. 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<br>OF POKETONE POLYMER M730R – Measured at 23 °C |                             |         |                |                      |
|--|-----------------------------|---------|----------------|----------------------|
|  | Test Method<br>& Conditions |         | ASTM<br>Values | ISO<br>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 <sup>2</sup> |
| Unnotched Izod impact strength   | D256                        | 180/U   | N.B.           | N.B.                 |
| Notched Izod impact strength   | D256                        | 180/A   | 138 J/m        | 10 kJ/m <sup>2</sup> |

| TABLE 2: TYPICAL PHYSICAL PROPERTIES<br>OF POKETONE POLYMER M730R – Measured at 23 °C |                             |      |                        |                        |
|---|-----------------------------|------|------------------------|------------------------|
|   | Test Method<br>& Conditions |      | ASTM<br>Values         | ISO<br>Values          |
|   | ASTM                        | ISO  | SI                     | SI                     |
| Specific gravity  | D792                        | 1183 | 1.24 g/cm <sup>3</sup> | 1.24 g/cm <sup>3</sup> |
| Shore D hardness  | D2240                       | 868  | -                      | 78                     |
| 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<br>OF POKETONE POLYMER M730R |                             |                     |                      |               |
|--|-----------------------------|---------------------|----------------------|---------------|
|  | Test Method<br>& Conditions |                     | ASTM<br>Values       | ISO<br>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                     | -                   | 9.4*10 <sup>-5</sup> | -             |
|  | MD                          | -                   | 1.0*10 <sup>-4</sup> | -             |
| Vicat softening point  | D1525 5kg                   | 306/B50 50N         | 190 °C               | 190 °C        |
|  | D648 66psi 264psi           | 75 0.45 MPa 1.8 MPa | 190 °C 90 °C         | 185 °C 80 °C  |

TABLE 4: TYPICAL PROCESS RELATED PROPERTIES OF POKETONE POLYMER M730R

|                                | Test Method & Conditions  |      | ASTM Values  | ISO Values  |
|--------------------------------|---------------------------|------|--------------|-------------|
|                                | ASTM                      | ISO  | SI           | SI          |
| Melt flow index 240 °C /2.16kg | D1238                     | 1133 | 3 g/10 min   | 2.8mℓ/10min |
| Mould shrinkage                | D955<br>MD, 3mm<br>TD,3mm | -    | 2.2%<br>2.1% | -           |

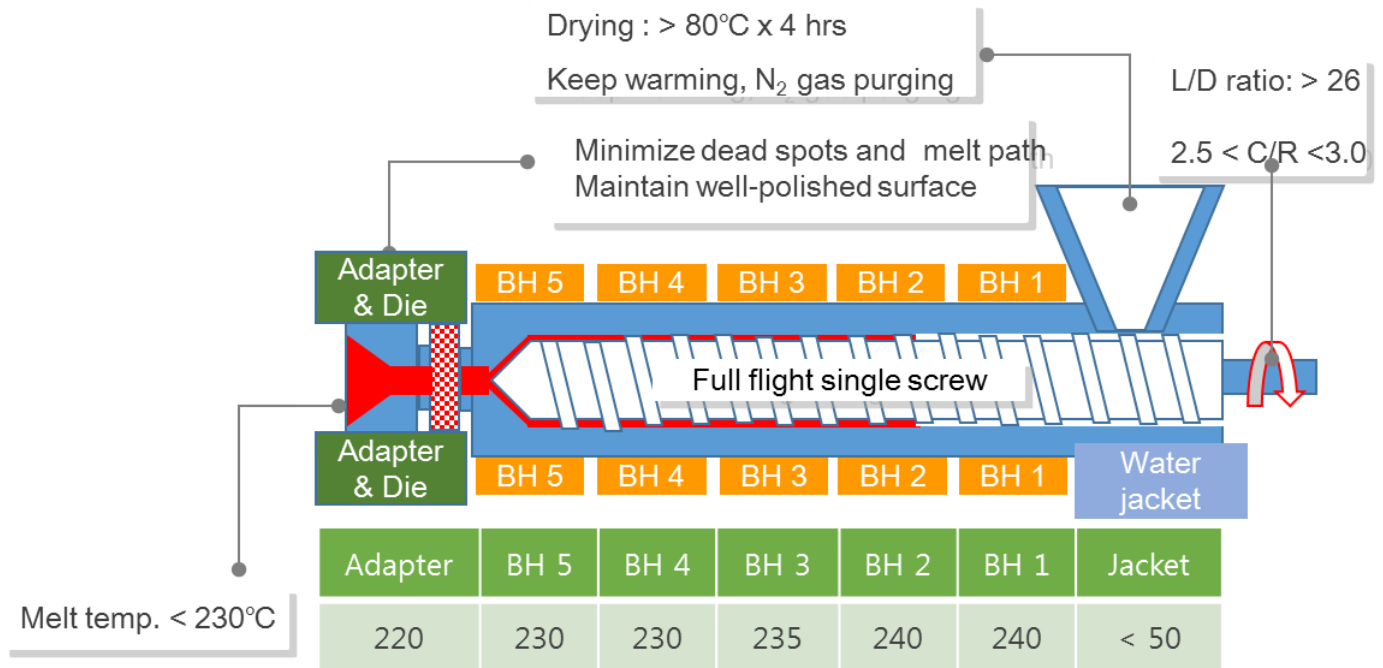
TABLE 5: TYPICAL ELECTRICAL PROPERTIES OF POKETONE POLYMER M330A

|                                 | Test Method & Conditions | ASTM Values              |
|---------------------------------|--------------------------|--------------------------|
|                                 | ASTM                     | SI                       |
| Dielectric strength, Short term | D149<br>3 mm             | 16 kV/mm                 |
|                                 | 2 mm                     | 20 kV/mm                 |
| Volume resistivity              | D257                     | 10 <sup>14</sup> ohm cm  |
| Surface resistivity             | D257                     | 10 <sup>17</sup> ohm/sq. |
| Dielectric constant at 60Hz     | D150                     | 6.2                      |
| Dissipation factor at 60Hz      | D150                     | 0.014                    |

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## POKETONE Extrusion Processing Guide



### Setting Temperature

- Recommended melting temperature: 220-240°C (428-464°F).
- Do not exceed 265°C (509°F). Long residence times at high end of the temperature range can cause thermal degradation & loss of physical properties.
- Keep lower melt temperature in order to enhance the melt quality (< 230°C).

### Start-up and Cleaning Guide

- Start-up with purge polymers (LDPE, PP, HDPE) first and gradually change to POKETONE.
- If you shut down the machine for more than 0.5 hour, please purge out POKETONE using purge polymers.
- Please immediately clean barrels thoroughly after producing POKETONE products. Other commercial purging compounds are also available.

### Drying

- Recommend drying POKETONE pellet at 80°C for about 3~4 hours. POKETONE should be dried by an oven or hopper drier to prevent surface problem like silver streak, drooling or voids.
- If the drying temperature is too high or the drying time is too long, it would be able to bring about discoloration of pellets.

If you need any further technical information, please contact our sales or marketing team who will be happy to assist you with any questions you may have. Feel free to visit our website. [www.poly-ketone.com](http://www.poly-ketone.com)