

# POKETONE® M33AS1A

## Description

Lubricated high-flow injection molding grade

| Physical Properties                    | ASTM     | Value                  | ISO   | Value                  |
|--|----------|------------------------|-------|------------------------|
| Density                                | D792     | 1.24 g/cm <sup>3</sup> | 1183  | 1.24 g/cm <sup>3</sup> |
| Shore D hardness                       | D2240    |                        | 868   | 75                     |
| Hardness Rockwell                      | D785     | 113                    | 2039  |                        |
| Water absorption equilibrium at RH 50% | D570     | 0.6 %                  | 62    | 0.6 %                  |
| Water absorption at Saturation         | D570     | 2.2 %                  | 62    | 2.2 %                  |
| Melt flow index 240°C/2.16kg           | D1238    | 49 g/10 min            | 1133  | 46 ml/10 min           |
|  | D955     |                        | 294-4 |                        |
| Mold Shrinkage                         | MD, 3 mm | 2.0 %                  |       |                        |
|  | TD, 3 mm | 2.0 %                  |       |                        |
|  | MD, 2 mm | 1.6 %                  |       |                        |
|  | TD, 2 mm | 1.6 %                  |       |                        |

| Mechanical Properties            | ASTM  | Value     | ISO     | Value               |
|----------------------------------|-------|-----------|---------|---------------------|
| Tensile strength at yield        | D638  | 60 MPa    | 527-1   | 60 MPa              |
| Tensile modulus                  | D638  | 1,550 MPa | 527-1   | 1,450 MPa           |
| Tensile elongation at yield      | D638  | 21 %      | 527-1   | 21 %                |
| Tensile elongation at break      | D638  | 200 %     | 527-1   | 200 %               |
| Flexural strength                | D790  | 57 MPa    | 178     | 56 MPa              |
| Flexural modulus                 | D790  | 1,500 MPa | 178     | 1,400 MPa           |
| Unnotched Izod impact strength   | D256  |           | 180/1U  |                     |
| Notched Izod impact strength     | D256  | 76 J/m    | 180/1A  | 7 kJ/m <sup>2</sup> |
| Unnotched Charpy impact strength | D6110 |           | 179/1eU |                     |
| Notched Charpy impact strength   | D6110 |           | 179/1eA | 7 kJ/m <sup>2</sup> |
| Falling dart impact strength     |       |           | 6603-2  |                     |

| Thermal Properties                                    | ASTM    | Value                | ISO      | Value  |
|---|---------|----------------------|----------|--------|
| Melting temperature                                   | D3418   | 222 °C               | 11357    | 222 °C |
| Coefficient of linear thermal expansion,<br>25 ~ 55°C | E831    |                      |          |        |
|   | TD      | 9.7×10 <sup>-5</sup> | 11359    |        |
|   | MD      | 1.0×10 <sup>-4</sup> |          |        |
| Vicat softening point                                 | D1525   | 187 °C               | 306/B50  | 187 °C |
|   | 5 kg    |                      | 50 N     |        |
| Heat deflection temperature                           | D648    |                      | 75       |        |
|   | 66 psi  | 190 °C               | 0.45 MPa | 185 °C |
|   | 264 psi | 100 °C               | 1.8 MPa  | 82 °C  |

## Wear & Abrasion Resistance

|   | Pin on Disk         | Thrust Washer                |
|---|---------------------|------------------------------|
| * Condition                                   | 1.3 MPa, 0.06 m/sec | 0.4 MPa, 0.12 m/sec          |
| Dynamic coefficient of Friction against self  |                     | 0.17                         |
| Dynamic coefficient of Friction against steel |                     | 0.27                         |
| Wear factor against self                      |                     | 0.0010 mm <sup>3</sup> /N·km |
| Wear factor against steel                     |                     | 0.010 mm <sup>3</sup> /N·km  |
| Taber abrasion<br>1kg load, CS-17 wheel       | ASTM D1044          |                              |

## Electrical Properties

|                             | Test Method & Condition | Value                              |
|-----------------------------|-------------------------|------------------------------------|
| Dielectric Strength (DS)    | ASTM D149<br>3 mm       | 16 kV/mm                           |
|                             | 2 mm                    | 19 kV/mm                           |
| Volume Resistivity (VR)     | ASTM D257               | 10 <sup>13</sup> Ω·cm              |
| Surface Resistivity (SR)    | ASTM D257               | 10 <sup>17</sup> Ω /m <sup>2</sup> |
| Dielectric constant at 60Hz | ASTM D150               | 6.1                                |
| Dissipation factor at 60Hz  | ASTM D150               | 0.014                              |

## Injection Molding Processing Conditions

|             |                        | Value             |
|-------------|------------------------|-------------------|
| Pre-drying  | Drying temperature     | 80 °C             |
|             | Drying time            | 3 ~ 4 hr          |
|             | Suggested max moisture | 0.20 %            |
| Temperature | Nozzle temperature     | 240 °C            |
|             | Zone 1 temperature     | 230 °C            |
|             | Zone 2 temperature     | 220 °C            |
|             | Zone 3 temperature     | 215 °C            |
|             | Zone 4 temperature     | 210 °C            |
|             | Processing temperature | 225 ~ 240 °C      |
|             | Mold temperature       | 60 ~ 80 °C        |
| Pressure    | Back pressure          | 0.294 ~ 0.686 MPa |
| Speed       | Screw Speed            | 50 ~ 100 rpm      |

\* The data listed here is not for specification warranty, but typical value.

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