



## Geloy\* Resin HRA222

### Europe-Africa-Middle East: COMMERCIAL

GELOY HRA222 is a multi-purpose, chlorine and bromine free flame retardant ASA+PC alloy for injection moulding processes. Typical properties as measured on natural material.

| TYPICAL PROPERTIES <sup>1</sup>        | TYPICAL VALUE | Unit | Standard   |
|----------------------------------------|---------------|------|------------|
| <b>MECHANICAL</b>                      |               |      |            |
| Tensile Stress, yld, Type I, 50 mm/min | 63            | MPa  | ASTM D 638 |
| Tensile Stress, brk, Type I, 50 mm/min | 56            | MPa  | ASTM D 638 |
| Tensile Stress, yld, Type I, 5 mm/min  | 59            | MPa  | ASTM D 638 |
| Tensile Stress, brk, Type I, 5 mm/min  | 66            | MPa  | ASTM D 638 |
| Tensile Strain, yld, Type I, 50 mm/min | 4.3           | %    | ASTM D 638 |
| Tensile Strain, brk, Type I, 50 mm/min | >100          | %    | ASTM D 638 |
| Tensile Strain, yld, Type I, 5 mm/min  | 4.2           | %    | ASTM D 638 |
| Tensile Strain, brk, Type I, 5 mm/min  | >100          | %    | ASTM D 638 |
| Tensile Modulus, 5 mm/min              | 2590          | MPa  | ASTM D 638 |
| Tensile Stress, yield, 5 mm/min        | 62            | MPa  | ISO 527    |
| Tensile Stress, break, 5 mm/min        | 51            | MPa  | ISO 527    |
| Tensile Stress, yield, 50 mm/min       | 60            | MPa  | ISO 527    |
| Tensile Stress, break, 50 mm/min       | 45            | MPa  | ISO 527    |
| Tensile Strain, yield, 5 mm/min        | 4.3           | %    | ISO 527    |
| Tensile Strain, break, 5 mm/min        | >50           | %    | ISO 527    |
| Tensile Strain, yield, 50 mm/min       | 4.4           | %    | ISO 527    |
| Tensile Strain, break, 50 mm/min       | >50           | %    | ISO 527    |
| Tensile Modulus, 1 mm/min              | 2520          | MPa  | ISO 527    |
| Flexural Stress, yield, 2 mm/min       | 93            | MPa  | ISO 178    |
| Flexural Modulus, 2 mm/min             | 2510          | MPa  | ISO 178    |
| <b>IMPACT</b>                          |               |      |            |
| Izod Impact, notched, 23°C             | 385           | J/m  | ASTM D 256 |



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| <b>IMPACT</b>                               |               |                         |                   |
| Izod Impact, notched, 0°C                   | 290           | J/m                     | ASTM D 256        |
| Izod Impact, notched 80*10*4 +23°C          | 17            | kJ/m <sup>2</sup>       | ISO 180/1A        |
| Izod Impact, notched 80*10*4 0°C            | 12            | kJ/m <sup>2</sup>       | ISO 180/1A        |
| Izod Impact, notched 80*10*4 -30°C          | 9             | kJ/m <sup>2</sup>       | ISO 180/1A        |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm  | 15            | kJ/m <sup>2</sup>       | ISO 179/1eA       |
| <b>THERMAL</b>                              |               |                         |                   |
| CTE, -30°C to 80°C, flow                    | 6.9E-05       | 1/°C                    | ISO 11359-2       |
| CTE, -30°C to 80°C, xflow                   | 7.1E-05       | 1/°C                    | ISO 11359-2       |
| CTE, 23°C to 80°C, xflow                    | 7.5E-05       | 1/°C                    | ISO 11359-2       |
| Ball Pressure Test, 75°C +/- 2°C            | PASSES        | -                       | IEC 60695-10-2    |
| Vicat Softening Temp, Rate A/50             | 111           | °C                      | ISO 306           |
| Vicat Softening Temp, Rate B/50             | 102           | °C                      | ISO 306           |
| Vicat Softening Temp, Rate B/120            | 104           | °C                      | ISO 306           |
| HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm     | 99            | °C                      | ISO 75/Be         |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm     | 88            | °C                      | ISO 75/Ae         |
| <b>PHYSICAL</b>                             |               |                         |                   |
| Mold Shrinkage on Tensile Bar, flow (2) (5) | 0.4 - 0.6     | %                       | SABIC Method      |
| Density                                     | 1.17          | g/cm <sup>3</sup>       | ISO 1183          |
| Water Absorption, (23°C/sat)                | 0.6           | %                       | ISO 62            |
| Moisture Absorption (23°C / 50% RH)         | 0.2           | %                       | ISO 62            |
| Melt Volume Rate, MVR at 260°C/2.16 kg      | 13            | cm <sup>3</sup> /10 min | ISO 1133          |
| <b>FLAME CHARACTERISTICS</b>                |               |                         |                   |
| UL Compliant, 94-5VB Rating (3)(4)          | 2.3           | mm                      | UL 94 by SABIC-IP |
| UL Recognized, 94V-2 Flame Class Rating (3) | 0.8           | mm                      | UL 94             |
| UL Recognized, 94V-0 Flame Class Rating (3) | 2             | mm                      | UL 94             |
| UL Recognized, 94-5VB Rating (3)            | 2.3           | mm                      | UL 94             |



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| <b>FLAME CHARACTERISTICS</b>                  |               |      |                |
| Glow Wire Flammability Index 960°C, passes at | 1             | mm   | IEC 60695-2-12 |
| Oxygen Index (LOI)                            | 29            | %    | ISO 4589       |



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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <b>Injection Molding</b>    |               |      |
| Drying Temperature          | 80 - 90       | °C   |
| Drying Time                 | 2 - 4         | hrs  |
| Maximum Moisture Content    | 0.02          | %    |
| Melt Temperature            | 230 - 270     | °C   |
| Nozzle Temperature          | 220 - 260     | °C   |
| Front - Zone 3 Temperature  | 230 - 270     | °C   |
| Middle - Zone 2 Temperature | 220 - 260     | °C   |
| Rear - Zone 1 Temperature   | 200 - 230     | °C   |
| Hopper Temperature          | 60 - 80       | °C   |
| Mold Temperature            | 50 - 70       | °C   |