

Product Data Sheet

Estar™ Copolyester AN004, Natural

Application/Uses

- Compacts
- Cosmetic jar caps
- Cosmetic jars
- Cosmetics/personal care packaging
- Fragrance caps
- Fragrance packaging
- Lipstick containers
- Personal care bottles

Key Attributes

- Easy to extrude, cut, print, and seal
- Effective barrier properties
- Excellent chemical resistance
- Excellent clarity
- Excellent colorability
- Good impact strength
- Good stiffness
- High gloss appearance
- Toughness

Product Description

Estar™ AN004 Copolyester contains a mold release. It has excellent appearance and is nearly water-clear. Its most outstanding features are its chemical resistance and processing capabilities. Exposure to aromatic oils often causes crazing or actual fracture of many polymer resins, but AN004 maintains its physical properties when exposed to these oils, and its appearance is virtually unchanged. Easy to process, it flows readily and fills intricate molds. Its processability coupled with its outstanding chemical resistance makes it well suited for thick-wall applications.

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Typical Properties

| Property ^a | Test ^b Method | Typical Value, Units ^c |
|---|--------------------------|---|
| Specific Gravity | D 792 | 1.2 |
| Mold Shrinkage Parallel to Flow, 3.2-mm (0.125-in.) thickness | D 955 | 0.002-0.006 mm/mm (0.002-0.006 in./in.) |

Mechanical Properties

| | | |
|--|--------|---------------------------------------|
| Tensile Stress @ Yield | D 638 | 47 MPa (6900 psi) |
| Tensile Stress @ Break | D 638 | 51 MPa (7400 psi) |
| Elongation @ Yield | D 638 | 5% |
| Elongation @ Break | D 638 | 320% |
| Flexural Modulus | D 790 | 2000 MPa (2.9 x 10 ⁵ psi) |
| Flexural Yield Strength | D 790 | 69 MPa (10000 psi) |
| Rockwell Hardness, R Scale | D 785 | 103 |
| Izod Impact Strength, Notched | | |
| @ 23°C (73°F) | D 256 | 80 J/m (1.5 ft·lbf/in.) |
| @ -40°C (-40°F) | D 256 | 40 J/m (0.7 ft·lbf/in.) |
| Impact Strength, Unnotched | | |
| @ 23°C (73°F) | D 4812 | NB |
| @ -40°C (-40°F) | D 4812 | NB |
| Impact Resistance (Puncture), Energy @ Max. Load | | |
| @ 23°C (73°F) | D 3763 | 42 J (31 ft·lbf) |
| @ -40°C (-40°F) | D 3763 | 48 J (35 ft·lbf) |

Mechanical Properties (ISO Method)

| | | |
|-------------------------------|---------|-----------------------|
| Tensile Strength @ Yield | ISO 527 | 47 MPa |
| Tensile Strength @ Break | ISO 527 | 46 MPa |
| Elongation @ Yield | ISO 527 | 4% |
| Elongation @ Break | ISO 527 | 200% |
| Tensile Modulus | ISO 527 | 1800 MPa |
| Flexural Modulus | ISO 178 | 1850 MPa |
| Flexural Strength | ISO 178 | 65 MPa |
| Izod Impact Strength, Notched | | |
| @ 23°C | ISO 180 | 7.8 kJ/m ² |
| @ -40°C | ISO 180 | 4.8 kJ/m ² |

Thermal Properties

| | | |
|------------------------|-------|--------------|
| Deflection Temperature | | |
| @ 0.455 MPa (66 psi) | D 648 | 73°C (164°F) |
| @ 1.82 MPa (264 psi) | D 648 | 65°C (149°F) |

Optical Properties

| | | |
|------|--------|------|
| Haze | D 1003 | 0.3% |
|------|--------|------|

| | | |
|-----------------------|--------|-----|
| Regular Transmittance | D 1003 | 89% |
| Total Transmittance | D 1003 | 91% |

Typical Processing Conditions

| | |
|-----------------------------|-----------------------|
| Drying Temperature | 70°C (160°F) |
| Drying Time | 3 hrs |
| Processing Melt Temperature | 230-280°C (450-530°F) |
| Mold Temperature | 15-30°C (60-80°F) |

^a Unless noted otherwise, all tests are run at 23°C (73°F) and 50% relative humidity.

^b Unless noted otherwise, the test method is ASTM.

^c Units are in SI or US customary units.

Comments

Properties reported here are typical of average lots. Eastman makes no representation that the material in any particular shipment will conform exactly to the values given.

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