

# Novodur 440

Acrylonitrile Butadiene Styrene (ABS)

## TECHNICAL DATASHEET

### DESCRIPTION

Novodur® 440 is an injection molding grade of ABS with medium impact, medium flow and high gloss.

### FEATURES

- High gloss
- Medium impact strength
- Easy flowing

### APPLICATIONS

- Home appliances
- Electrical and electronics
- General Injection Molding Application
- Toys, Sport & Leisure

| Property, Test Condition                                      | Standard    | Unit                    | Values |
|---|-------------|-------------------------|--------|
| <b>Rheological Properties</b>                                 |             |                         |        |
| Melt Volume Rate 220 °C/10 kg                                 | ISO 1133    | cm <sup>3</sup> /10 min | 20     |
| <b>Mechanical Properties</b>                                  |             |                         |        |
| Izod Notched Impact Strength, 23 °C                           | ISO 180/A   | kJ/m <sup>2</sup>       | 19     |
| Izod Notched Impact Strength, -20 °C                          | ISO 180/A   | kJ/m <sup>2</sup>       | 14     |
| Izod Notched Impact Strength, -30 °C                          | ISO 180/A   | kJ/m <sup>2</sup>       | 8      |
| Tensile Stress at Break, 23 °C                                | ISO 527     | MPa                     | 34     |
| Tensile Stress at Yield, 23 °C                                | ISO 527     | MPa                     | 48     |
| Tensile Strain at Break, 23 °C                                | ISO 527     | %                       | 20     |
| Tensile Modulus   | ISO 527     | MPa                     | 2500   |
| Flexural Strength, 23 °C                                      | ISO 178     | MPa                     | 71     |
| Flexural Modulus, 23 °C                                       | ISO 178     | MPa                     | 2400   |
| Hardness, Rockwell  | ISO 2039-2  | R scale                 | 112    |
| <b>Thermal Properties</b>                                     |             |                         |        |
| Vicat Softening Temperature, B/2 (120 °C/h, 50N)              | ASTM D 1525 | °C                      | 99     |
| Heat Deflection Temperature A; (annealed 4 h/80 °C; 1.8 MPa)  | ISO 75      | °C                      | 92     |
| Heat Deflection Temperature B; (annealed 4 h/80 °C; 0.45 MPa) | ISO 75      | °C                      | 96     |
| <b>Optical Properties</b>                                     |             |                         |        |

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|--------------------------|-----------|-------------------|-----------|
| Specular Gloss, 60 °     | -         |                   | 90        |
| <b>Other Properties</b>  |           |                   |           |
| Density                  | ISO 1183  | kg/m <sup>3</sup> | 1050      |
| <b>Processing</b>        |           |                   |           |
| Linear Mold Shrinkage    | ISO 294-4 | %                 | 0.4 - 0.6 |

Typical values for uncolored products

## SUPPLY FORM

Novodur is delivered in the form of cylindrical or cubical pellets. The bulk density of the pellets is from 0.55 to 0.65 g/cm<sup>3</sup>. Values may differ for special grades. Standard Packaging unit: 25 kg paper bag. In addition, delivery in larger units of up to 1000 kg (IBC = Intermediate Bulk Container) or silo trucks can be arranged. In dry areas with normal temperature control, Novodur pellets can be stored for relatively long periods of time without any change in mechanical properties. With unstable colors, however, storage over a number of years can give rise to some change in color. Under poor storage conditions, Novodur absorbs moisture, but this can be removed by drying.

## PRODUCT SAFETY

No adverse effects on the health of processing personnel have been observed where the products are correctly processed and the production areas are suitably ventilated. For styrene, alpha-methylstyrene, acrylonitrile, and butyl acrylate the maximum allowable workplace concentrations must be observed according to the pertaining national regulations. In Germany, the following limit values are valid TRGS 900 (Aug. 2004): styrene, MAK-value: 20 ml/m<sup>3</sup>; alpha-methylstyrene, MAK-value: 100 ml/m<sup>3</sup>; acrylonitrile, TRK-value: 3 ml/m<sup>3</sup>, and butyl acrylate, MAK-value: 2 ml/m<sup>3</sup> (1.7.2004). According to EU directive 67/548/EEC, Annex I (2001), acrylonitrile is classified as carcinogenic, category 2 ('substances which should be regarded as if they are carcinogenic to man'). Experience has shown that when Novodur® is processed correctly with appropriate ventilation, the levels are far below the limits mentioned above. Inhalation of the vapors of degradation products which can arise on severe overheating of the materials or during purging out should be avoided. Further information can be found in the Novodur safety data sheets.

## DISCLAIMER

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