



## LNP™ THERMOTUF™ Compound VF004S

### Americas: COMMERCIAL

Also known as: LNP™ THERMOTUF™ Compound VF-1004 HS

Product reorder name: VF004S

LNP THERMOTUF™ VF004S is a compound based on Super Tough Nylon resin containing 20% Glass Fiber. Added features of this material include: Heat Stabilized.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                | Standard    |
|----------------------------------------------|---------------|---------------------|-------------|
| <b>MECHANICAL</b>                            |               |                     |             |
| Tensile Stress, brk, Type I, 5 mm/min        | 1040          | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Strain, yld, Type I, 5 mm/min        | 2.8           | %                   | ASTM D 638  |
| Tensile Strain, brk, Type I, 5 mm/min        | 3             | %                   | ASTM D 638  |
| Tensile Modulus, 50 mm/min                   | 66000         | kgf/cm <sup>2</sup> | ASTM D 638  |
| Flexural Stress, brk, 1.3 mm/min, 50 mm span | 1590          | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 57300         | kgf/cm <sup>2</sup> | ASTM D 790  |
| Tensile Stress, break, 5 mm/min              | 97            | MPa                 | ISO 527     |
| Tensile Strain, yield, 5 mm/min              | 2.6           | %                   | ISO 527     |
| Tensile Strain, break, 5 mm/min              | 3             | %                   | ISO 527     |
| Tensile Modulus, 1 mm/min                    | 6210          | MPa                 | ISO 527     |
| Flexural Modulus, 2 mm/min                   | 5080          | MPa                 | ISO 178     |
| <b>IMPACT</b>                                |               |                     |             |
| Izod Impact, unnotched, 23°C                 | 71            | cm-kgf/cm           | ASTM D 4812 |
| Izod Impact, notched, 23°C                   | 13            | cm-kgf/cm           | ASTM D 256  |
| Multiaxial Impact                            | 62            | cm-kgf              | ISO 6603    |
| Instrumented Impact Total Energy, 23°C       | 225           | cm-kgf              | ASTM D 3763 |
| Izod Impact, unnotched 80*10*4 +23°C         | 42            | kJ/m <sup>2</sup>   | ISO 180/1U  |
| Izod Impact, notched 80*10*4 +23°C           | 12            | kJ/m <sup>2</sup>   | ISO 180/1A  |
| <b>THERMAL</b>                               |               |                     |             |
| HDT, 0.45 MPa, 3.2 mm, unannealed            | 256           | °C                  | ASTM D 648  |
| HDT, 1.82 MPa, 3.2mm, unannealed             | 240           | °C                  | ASTM D 648  |
| CTE, -30°C to 30°C, flow                     | 2.99E+01      | 1/°C                | ASTM D 696  |
| CTE, -30°C to 30°C, xflow                    | 8.12E+01      | 1/°C                | ASTM D 696  |



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| TYPICAL PROPERTIES <sup>1</sup>        | TYPICAL VALUE | Unit              | Standard   |
|----------------------------------------|---------------|-------------------|------------|
| <b>THERMAL</b>                         |               |                   |            |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm | 235           | °C                | ISO 75/Bf  |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm  | 235           | °C                | ISO 75/Af  |
| <b>PHYSICAL</b>                        |               |                   |            |
| Density                                | 1.23          | g/cm <sup>3</sup> | ASTM D 792 |
| Moisture Absorption, 50% RH, 24 hrs    | 0.74          | %                 | ASTM D 570 |
| Mold Shrinkage, flow, 24 hrs (5)       | 0.4 - 0.6     | %                 | ASTM D 955 |
| Mold Shrinkage, xflow, 24 hrs (5)      | 0.8 - 1       | %                 | ASTM D 955 |
| Density                                | 1.23          | g/cm <sup>3</sup> | ISO 1183   |
| Moisture Absorption (23°C / 50% RH)    | 1.1           | %                 | ISO 62     |



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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <b>Injection Molding</b>    |               |      |
| Drying Temperature          | 80            | °C   |
| Drying Time                 | 4             | hrs  |
| Maximum Moisture Content    | 0.15          | %    |
| Melt Temperature            | 280 - 295     | °C   |
| Front - Zone 3 Temperature  | 295 - 305     | °C   |
| Middle - Zone 2 Temperature | 275 - 290     | °C   |
| Rear - Zone 1 Temperature   | 260 - 270     | °C   |
| Mold Temperature            | 95 - 110      | °C   |
| Back Pressure               | 0.2 - 0.3     | MPa  |
| Screw Speed                 | 30 - 60       | rpm  |