

# RESOLE FM 4029F-1

Phenolic

Vyncolit N.V.

## Message:

FM 4029F-1 is a fiberglass and mineral reinforced phenolic molding compound, with excellent dimensional stability and good strength at elevated temperatures. Automatic performing is enhanced by the high powder density.

| General Information                           |                                    |                   |             |
|---|------------------------------------|-------------------|-------------|
| Filler / Reinforcement                        | Glass \Mineral                     |                   |             |
| Features                                      | Ultra high toughness               |                   |             |
|   | Good dimensional stability         |                   |             |
|   | Low smoke                          |                   |             |
|   | High strength                      |                   |             |
|   | Antibacterial property             |                   |             |
|   | Solvent resistance                 |                   |             |
|   | Good creep resistance              |                   |             |
|   | alkali resistance                  |                   |             |
|   | acid resistance                    |                   |             |
| Uses  | Membrane key switch                |                   |             |
|   | Pump parts                         |                   |             |
|   | Gear                               |                   |             |
|   | Electrical/Electronic Applications |                   |             |
|   | Electrical appliances              |                   |             |
|   | Power/other tools                  |                   |             |
|   | Connector                          |                   |             |
|   | Application in Automobile Field    |                   |             |
|   | Shell                              |                   |             |
| Appearance                                    | Turquoise                          |                   |             |
|   | Blue                               |                   |             |
| Forms   | Particles                          |                   |             |
| Processing Method                             | Resin transfer molding             |                   |             |
|   | Compression molding                |                   |             |
|   | Injection molding                  |                   |             |
| Physical                                      | Nominal Value                      | Unit              | Test Method |
| Specific Gravity                              | 2.13                               | g/cm <sup>3</sup> | ASTM D792   |
| Molding Shrinkage - Flow (Compression Molded) | 0.10                               | %                 | ASTM D955   |

|   |               |          |             |
|---|---------------|----------|-------------|
| Water Absorption (23°C, 24 hr)  | 0.10          | %        | ASTM D570   |
| Hardness  | Nominal Value | Unit     | Test Method |
| Rockwell Hardness (E-Scale)   | 95            |          | ASTM D785   |
| Mechanical  | Nominal Value | Unit     | Test Method |
| Tensile Strength (Break, Compression Molded)                                | 60.0          | MPa      | ASTM D638   |
| Flexural Modulus (Compression Molded)                                       | 20000         | MPa      | ASTM D790   |
| Flexural Strength (Break)   | 110           | MPa      | ASTM D790   |
| Compressive Strength  | 210           | MPa      | ASTM D695   |
| Impact  | Nominal Value | Unit     | Test Method |
| Notched Izod Impact (Compression Molded)                                    | 22            | J/m      | ASTM D256   |
| Thermal   | Nominal Value | Unit     | Test Method |
| Deflection Temperature Under Load (1.8 MPa, Unannealed, Compression Molded) | 243           | °C       | ASTM D648   |
| CLTE - Flow   | 1.3E-5        | cm/cm/°C | ASTM E831   |
| Flammability  | Nominal Value |          | Test Method |
| Flame Rating  |               |          | UL 94       |
| 1.59 mm   | V-0           |          | UL 94       |
| 3.18 mm   | V-0           |          | UL 94       |
| Injection   | Nominal Value | Unit     |             |
| Rear Temperature  | 60.0          | °C       |             |
| Middle Temperature  | 73.9          | °C       |             |
| Nozzle Temperature  | 87.8          | °C       |             |
| Processing (Melt) Temp  | 98.9 - 116    | °C       |             |
| Mold Temperature  | 166 - 188     | °C       |             |
| Injection Pressure  | 100 - 248     | MPa      |             |
| Holding Pressure  | 30.0 - 89.6   | MPa      |             |
| Back Pressure   | 4.83 - 15.2   | MPa      |             |
| Injection instructions  |               |          |             |

Plastication: 50rpmInjection Time: 2 to 8 secHold Time: 1 to 5 sec/mmCure Time, 0.125 in: 5 to 12 sec/mmAll ASTM properties listed were tested in accordance with ASTM D5948.Powder Density, ASTM D1895: 1 g/cm<sup>3</sup>Water Absorption, ASTM D570, 48 hrs, 50°C: 0.15%DTUL @264psi - Unannealed, ASTM D648, Post Baked, Compression Molded: >282°C

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