

# IROGRAN® A 92 E 4670

Thermoplastic Polyurethane Elastomer (Polyester)

Huntsman Corporation

Message:

IROGRAN A 92 E 4670 is a thermoplastic polyester polyurethane for melt calendering.  
IROGRAN is part of the HUNTSMAN technical extrusion/injection molding product range and offers a specially designed, flexible material with a broad processing window.

PERFORMANCE FEATURES

- High oil resistance
- High production rate
- Good melt flow
- Easy coloring
- Complies with FDA CFR 175.105 / 177.2600

APPLICATION

- Cable jacketing
- Tubing
- Technical extrusion

| General Information                         |                      |           |             |
|---------------------------------------------|----------------------|-----------|-------------|
| Features                                    | Good Colorability    |           |             |
|                                             | Good Flexibility     |           |             |
|                                             | Good Flow            |           |             |
|                                             | Oil Resistant        |           |             |
| Uses                                        | Cable Jacketing      |           |             |
|                                             | Tubing               |           |             |
| Agency Ratings                              | FDA 21 CFR 175.105   |           |             |
|                                             | FDA 21 CFR 177.2600  |           |             |
| RoHS Compliance                             | Contact Manufacturer |           |             |
| Forms                                       | Pellets              |           |             |
| Processing Method                           | Calendering          |           |             |
|                                             | Extrusion            |           |             |
|                                             | Injection Molding    |           |             |
| Physical                                    | Nominal Value        | Unit      | Test Method |
| Specific Gravity <sup>1</sup>               |                      |           |             |
| --                                          | 1.21                 | g/cm³     | ASTM D792   |
| --                                          | 1.20                 | g/cm³     | DIN 53479   |
| Melt Volume-Flow Rate (MVR) (190°C/10.0 kg) | 60.0                 | cm³/10min |             |
| Molding Shrinkage - Flow (Injection Molded) | 0.40                 | %         | ASTM D955   |
| Hardness                                    | Nominal Value        | Unit      | Test Method |

| Durometer Hardness              |                  |                 | ASTM D2240, DIN 53505 |
|---------------------------------|------------------|-----------------|-----------------------|
| Shore A, Injection Molded       | 90               |                 |                       |
| Shore D, Injection Molded       | 38               |                 |                       |
| Mechanical                      | Nominal Value    | Unit            | Test Method           |
| Abrasion <sup>2</sup>           | 20               | mm <sup>3</sup> | DIN 53516             |
| TMA <sup>3</sup>                |                  |                 | Internal Method       |
| High                            | 170              | °C              |                       |
| Low                             | 125              | °C              |                       |
| Elastomers                      | Nominal Value    | Unit            | Test Method           |
| Tensile Stress <sup>4</sup>     |                  |                 |                       |
| 100% Strain, 0.635 mm           | 4.69             | MPa             | ASTM D412             |
| 100% Strain, 0.635 mm           | 8.50             | MPa             | DIN 53504             |
| 300% Strain, 0.635 mm           | 10.3             | MPa             | ASTM D412             |
| 300% Strain, 0.635 mm           | 16.0             | MPa             | DIN 53504             |
| Tensile Strength <sup>5</sup>   |                  |                 |                       |
| Break, 0.635 mm                 | 37.9             | MPa             | ASTM D412             |
| Break, 0.635 mm                 | 36.0             | MPa             | DIN 53504             |
| Tensile Elongation <sup>6</sup> |                  |                 |                       |
| Break, 0.635 mm                 | 570              | %               | ASTM D412             |
| Break, 0.635 mm                 | 600              | %               | DIN 53504             |
| Tear Strength <sup>7</sup>      |                  |                 |                       |
| 0.635 mm                        | 80.6             | kN/m            | ASTM D624             |
| 0.635 mm                        | 83               | kN/m            | DIN 53515             |
| Compression Set <sup>8</sup>    |                  |                 |                       |
| 23°C, 24 hr                     | 25               | %               | ASTM D395, DIN 53517  |
| 70°C, 24 hr                     | 40               | %               | ASTM D395             |
| 70°C, 24 hr                     | 0.40             | %               | DIN 53517             |
| Bayshore Resilience             | 1                | %               |                       |
| Extrusion                       | Nominal Value    | Unit            |                       |
| Drying Temperature              | 85.0 to 90.0     | °C              |                       |
| Drying Time                     | 3.0              | hr              |                       |
| Hopper Temperature              | 170              | °C              |                       |
| Cylinder Zone 1 Temp.           | 175              | °C              |                       |
| Cylinder Zone 2 Temp.           | 175              | °C              |                       |
| Cylinder Zone 3 Temp.           | 175              | °C              |                       |
| Cylinder Zone 4 Temp.           | 175              | °C              |                       |
| Cylinder Zone 5 Temp.           | 175              | °C              |                       |
| Adapter Temperature             | 180              | °C              |                       |
| Die Temperature                 | 180              | °C              |                       |
| NOTE                            |                  |                 |                       |
| 1.                              | Injection Molded |                 |                       |
| 2.                              | Injection Molded |                 |                       |

|    |                  |
|----|------------------|
| 3. | Injection Molded |
| 4. | Extruded Film    |
| 5. | Extruded Film    |
| 6. | Extruded Film    |
| 7. | Extruded Film    |
| 8. | Injection Molded |

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### Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

