

# Styrolution PS 2710

High Impact Polystyrene (HIPS)

## TECHNICAL DATASHEET

### DESCRIPTION

Styrolution PS 2710 is a high impact grade of polystyrene with improved stress crack resistance, developed for extrusion and thermoforming applications, especially for the refrigerator industry.

### FEATURES

- Improved Environmental stress cracking resistance (ESCR) HIPS
- Balanced mechanical properties

### APPLICATIONS

- Refrigerator liners for refrigerator inserts and door paneling
- Packaging applications for oily food and dairy products.
- Sheet extrusion application

| Property, Test Condition                            | Standard    | Unit                    | Values |
|-----------------------------------------------------|-------------|-------------------------|--------|
| <b>Rheological Properties</b>                       |             |                         |        |
| Melt Volume Rate, 200 °C/5 kg                       | ISO 1133    | cm <sup>3</sup> /10 min | 5      |
| <b>Mechanical Properties</b>                        |             |                         |        |
| Izod Notched Impact Strength, 23 °C                 | ISO 180/A   | kJ/m <sup>2</sup>       | 12     |
| Izod Notched Impact Strength, -30 °C                | ISO 180/A   | kJ/m <sup>2</sup>       | 7      |
| Charpy Notched Impact Strength, 23° C               | ISO 179/1eA | kJ/m <sup>2</sup>       | 10     |
| Charpy Notched Impact Strength, -30 °C              | ISO 179/1eA | kJ/m <sup>2</sup>       | 7      |
| Charpy Unnotched, -30 °C                            | ISO 179/1eU | kJ/m <sup>2</sup>       | 120    |
| Tensile Stress at Yield, 23 °C                      | ISO 527     | MPa                     | 22     |
| Tensile Strain at Yield, 23 °C                      | ISO 527     | %                       | 1.8    |
| Tensile Strain at Break, 23 °C                      | ISO 527     | %                       | 50     |
| Tensile Modulus                                     | ISO 527     | MPa                     | 1600   |
| Elongation at Break (MD)                            | ISO 527     | %                       | 50     |
| Flexural Strength, 23 °C                            | ISO 178     | MPa                     | 32     |
| Flexural Modulus, 23 °C                             | ISO 178     | MPa                     | 1500   |
| Hardness, Ball Indentation                          | ISO 2039-1  | MPa                     | 65     |
| <b>Thermal Properties</b>                           |             |                         |        |
| Vicat Softening Temperature VST/B/50 (50N, 50 °C/h) | ISO 306     | °C                      | 92     |

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| Property, Test Condition                                      | Standard      | Unit                 | Values            |
|---------------------------------------------------------------|---------------|----------------------|-------------------|
| Vicat Softening Temperature, VST/A/50 (10N, 50 °C/h)          | ISO 306       | °C                   | 97                |
| Heat Deflection Temperature A; (annealed 4 h/80 °C; 1.8 MPa)  | ISO 75        | °C                   | 82                |
| Heat Deflection Temperature B; (annealed 4 h/80 °C; 0.45 MPa) | ISO 75        | °C                   | 90                |
| Coefficient of Linear Thermal Expansion                       | ISO 11359     | 10 <sup>-6</sup> /°C | 100               |
| Thermal Conductivity                                          | DIN 52612-1   | W/(m K)              | 0.17              |
| <b>Electrical Properties</b>                                  |               |                      |                   |
| Dielectric Constant (100 Hz)                                  | IEC 62631-2-1 | -                    | 2.5               |
| Dissipation Factor (100 Hz)                                   | IEC 62631-2-1 | 10 <sup>-4</sup>     | 4                 |
| Dissipation Factor (1 MHz)                                    | IEC 62631-2-1 | 10 <sup>-4</sup>     | 4                 |
| Dielectric Strength, Short Time, 1.5 mm                       | IEC 60243-1   | kV/mm                | 155               |
| Relative Permittivity (100 Hz)                                | IEC 62631-2-1 | -                    | 2.5               |
| Relative Permittivity (1 MHz)                                 | IEC 62631-2-1 | -                    | 2.5               |
| Volume Resistivity                                            | IEC 62631-3-1 | Ohm*m                | >10 <sup>16</sup> |
| Surface Resistivity                                           | IEC 62631-3-1 | Ohm                  | >10 <sup>14</sup> |
| <b>Optical Properties</b>                                     |               |                      |                   |
| Specular Gloss, 60 °                                          | -             |                      | 20                |
| <b>Other Properties</b>                                       |               |                      |                   |
| Density                                                       | ISO 1183      | kg/m <sup>3</sup>    | 1050              |
| <b>Processing</b>                                             |               |                      |                   |
| Linear Mold Shrinkage                                         | ISO 294-4     | %                    | 0.4 - 0.7         |
| Melt Temperature Range                                        | ISO 294       | °C                   | 180 - 260         |
| Mold Temperature Range                                        | ISO 294       | °C                   | 10 - 60           |
| Injection Velocity                                            | ISO 294       | mm/s                 | 200               |

Typical values for uncolored products

Please note that all processing data stated are only indicative and may vary depending on the individual processing complexities.

Please consult our local sales or technical representatives for details.

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### SUPPLY FORM

Styrolution PS 2710 is supplied as cylindrical shaped granules. It has to be kept in its original containers in a dry, cool place. Avoid direct exposure to sunlight. Styrolution PS 2710 can also be stored in silos.

### PROCESSING

Although Styrolution PS 2710 can be processed by any method applicable to polystyrene based plastics, it is most suitable for extrusion /thermoforming.

### PRODUCT SAFETY

During processing of Styrolution PS resins small quantities of styrene monomer may be released into the atmosphere. At styrene vapor concentrations below 20 ppm no negative effects on health are expected. In our experience, the concentration of styrene does not exceed 1 ppm in well ventilated workplaces - that is where five to eight air changes per hour are made. Further information can be found in our Styrolution PS safety data sheets.

### DISCLAIMER

The above mentioned data are accurate to the best of our knowledge. They are based upon reputable labs and industry standard testing methods. These are only typical values and actual product specification may deviate at industrial range. Therefore, no data in this technical data sheet shall constitute a warranty or representation regarding product features, fitness of the product for a specific purpose or application or its processability. INEOS Styrolution disclaims all liability in connection therewith. The customer himself is required to verify whether or not the product is suitable for the further processing or application intended and whether or not the product complies with the relevant statutory requirements. Unless explicitly and individually otherwise agreed in writing, INEOS Styrolution's sole and exclusive liability with respect to its products is set forth in INEOS Styrolution's General Terms and Conditions for Sale.