

## PLEXIGLAS® Resist zk6BR

PMMA-I

Röhm GmbH

### Productprofil:

PLEXIGLAS® Resist zk6BR is an amorphous, impact-modified thermoplastic molding compound (PMMA-I).

Typical properties of impact-modified PLEXIGLAS® molding compounds are:

- high weather resistance
- excellent transmission and clarity
- brilliant appearance
- the pleasant feel and sound of the moldings.

PLEXIGLAS® Resist zk6BR is characterized by the following special properties:

- maximum break resistance and impact strength,
- improved resistance to stress cracking
- balanced property profile
- AMECA listing.

### Application:

Used for extruding and coextruding sheets and profiles as well as for injection molding

### Example:

extruded and injection-molded luminaire covers, extruded hollow profiles, writing utensils such as stencils and fountain pens, appliance housings, coextruded profiles for window frames, gutters, downspouts, and housewares such as cutlery handles, bowls, cookie jars.

### Processing:

PLEXIGLAS® Resist zk6BR can be processed on machines with 3-zone general purpose screws for engineering thermoplastics.

### Physical Form / Packaging:

PLEXIGLAS® Resist zk molding compounds are supplied as pellets of uniform size in 25kg polyethylene bags or in 500kg boxes with PE lining; other packaging on request.

| Rheological properties     | Value | Unit                   | Test Standard |
|----------------------------|-------|------------------------|---------------|
| <b>ISO Data</b>            |       |                        |               |
| Melt volume-flow rate, MVR | 1.6   | cm <sup>3</sup> /10min | ISO 1133      |
| Temperature                | 230   | °C                     | -             |
| Load                       | 3.8   | kg                     | -             |

| Mechanical Properties           | Value | Unit              | Test Standard |
|---------------------------------|-------|-------------------|---------------|
| <b>ISO Data</b>                 |       |                   |               |
| Tensile Modulus                 | 1800  | MPa               | ISO 527       |
| Yield stress                    | 45    | MPa               | ISO 527       |
| Yield strain                    | 5     | %                 | ISO 527       |
| Nominal strain at break         | >50   | %                 | ISO 527       |
| Tensile Creep Modulus, 1h       | 1400  | MPa               | ISO 899-1     |
| Tensile Creep Modulus, 1000h    | 900   | MPa               | ISO 899-1     |
| Impact Strength (Charpy), +23°C | 80    | kJ/m <sup>2</sup> | ISO 179/1eU   |

| Thermal Properties                        | Value | Unit | Test Standard  |
|-------------------------------------------|-------|------|----------------|
| <b>ISO Data</b>                           |       |      |                |
| Glass Transition Temperature (10°C/min)   | 109   | °C   | ISO 11357-1/-2 |
| Temp. of deflection under load (1.80 MPa) | 88    | °C   | ISO 75-1/-2    |
| Temp. of deflection under load (0.45 MPa) | 93    | °C   | ISO 75-1/-2    |

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|                                             |      |       |                |
|---------------------------------------------|------|-------|----------------|
| Vicat softening temperature, 50°C/h 50N     | 95   | °C    | ISO 306        |
| Coeff. of Linear Therm. Expansion, parallel | 110  | E-6/K | ISO 11359-1/-2 |
| Burning Behav. at 1.5 mm Nom. Thickn.       | HB   | class | UL 94          |
| Thickness tested                            | 1.6  | mm    | -              |
| UL recognition                              | yes  | -     | -              |
| Oxygen index                                | 17.5 | %     | ISO 4589-1/-2  |

| Electrical Properties        | Value | Unit  | Test Standard |
|------------------------------|-------|-------|---------------|
| <b>ISO Data</b>              |       |       |               |
| Relative permittivity, 100Hz | 3.7   | -     | IEC 62631-2-1 |
| Relative permittivity, 1MHz  | 2.9   | -     | IEC 62631-2-1 |
| Dissipation Factor, 100Hz    | 500   | E-4   | IEC 62631-2-1 |
| Dissipation Factor, 1MHz     | 300   | E-4   | IEC 62631-2-1 |
| Volume Resistivity           | >1E13 | Ohm*m | IEC 62631-3-1 |
| Surface Resistivity          | 1E13  | Ohm   | IEC 62631-3-2 |
| Comparative tracking index   | 600   | -     | IEC 60112     |

| Other Properties    | Value | Unit  | Test Standard  |
|---------------------|-------|-------|----------------|
| <b>ISO Data</b>     |       |       |                |
| Water Absorption    | 1.9   | %     | Sim. to ISO 62 |
| Humidity absorption | 0.5   | %     | Sim. to ISO 62 |
| Density             | 1160  | kg/m³ | ISO 1183       |

| Material Specific Properties | Value | Unit | Test Standard   |
|------------------------------|-------|------|-----------------|
| <b>ISO Data</b>              |       |      |                 |
| Luminous transmittance       | 91    | %    | ISO 13468-1, -2 |

| Rheological calculation properties | Value   | Unit     | Test Standard |
|------------------------------------|---------|----------|---------------|
| <b>ISO Data</b>                    |         |          |               |
| Density of melt                    | 1040    | kg/m³    | -             |
| Thermal Conductivity of Melt       | 0.19    | W/(m K)  | -             |
| Spec. heat capacity of melt        | 2440    | J/(kg K) | -             |
| Eff. thermal diffusivity           | 7.49E-8 | m²/s     | -             |
| Ejection temperature               | 75      | °C       | -             |

| Test specimen production              | Value | Unit | Test Standard |
|---------------------------------------|-------|------|---------------|
| <b>ISO Data</b>                       |       |      |               |
| Injection Molding, melt temperature   | 255   | °C   | ISO 294       |
| Injection Molding, mold temperature   | 50    | °C   | ISO 294       |
| Injection Molding, injection velocity | 195   | mm/s | ISO 294       |

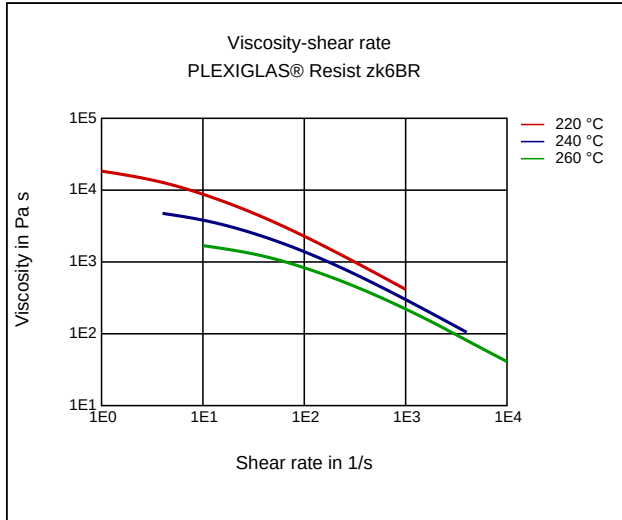
| Processing Recommendation Injection Molding | Value     | Unit | Test Standard |
|---------------------------------------------|-----------|------|---------------|
| Pre-drying - Temperature                    | 85        | °C   | -             |
| Pre-drying - Time                           | 2 - 3     | h    | -             |
| Melt temperature                            | 220 - 260 | °C   | -             |
| Mold temperature                            | 50 - 70   | °C   | -             |

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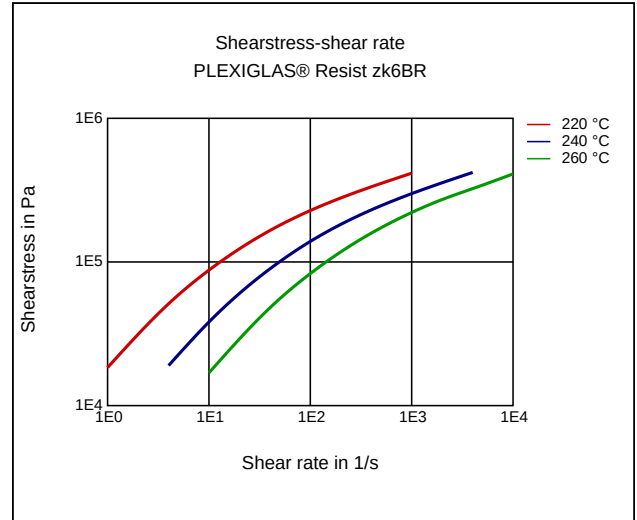
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## Diagrams

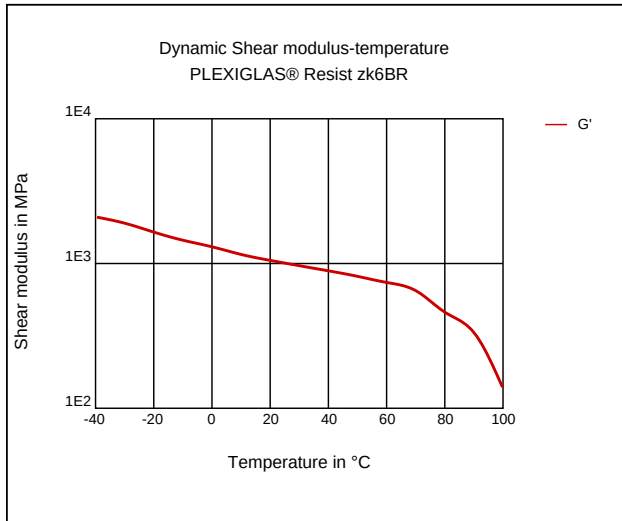
### Viscosity-shear rate



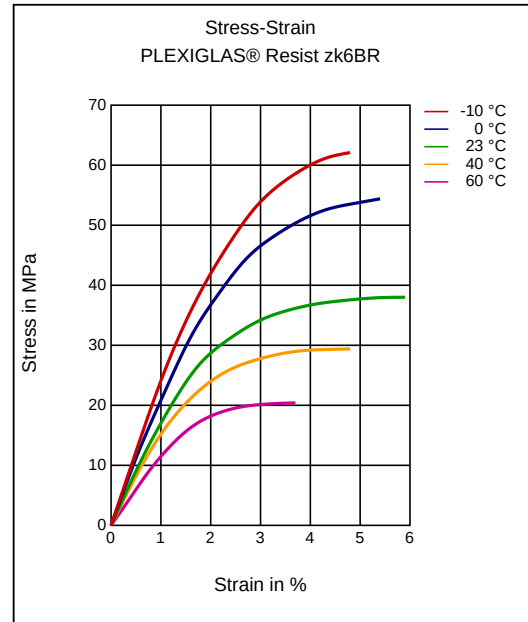
### Shearstress-shear rate



### Dynamic Shear modulus-temperature



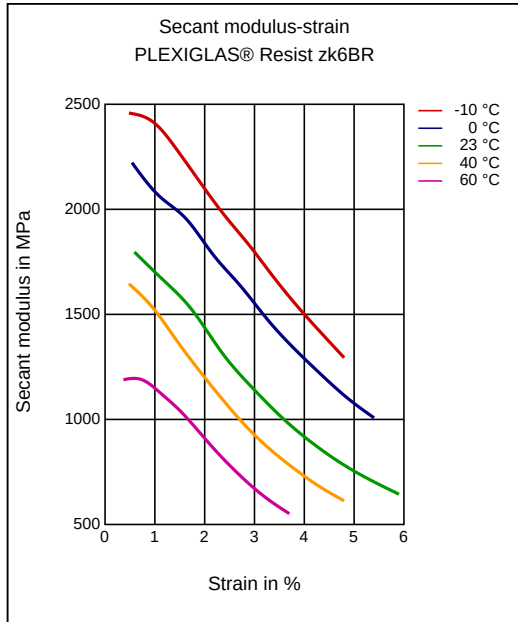
### Stress-strain



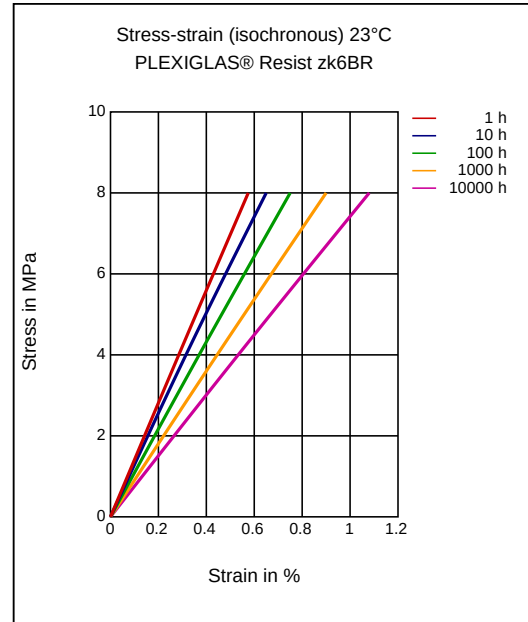
**PLEXIGLAS® Resist zk6BR**  
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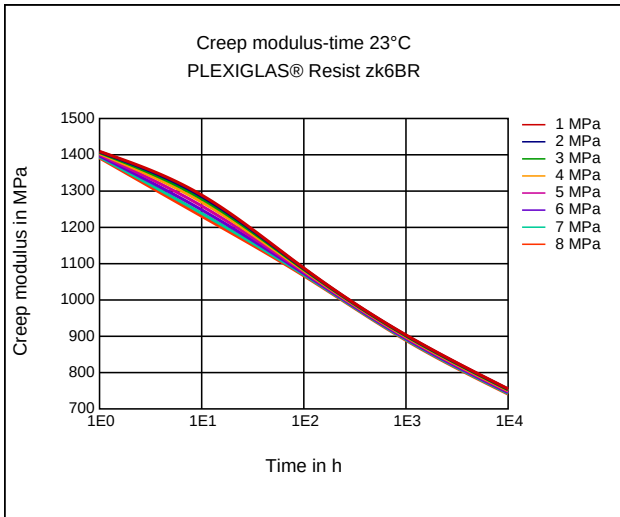
**Secant modulus-strain**



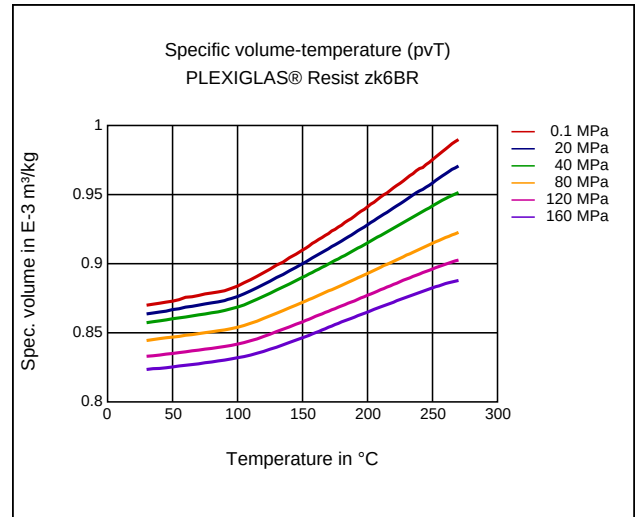
**Stress-strain (isochronous) 23°C**



**Creep modulus-time 23°C**



**Specific volume-temperature (pvT)**

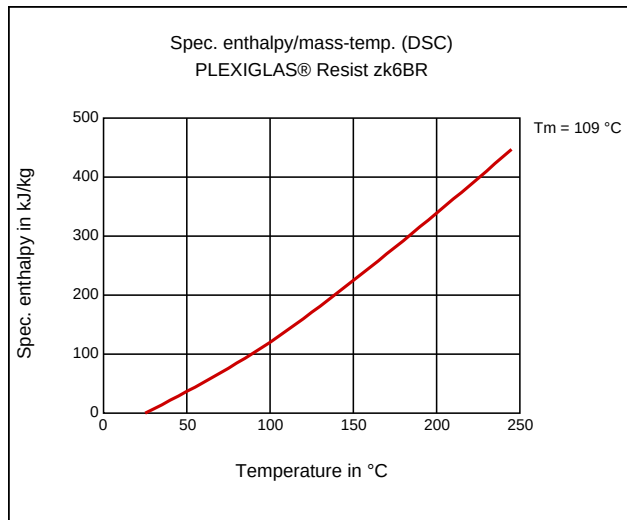


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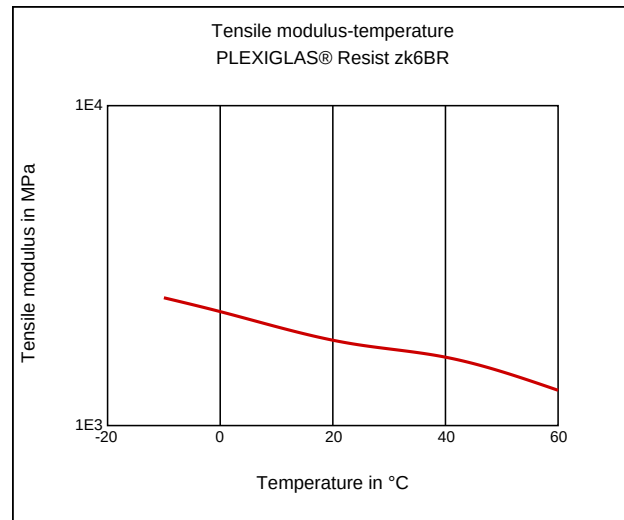
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### Spec. enthalpy/mass-temp. (DSC)



### Tensile Modulus-Temperature



### Characteristics

#### Processing

Injection Molding, Film Extrusion, Profile Extrusion, Sheet Extrusion, Other Extrusion, Thermoforming

#### Delivery form

Pellets

#### Additives

Release agent

#### Special Characteristics

Impact modified, Light stabilized or stable to light, UV stabilized, Transparent

#### Features

Amorphous

#### Chemical Resistance

Environmental Stress Crack Resistance

#### Applications

Building Construction, Encapsulation

### Injection Molding

#### PREPROCESSING

Predrying temperature: max. 85 °C

Predrying time in a desiccant-type drier: 2 - 3 h

#### PROCESSING

Melt temperature: 220 - 260 °C

Mold temperature: 50 - 70 °C

### Profile extrusion

#### PREPROCESSING

Predrying temperature: max. 85 °C

Predrying time in a desiccant-type drier: 2 - 3 h

#### PROCESSING

Melt temperature: 220 - 260 °C

Die temperature: 220 - 260 °C

### Sheet Extrusion

#### PREPROCESSING

Predrying temperature: max. 85 °C

Predrying time in a desiccant-type drier: 2 - 3 h

#### PROCESSING

Melt temperature: 220 - 260 °C

Die temperature: 220 - 260 °C

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### Chemical Media Resistance

#### Acids

- ✓ Citric Acid solution (10% by mass) (23°C)
- ✓ Lactic Acid (10% by mass) (23°C)
- ✓ Sulfuric Acid (38% by mass) (23°C)
- ✓ Sulfuric Acid (5% by mass) (23°C)

#### Bases

- ✓ Sodium Hydroxide solution (35% by mass) (23°C)
- ✓ Sodium Hydroxide solution (1% by mass) (23°C)
- ✓ Ammonium Hydroxide solution (10% by mass) (23°C)

#### Hydrocarbons

- ✓ n-Hexane (23°C)

#### Standard Fuels

- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- ✓ Diesel fuel (pref. ISO 1817 Liquid F) (23°C)

#### Other

- ✓ 50% Oleic acid + 50% Olive Oil (23°C)
  - ✓ Water (23°C)
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