

## Productprofil:

PLEXIGLAS® Heatresist hw55 clear is a copolymer based on methyl methacrylate (MMA) with comonomer constituents.

Besides showing the familiar properties of standard PLEXIGLAS® molding compound, such as

- high light transmission,
- good flowability,
- high mechanical strength, surface hardness and abrasion resistance, as well as
- excellent weatherability,

PLEXIGLAS® Heatresist hw55 clear offers the additional benefits of

- increased heat deflection temperature under load and
- improved resistance to stress cacking
- optimised inherent color,
- AMECA listing.

## Application:

PLEXIGLAS® Heatresist hw55 clear is particularly suitable for injection molding of technical items.

## Example:

lighted keys, luminaire covers, fiber optics.

## Processing:

PLEXIGLAS® Heatresist hw55 clear can be processed on injection molding machines with 3-zone general purpose screws for thermoplastics.

## Physical Form / Packaging:

PLEXIGLAS® Heatresist hw55 is supplied as pellets of uniform size, packaged in two-ply, 25kg polyethylene bags; other packaging on request.

Rheological properties	Value	Unit	Test Standard
<b>ISO Data</b>			
Melt volume-flow rate, MVR	1.2	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	3600	MPa	ISO 527
Stress at Break	80	MPa	ISO 527
Strain at Break	3.5	%	ISO 527
Tensile Creep Modulus, 1h	3300	MPa	ISO 899-1
Tensile Creep Modulus, 1000h	2700	MPa	ISO 899-1
Impact Strength (Charpy), +23°C	20	kJ/m <sup>2</sup>	ISO 179/1eU
Thermal Properties	Value	Unit	Test Standard
<b>ISO Data</b>			
Glass Transition Temperature (10°C/min)	122	°C	ISO 11357-1/-2
Temp. of deflection under load (1.80 MPa)	106	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	109	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	119	°C	ISO 306
Coeff. of Linear Therm. Expansion, parallel	70	E-6/K	ISO 11359-1/-2

**PLEXIGLAS® Heatresist hw55**  
PMMA

Röhm GmbH

Burning Behav. at 1.5 mm Nom. Thickn.	HB	class	UL 94
Thickness tested	1.6	mm	-
UL recognition	yes	-	-
Oxygen index	18	%	ISO 4589-1/-2

Electrical Properties	Value	Unit	Test Standard
<b>ISO Data</b>			
Relative permittivity, 100Hz	3.5	-	IEC 62631-2-1
Relative permittivity, 1MHz	2.9	-	IEC 62631-2-1
Dissipation Factor, 100Hz	400	E-4	IEC 62631-2-1
Dissipation Factor, 1MHz	200	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	2.2	%	Sim. to ISO 62
Humidity absorption	0.6	%	Sim. to ISO 62
Density	1190	kg/m³	ISO 1183

Material Specific Properties	Value	Unit	Test Standard
<b>ISO Data</b>			
Viscosity number	60	cm³/g	ISO 307, 1157, 1628
Luminous transmittance	90	%	ISO 13468-1, -2

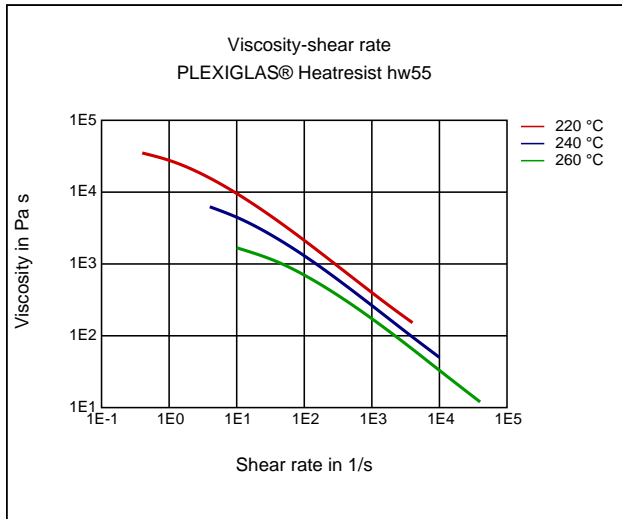
Rheological calculation properties	Value	Unit	Test Standard
<b>ISO Data</b>			
Density of melt	1080	kg/m³	-
Thermal Conductivity of Melt	0.19	W/(m K)	-
Spec. heat capacity of melt	2440	J/(kg K)	-
Eff. thermal diffusivity	7.22E-8	m²/s	-
Ejection temperature	100	°C	-

Test specimen production	Value	Unit	Test Standard
<b>ISO Data</b>			
Injection Molding, melt temperature	250	°C	ISO 294
Injection Molding, mold temperature	82	°C	ISO 294
Injection Molding, injection velocity	195	mm/s	ISO 294

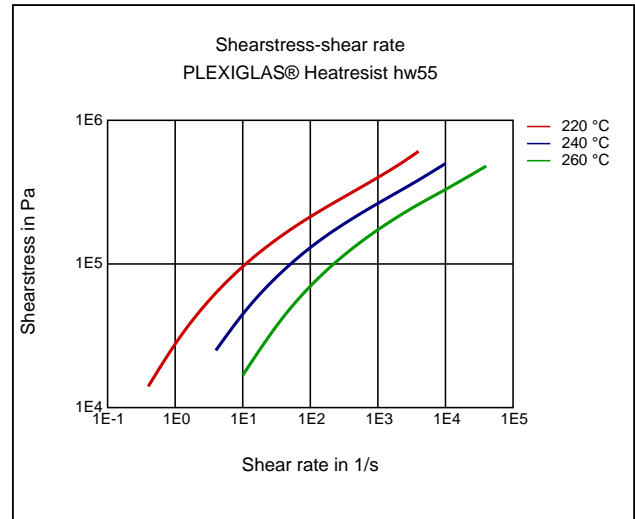
Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	109	°C	-
Pre-drying - Time	2 - 3	h	-
Melt temperature	220 - 250	°C	-
Mold temperature	60 - 90	°C	-

**Diagrams**

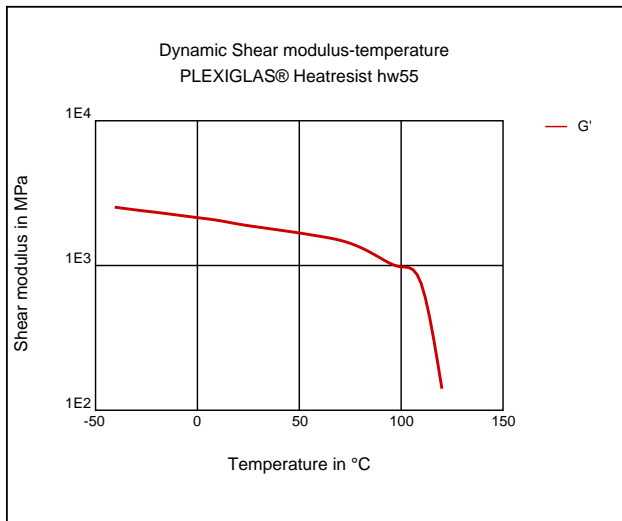
**Viscosity-shear rate**



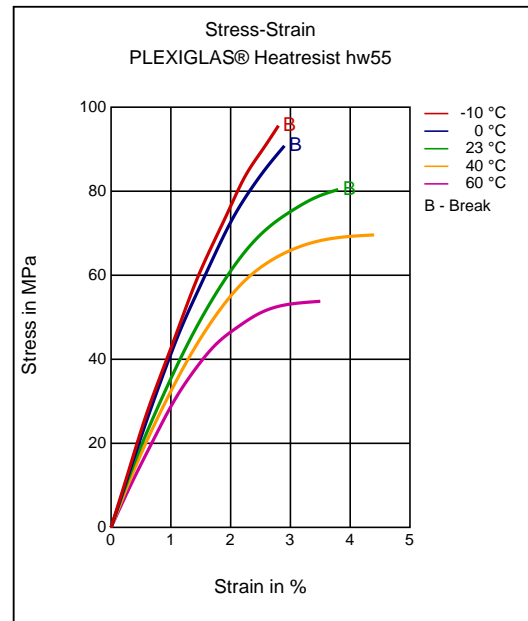
**Shearstress-shear rate**



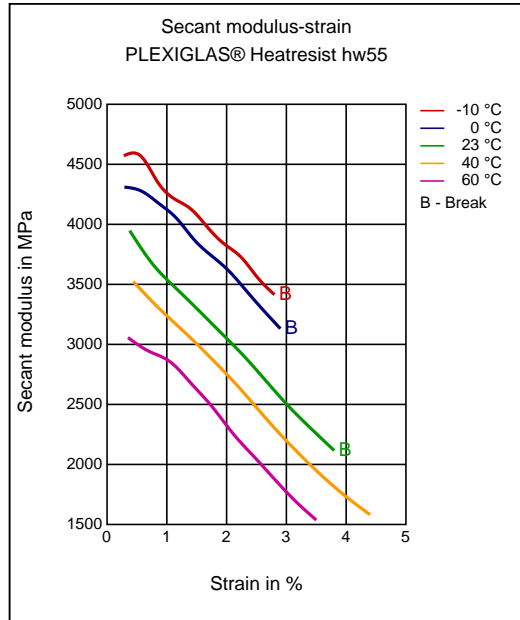
**Dynamic Shear modulus-temperature**



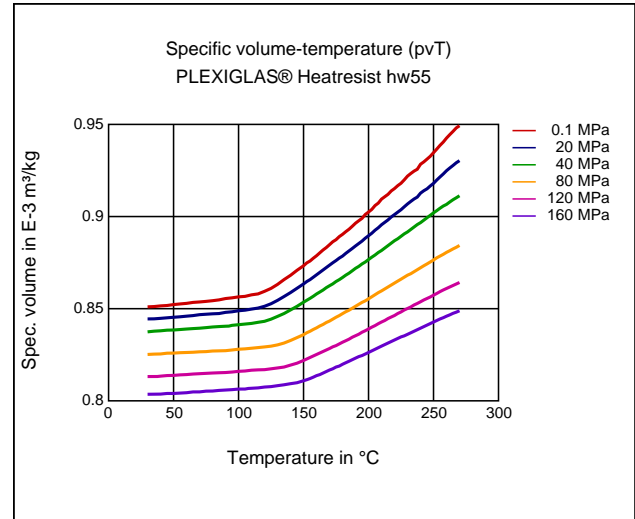
**Stress-strain**



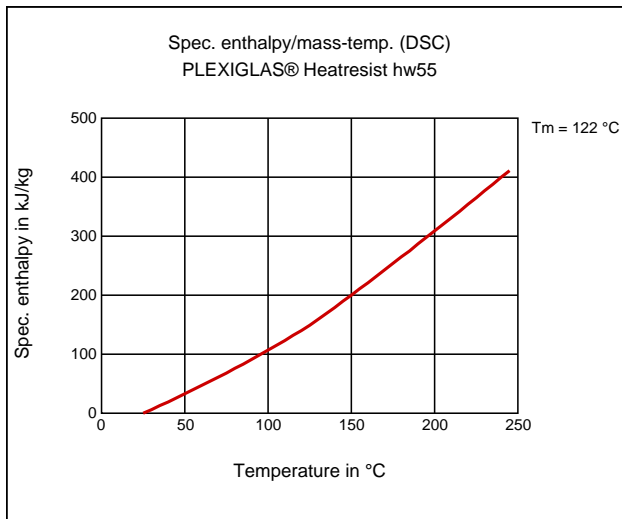
#### Secant modulus-strain



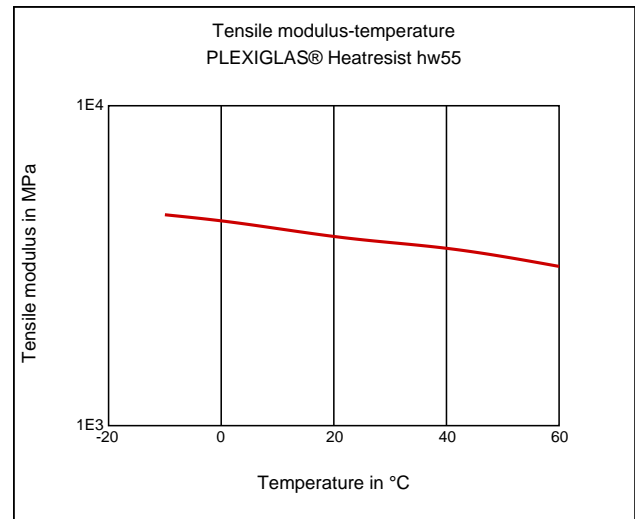
#### Specific volume-temperature (pvT)



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



#### Tensile Modulus-Temperature



### Characteristics

#### Processing

Injection Molding

#### Delivery form

Pellets

#### Special Characteristics

Light stabilized or stable to light, UV stablized, Heat aging stabilized, Transparent

#### Injection Molding

PREPROCESSING

Predrying temperature: max. 109 °C

#### Features

Copolymer

#### Chemical Resistance

Environmental Stress Crack Resistance

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

**PROCESSING**

Melt temperature: 220 - 250 °C

Mold temperature: 60 - 90 °C

**Chemical Media Resistance**

**Acids**

- ✓ Citric Acid solution (10% by mass) (23 °C)
- ✓ Lactic Acid (10% by mass) (23 °C)
- ✓ Nitric Acid (40% 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)
- ✓ iso-Octane (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)

**Salt solutions**

- ✓ Sodium Carbonate solution (20% by mass) (23 °C)
- ✓ Sodium Carbonate solution (2% by mass) (23 °C)

**Other**

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

**Disclaimer**

**Liability Exclusion**

These guide values are measured and provided by the product manufacturer and have been determined on standardised test specimens and can be affected by pigmentation, mould design and processing conditions. M-Base has taken the guide values from the producer's original Technical Data Sheet. **ALBIS AND M-BASE ARE THEREFORE NOT RESPONSIBLE FOR THE ACCURACY OF THE GUIDE VALUES AND CANNOT GIVE ANY WARRANTY WITH REGARD TO THEIR CORRECTNESS.**

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