

## ACRYLITE® hw55 acrylic polymer for high heat applications



Evonik Industries is a global market leader in specialty chemicals with business activities all over the world. Evonik Cyro LLC, a business line within the Chemicals Business Area of Evonik, is a worldwide manufacturer of PMMA molding compounds.

Where high heat resistance and lighting efficiency is desired, ACRYLITE® hw55 acrylic polymer provides the solution. In addition, it offers enhanced mechanical properties and excellent surface hardness. This copolymer, based on methyl methacrylate (MMA) with comonomer constituents, is ideal for injection molding of technical parts subjected to high thermal stress.

### Benefits of ACRYLITE hw55 polymer:

- Highest heat deflection temperature under load of all ACRYLITE polymer grades
- Retains maximum transparency after long-term exposure to heat in contrast with other plastics
- Superior tensile and flexural strength of all ACRYLITE polymer grades
- Good dimensional stability
- Break and scratch resistance
- Excellent weathering resistance
- AMECA listed
- Best isopropyl alcohol resistance of ACRYLITE polymer grades

### Processing:

ACRYLITE hw55 polymer can be processed on injection molding machines and extrusion lines with 3-zone general purpose screws. This polymer exhibits heat sensitivity during processing, therefore, follow our recommended processing conditions.

### Applications:

- Medical – diagnostic & surgical lighting
- Automotive – fiber optics in motor vehicles; condenser lenses, headlamps
- Marine – navigation & signaling lights; oil & offshore platform markings
- Roads & Runways – airfield, tunnel & subway lighting; high-intensity street lamps
- Gauges & Instruments – utility meter lenses/covers

### Product Offering:

Color: Crystal clear; custom colors available upon request

Packaging: Pellets of uniform size in 1500lb Gaylord boxes; other packaging available upon request.



Properties	ASTM Method	ACRYLITE hw55 polymer	ACRYLITE 8N polymer
<b>Optical Properties</b>			
Light Transmission, %	D 1003	Typical Value 91	Typical Value 92
Haze, %	D 1003	<1	<1
<b>Rheological Properties</b>			
Melt Flow Rate, g/10 min 230 °C & 3.8kg	D 1238	1.3	3.3
<b>Mechanical Properties</b>			
Tensile Strength, psi [MPa]	D 638	12500 [86]	11300 [77.9]
Tensile Modulus, x 10 <sup>6</sup> psi [GPa]	D 638	0.55 [3.8]	0.47 [3.2]
Tensile Elongation @ Yield, %	D 638	2 - 4	4 - 6
Tensile Elongation @ Break, %	D 638	2 - 4	4 - 6
Flexural Strength, psi [MPa]	D 790	19800 [136.5]	16200 [111.7]
Flexural Modulus, x 10 <sup>6</sup> psi [GPa]	D 790	0.50 [3.5]	0.50 [3.5]
Notched Izod, ft-lb/in [J/m] ¼" [6.35 mm] bar @ 23 °C	D 256	0.25 [13]	0.36 [19]
Rockwell Hardness, M Scale	D 785	100	95
<b>Physical Properties</b>			
Deflection Temperature, °F [°C] 264 psi, annealed	D 648	241 [116]	212 [100]
Vicat Softening Temperature, °F [°C] 5 Kg @ 50 °C/hr	D 1525	246 [119]	226 [108]
Coefficient of Linear Thermal Expansion in/ in/°F, 32 -212°F [mm/mm/°C, 0 -100 °C ]	D 696	0.000056 [0.00010]	0.00004 [0.000072]
Specific Gravity	D 792	1.19	1.19
Moisture Absorption, % Max	D 570	0.3	0.3
Mold Shrinkage, in/in [mm/mm]	D 955	0.009 - 0.010	0.004 - 0.007
Flammability	—	UL 94 HB	UL 94 HB

Properties	ISO Method	ACRYLITE hw55 polymer	ACRYLITE 8N polymer
<b>Optical Properties</b>			
Transmission Factor, % D65/10°	ISO 13468	Typical Value 91	Typical Value 92
Refractive Index	ISO 489	1.51	1.49
<b>Rheological Properties</b>			
Melt Volume Rate, cm <sup>3</sup> /10 min, 230 °C & 3.8kg	ISO 1133	1.2	3.0
<b>Mechanical Properties</b>			
Tensile Modulus, MPa, 1 mm/min	ISO 527	3600	3300
Stress @ Break, MPa, 5 mm/min	ISO 527	80	77
Strain @ Break, %, 5 mm/min	ISO 527	3.5	5.5
Charpy Impact Strength, KJ/m <sup>2</sup> , 23 °C	ISO 179/1eU	20	20
<b>Physical Properties</b>			
Deflection Temperature, °C, 1.8 MPa	ISO 75	106	98
Vicat Softening Temperature, °C, B/50	ISO 306	119	108
Density, g/cm <sup>3</sup>	ISO 1183	1.19	1.19

All listed technical data are typical values intended for your guidance. They are given without obligation and do not constitute materials specification.

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Samples are available to qualified customers.

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