

SALES RANGE

MOLDING COMPOUNDS

PLEXIGLAS® | PLEXIMID® | CYROLITE® | ACRIFIX®



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SALES RANGE MOLDING COMPOUNDS - MOBILE APP

From now on, our delivery program is also available as mobile app for iPhone and iPad as well as for Android smartphones.

GENERAL REMARKS

PLEXIGLAS® molding compounds

PLEXIGLAS® molding compounds are thermoplastics based on polymethyl methacrylate (PMMA), standardized to DIN 7745/ISO 8257. PLEXIGLAS® molding compounds are characterized by a number of chemical, physical and technical properties that are indispensable for manufacturing high-quality parts by injection molding, injection blow molding and extrusion.

Absolutely clear

PLEXIGLAS® crystal-clear molding compound grades are so highly transparent that molded parts and semifinished products manufactured from them provide the maximum possible light transmission of 92 %, i.e. show only the physically unavoidable reflection loss of 4 % at each surface where light enters and exits. This unique clarity makes it possible to obtain particularly pure colors with an outstanding degree of precision.

Convincing longevity

As confirmed by tests in all of the world's climates, PLEXIGLAS® molding compounds show unsurpassed resistance to weathering and aging. They do not turn yellow or wear away under chemical attack, show no deterioration of their properties and are not subject to decay. PLEXIGLAS® therefore makes a major contribution to resource conservation. That was also one of the outstanding points in its favor in the Life Cycle Assessment (LCA) performed in accordance with DIN ISO 14040ff.

Recyclable

Owing to their chemical composition, PLEXIGLAS® molding compounds are uniquely suitable for chemical recycling and material recovery.

Tough surface

In addition to their pleasant feel and sound, molded parts and semifinished products made from PLEXIGLAS® (PMMA) present the greatest surface hardness and thus the best scratch resistance of all thermoplastics. This enables them to conserve their high gloss even after prolonged use.

Food contact approvals

The crystal-clear molding compounds PLEXIGLAS® 6N, 7N, 7M, 7H, 8N and 8H conform to FDA Regulation CFR 21 § 177.1010, Commission Regulations EU 10/2011, EU 174/2015 and EU 1416/2016 repealing to Recommendation XXII of the German Federal Institute for Risk Assessment (BfR, formerly BgVV). They also comply with the German Consumer Goods Ordinance (December 23, 1997). Please consult us with regard to other grades and colored molding compounds.

Certified quality

The Performance Materials segment of Evonik Industries AG has combined its management systems for environmental protection, safety, health and quality in an integrated management system and is certified in accordance with ISO 9001:2008 and ISO 14001:2004. Moreover, the quality management system of the Molding Compounds Product Line has satisfied the stringent ISO TS 16949:2009 standard of the automotive industry. All manufacturing processes for PLEXIGLAS® molding compounds are subjected to a continuous improvement process and are monitored by a modern quality management system.

Product overview/ Overview of applications

We encounter PLEXIGLAS® or one of our other molding compounds every day in a multitude of applications and in different market segments.

	AUTOMOTIVE & TRANSPORTATION*	ELECTRONIC & COMMUNICATION	LIGHTING TECHNOLOGIES	SOLAR APPLICATIONS	INDUSTRIAL CONSTRUCTION & ARCHITECTURE	FURNITURE, EXHIBITION BOOTH & SHOP FITTING	HEALTH & MEDICAL
PLEXIGLAS®	+	+	+		+	+	+
PLEXIGLAS® Heatresist	+	+	+				
PLEXIGLAS® Hi-Gloss	+	+			+	+	
PLEXIGLAS® LED	+	+	+		+	+	
PLEXIGLAS® Optical		+	+				
PLEXIGLAS® Resist	+		+		+	+	
PLEXIGLAS® Satinice	+	+	+		+	+	
PLEXIGLAS® Solar				+			
CoverForm®	+	+	+	+	+	+	
CYROLITE®							+
PLEXIMID®	+	+	+				

***Note on the Automotive & Transportation market segment**

There are increasing demands from the automotive industry for material data to be entered in the International Material Data System (IMDS).

The IMDS archives and manages all materials used in vehicle manufacture. This is the only way to fulfill the obligations imposed on automobile manufacturers, and consequently on suppliers, by national and international norms, standards, laws and directives.

Our material data sheets are published in IMDS and are therefore accessible to all IMDS participants. After they have registered free of charge at www.mdssystem.com, they can retrieve the data sheets by entering our company ID 2211.

PLEXIGLAS® molding compounds

Depending on the grade, our standard molding compounds differ in their physical properties such as flow and heat deflection temperature under load. They can be processed by means of all conventional thermoplastic processing methods.

- PLEXIGLAS® 6N**
- molding compound with good flow and a low heat deflection temperature under load
 - application: injection molding of thin-walled parts with long flow paths
-

- PLEXIGLAS® 7N**
- molding compound with good flow (somewhat inferior to PLEXIGLAS® 6N) and an adequate heat deflection temperature under load
 - application: injection molding of optical and technical items such as nameplates, covers, magnifying glasses, lenses, housewares and many other uses
-

- PLEXIGLAS® 8N**
- molding compound with a high heat deflection temperature under load
 - slightly inferior flow to PLEXIGLAS® 7N
 - application: injection molding of technical items to satisfy higher demands on heat deflection temperature under load (e.g. lighting industry, automotive industry (taillights, etc.))
-

- PLEXIGLAS® 7H**
- variant of PLEXIGLAS® 7N with higher molecular weight and improved stress crack resistance. Somewhat tougher than PLEXIGLAS® 7N at the same heat deflection temperature under load.
 - application: extrusion of profiles and sheets for lighting engineering
-

- PLEXIGLAS® 7M**
- variant of PLEXIGLAS® 7H with improved flow
 - application: extrusion of profiles and sheets for lighting engineering
-

- PLEXIGLAS® 8H**
- variant of PLEXIGLAS® 8N with higher molecular weight and improved stress crack resistance. Somewhat tougher than PLEXIGLAS® 8N at the same heat deflection temperature under load.
 - application: extrusion of profiles and sheets for lighting engineering

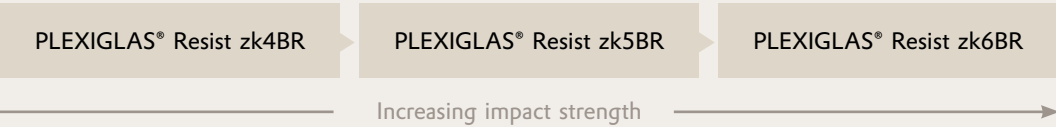
PLEXIGLAS® Resist – impact-modified (zk)

Depending on the standard molding compound, the impact-modified grades differ in their key properties, such as optimized flow or stress crack resistance. They are suitable for extruding and coextruding profiles and sheets and for injection molding formed parts.

High impact strength

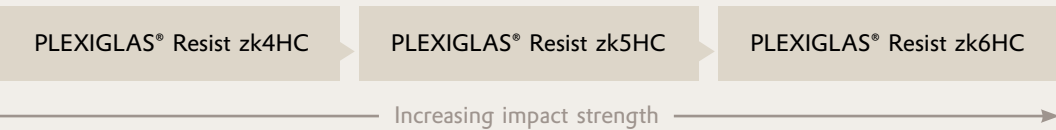
zkBR-Series

With its special optical characteristics and balanced property spectrum, the zkBR series is the basis for impact-modified PLEXIGLAS® molding compounds.



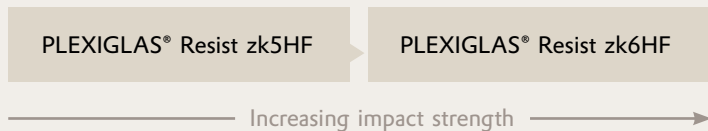
zkHC-Series

This series is characterized by even higher stress crack resistance than that of PLEXIGLAS® zkBR molding compounds.



zkHF-Series

The special feature of this series of PLEXIGLAS® molding compounds as compared with other impact-modified grades is its excellent flow.



Very high impact strength

PLEXIGLAS® Resist AG 100

Very high impact strength combined with a high heat deflection temperature.

A typical feature of this product is the clear reduction in reversible haze at very high and low temperatures.

PLEXIGLAS® Heatresist and PLEXIMID® – high heat deflection temperature under load

Products of the PLEXIGLAS® Heatresist and PLEXIMID® groups are crystal-clear molding compounds with different heat deflection temperatures under load.

PLEXIGLAS® Heatresist FT15

PLEXIGLAS® Heatresist FT15 is a new molding compound based on PMMA with a higher heat deflection temperature under load combined with improved flow.

PLEXIGLAS® Heatresist FT15 is particularly suitable for injection-molding and extrusion applications with stringent requirements in terms of heat deflection temperature and flow. The special property profile offers benefits particularly when it comes to designing moldings with challenging wall thickness/flow path ratios (e.g. multi-component injection moulding).

PLEXIGLAS® Heatresist hw55

PLEXIGLAS® Heatresist hw55 is particularly suited for injection-molded technical parts for applications subjected to high thermal stress.

PLEXIGLAS® Heatresist hw55 is a copolymer based on methyl methacrylate (MMA) with comonomer constituents. These provide a high heat deflection temperature under load for a PMMA molding compound, combined with particularly high chemical resistance and ease of processing.

PLEXIMID® TT50 und TT70

PLEXIMID® products are polymethyl methacrylimide molding compounds that combine an extremely high heat deflection temperature with very high resistance to chemicals and stress cracking. Besides their high light transmission and clarity, and good strength and rigidity, the speciality grades are characterized by extremely stable optical values upon prolonged exposure to heat. They can be used for example as films, headlamp lenses, drum lenses and built-in furniture lighting.

PLEXIGLAS® Satinice – light-diffusing (df)

In all production processes, bead-shaped polymer particles impart light-diffusing properties to products made of PLEXIGLAS® Satinice, with minimal loss of transmitted light. Furthermore, in extrusion processes, matt surfaces can be obtained.

Homogeneous illumination

PLEXIGLAS® Satinice df20–23

These products from the PLEXIGLAS® Satinice range are specialty molding compounds used for example for lighting fixture covers or short light guides for ambient lighting and for the homogeneous illumination of small displays. They diffuse the light evenly towards the viewer.

Available in grades PLEXIGLAS® 7H, 7N, 8N and zk6BR.

PLEXIGLAS® Satinice df20

PLEXIGLAS® Satinice df21

PLEXIGLAS® Satinice df22

PLEXIGLAS® Satinice df23

Increasing light diffusion



PLEXIGLAS® LED – for LED lighting

Specialty molding compounds for efficient lighting engineering applications in combination with LEDs. There is a choice of products either for edge or backlighting without any disturbing hot spots.

For edge lighting

Components made from the molding compounds of the LD range appear crystal-clear and transparent when unlit. These molding compounds have been optimized for edge lighting and for guiding light across differently sized areas. No additional diffusion films or microstructures are required on the component surface in order to achieve uniform light output over the entire surface.

Possible applications are ambient lighting, light guides without a decoupling structure, area lighting and combinations of backlighting and edge lighting.

Light guiding over large area with light input from both sides

PLEXIGLAS® LED LD

Light guiding over large area with light input from both sides

PLEXIGLAS® LED LD12	PLEXIGLAS® LED LD24
PLEXIGLAS® LED LD48	PLEXIGLAS® LED LD96

Available as PLEXIGLAS® molding compounds 8N.

For backlighting

Molding compound colors for uniform light distribution when backlit with strong LED light, combined with high transmission, and without any disturbing hotspots (spots of light). These properties make it possible to reduce the spacing required between the cover and the LED light source, and to optimize the wall thickness of the component.

PLEXIGLAS® LED White

PLEXIGLAS® LED White 0V606

Molding compounds made from this special color appear white in incident light.

PLEXIGLAS® LED White 0V200

Special color for higher transmission, while retaining the light-diffusing properties.

Both are available in grades PLEXIGLAS® 7N, 7H and zk6BR.

PLEXIGLAS® Hi-Gloss

Molding compounds of the PLEXIGLAS® Hi-Gloss family are particularly suitable for injection-molding technical moldings. Their high brilliance makes it possible to manufacture high-gloss, Class A surfaces. The color Black 9V022 was specially developed for so-called piano black applications. This grade offers an extremely intensive degree of blackness as well as outstanding weather resistance.

Applications: add-on automotive body parts (e.g. pillar panels, spoilers, roof elements), decorative trim in car interiors and exteriors, mirror housings etc.

PLEXIGLAS® Hi-Gloss 8N

- molding compound with high heat deflection temperature under load
- good flow and melt viscosity

PLEXIGLAS® Hi-Gloss zk6BR

- Impact-modified compound based on polymethyl methacrylate (PMMA)

PLEXIGLAS® Hi-Gloss FT15

- high heat deflection temperature under load combined with increased flow

PLEXIGLAS® Hi-Gloss NTA-1

- slightly impact-modified molding compound with high heat deflection temperature under load based on polymethyl methacrylate (PMMA)

PLEXIGLAS® Hi-Gloss NTA-3

- molding compound with higher heat deflection temperature under load based on polymethyl methacrylate (PMMA)

PLEXIGLAS® Hi-Gloss NTA-5

- Highly impact-modified compound based on polymethyl methacrylate (PMMA) that simultaneously offers a higher heat deflection temperature

PLEXIGLAS® Hi-Gloss NTX-8

- Molding compounds with improved wipe resistance
- Significantly increased ease of flow

PLEXIGLAS® Hi-Gloss NTX-15

- Improved demolding behavior
- Less tendency to form weld lines

SPECIAL GRADES

System solution

PLEXIGLAS® cf

The specialty molding compound PLEXIGLAS® cf is a component of the CoverForm® system solution. Together with a solvent-free multi-component reactive system on an acrylate base, PMMA components can be coated directly inside the injection mold. The surfaces obtained in this way are highly resistant to scratching and wear, as well as to a large number of chemicals.

Solar applications

PLEXIGLAS® Solar IM20

This specialty molding compound was custom-developed for optical applications in areas with particularly high exposure to UV light. As well as its very high resistance to UV light and weathering, the product's light transmission is adjusted to the efficiency range of solar cells. Owing to its excellent flow and low melt viscosity, PLEXIGLAS® Solar IM20 is eminently suitable for manufacturing high-precision microstructure lenses by injection molding and injection compression molding.

Optical grades

Depending on requirements for optical applications different product grades are available.

PLEXIGLAS® oq

For premium articles the molding compounds PLEXIGLAS® 7N and 8N can be supplied on request in „tested optical quality“.

PLEXIGLAS® 8N SuPure

PLEXIGLAS® SuPure is available for the production of optical parts which have to fulfill highest requirements. Specific features of PLEXIGLAS® 8N SuPure are its optimized pellet shape and the fact that it undergoes extended quality assurance tests.

Molding compounds with special additives

Standard molding compounds with special properties are available on request. These include:

- increased UV absorption
 - UV transmission
 - easy mold release, especially for particularly complex molding shapes to minimize the risk of demolding fracture. The mold release agent causes no haze.
-

Medical technology grades

CYROLITE®

CYROLITE® products are impact-resistant thermoplastic molding compounds based on methacrylate. They show remarkable clarity and light transmission for a multiphase polymer. Their melt viscosity is similar to that of standard PLEXIGLAS® molding

Auxiliary agents

ACRIFIX® sp Cylinder/Barrel Cleaning Agent

- ACRIFIX® sp is a cylinder/barrel cleaning agent of high molecular weight, based on polymethyl methacrylate (PMMA).
- ACRIFIX® sp is used both for switching from one type of plastic to another and for changing colors. It remains rubbery-elastic even at high temperatures.

COLORS AND DELIVERY

Colors

PLEXIGLAS® colors

Standard colors are identified by a five-digit number after the color name. The 1st digit stands for the main color (in analogy to RAL):

Special colors

We offer a variety of special colors. Among others, these include further colors for signaling applications and lighting engineering, as well as ones with good hiding power for coextrusion.

Further information on the availability of special colors is available on request.

AMECA*-listed colors are available that can be employed for automotive signal purposes. They meet the requirements of SAE J 576.

*Automotive Manufacturers Equipment Compliance Agency

0 = white	5 = blue
1 = yellow	6 = green
2 = orange	7 = gray
3 = red	8 = brown
4 = purple	9 = black and clear

Delivery

Physical Forms

PLEXIGLAS® molding compounds are supplied in injection molding and extrusion quality as pellets of uniform size.

Packaging

- 25 kg, two-ply polyethylene bag
- 500 kg carton with polyethylene lining
- Further forms of packaging, such as silos, on request

No charge is made for standard packaging. All forms of packaging ensure that the molding compound is delivered in such a way that it normally requires no predrying. If correctly stored, the protection offered by the packaging means that very little moisture is absorbed even after several months' storage.

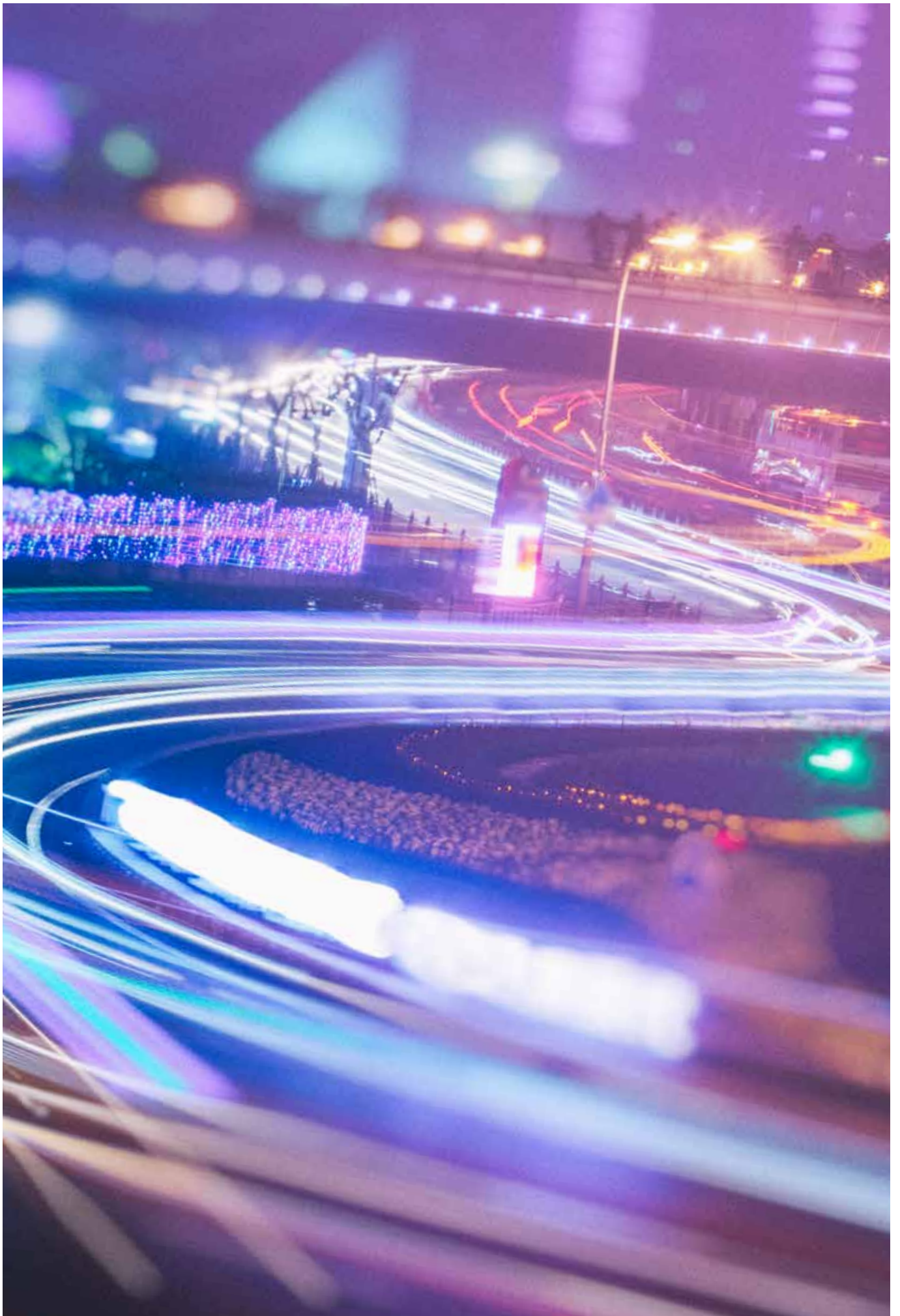
Despite the described protection of the molding compound by our specific packaging predrying is recommended for usage in regions with high humidity.

Inspection and other certificates

An inspection certificate in line with EN 10204-3.1 can be provided on request.

Availability

PLEXIGLAS® molding compound in crystal-clear and standard colors is normally available at short notice. All other molding compounds are manufactured to order, subject to certain minimum quantities. Color matching and new colors on request, at a charge.



PROPERTIES OF SELECTED MOLDING COMPOUNDS

Mechanical properties

	Tensile modulus (1 mm/min)	Yield stress (50 mm/min)	Yield strain (50 mm/min)	Nominal strain at break	Stress at break (5 mm/min)	Stress at break (5 mm/min)	Charpy- impact strength (23 °C)
Unit	MPa	MPa	%	%	MPa	%	kJ/m ²
Standard	ISO 527	ISO 527	ISO 527	ISO 527	ISO 527	ISO 527	ISO 179/1eU
PLEXIGLAS®							
6N	3200	–	–	–	67	3	20
7N	3200	–	–	–	73	3.5	20
8N	3300	–	–	–	77	5.5	20
7H	3200	–	–	–	76	5.5	20
7M	3200	–	–	–	69	4	20
8H	3300	–	–	–	78	6.5	20
PLEXIGLAS® Resist							
zk4BR	2800	71	4.5	19	–	–	25
zk5BR	2400	62	4.5	27	–	–	50
zk6BR	1800	45	5	54	–	–	80
zk4HC	2900	68	4.5	17	–	–	25
zk5HC	2500	63	5	28	–	–	55
zk6HC	1700	47	5.5	48	–	–	80
zk5HF	2500	55	4.5	25	–	–	50
zk6HF	1900	45	5	50	–	–	75
AG100	2200	55	5	45	–	–	120
PLEXIGLAS® Heatresist							
FT15	3500	–	–	–	50	3.1	18
hw55	3600	–	–	–	80	3.5	20
PLEXIMID®							
TT50	4000	–	–	–	80	3	20
TT70	4000	–	–	–	80	3	20
PLEXIGLAS® Hi-Gloss							
NTA-1	2700	68	5	10	–	–	33
NTA-3	2900	–	–	–	60	2.6	16
NTA-5	2100	54	5	48	–	–	110

All listed technical data are typical values intended for your guidance. They are given without obligation and do not constitute a materials specification. We will be pleased to state the properties of other grades of PLEXIGLAS® molding compounds.
 **MVR (260/10).

Thermal properties			Rheological properties	Optical properties		Other properties
Vicat softening temperature (B/50)	Temp. of deflection under load (0.45 MPa)	Flammability UL 94 (1.6 mm thickness)	Melt volume rate, MVR (230/3.8)	Transmittance, τ_{D65} (3 mm)	Refractive index (3 mm)	Density
°C	°C	Class	cm ³ /10 min	%		g/cm ³
ISO 306	ISO 75	IEC 707	ISO 1133	ISO 13468-2	ISO 489	ISO 1183
96		HB	12	92	1.49	1.19
103	100	HB	6	92	1.49	1.19
108	103	HB	3	92	1.49	1.19
103	100	HB	1.4	92	1.49	1.19
104		HB	2.9	92	1.49	1.19
108		HB	0.8	92	1.49	1.19
102	99	HB	4.5	92	1.49	1.18
100	98	HB	3.3	92	1.49	1.17
95	93	HB	1.6	91	1.49	1.16
102		HB	1.1	92	1.49	1.18
100		HB	0.7	92	1.49	1.17
97		HB	0.4	91	1.49	1.16
96		HB	8.1	92	1.49	1.17
94		HB	4.2	91	1.49	1.16
105	105	HB	1.1	91	1.49	1.16
115	107	HB	4.5	91		1.19
119	109	HB	1.2	90	1.51	1.19
150	140		5**	91	1.53	1.21
170	158		1.7**	91	1.54	1.21
110	103		3	opaque	-	1.18
116	106		2	opaque	-	1.18
103	102	HB	1.3	opaque	-	1.16

Compound on request. The properties of PLEXIGLAS® molding compounds are available at www.campusplastic.com.

EVONIK PERFORMANCE MATERIALS GMBH

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® =registered trademark

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This information and all further technical advice is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, also with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.

Sales Range and technical data subject to alteration.

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