

PLEXIGLAS® Resist, extruded 45, -65, -75, -100

Product Description

Product and Application

Extruded PLEXIGLAS® Resist is a highly weather-resistant sheet material from **impact-modified** acrylic (polymethyl methacrylate, PMMA). The grades Resist 45, -65, -75, -100 show increasing impact strength in that order. The sheets therefore offer **greater break resistance** than standard acrylic during

- transport and handling,
- the entire fabrication process,
- installation and
- subsequent use.

PLEXIGLAS® Resist combines the positive properties of PMMA with the toughness of other plastics such as polycarbonate (PC). The opposite graph shows the impact resistance of Resist sheets as compared with PC and the basic grade PLEXIGLAS® XT 20070.

Very often, extreme break resistance is uneconomical. In this case, the individual, custom-tailored solutions offered by PLEXIGLAS® Resist are particularly advantageous.

PLEXIGLAS® Resist is highly weather resistant and durable. Unlike other plastics (e.g. PC, PET, PETG) it requires no additional UV protection. PLEXIGLAS® Resist is therefore a highly versatile and absolutely reliable material for

- structural glazing outdoors, e.g. barrel vaults for busstops, bicycle stands, walkways,
- protective glazing such as general access protection, housings for machines, equipment and workplaces,
- vehicle glazing, e.g. windshields for motorcycles and scooters, interior glazing in buses and trains,
- glazing of shop fittings and counters,
- signage, e.g. illuminated signs, indicator panels, advertising pillars,
- P.O.P. displays and sales stands, glazing of vending machines, drawing equipment etc.

In the field of vehicle glazing, PLEXIGLAS® Resist 75 is suitable for use in classes E to F according to the German regulation ABG No. 2326 (e.g. trailers, caravans, building site vehicles, forklift trucks, motorcycle windshields etc.). Moreover, it is approved to DOT-112, AS-6, M-34 to M-84.

All clear-transparent Resist sheets are approved for food-contact applications.

Chemical Resistance

The chemical resistance roughly corresponds to that of PLEXIGLAS® XT 20070. We will be pleased to answer specific inquiries about compatibility with given substances.

Machining

Owing to its increased toughness, PLEXIGLAS® Resist lends itself perfectly to sawing, drilling, milling, grinding and polishing under conditions corresponding to the material. Twist drills must have specially ground bits for acrylic. Only slight pressure should be exerted during polishing. For more precise recommendations, please consult our Guidelines for Workshop Practice.

The appropriate accident prevention regulations and statements of tool manufacturers must be observed during machining. PLEXIGLAS® Resist can be laser-cut. The gloss of the lasered edge changes at increasing impact strength. Clear edges can be obtained by wiping them with petroleum ether.

Bonding

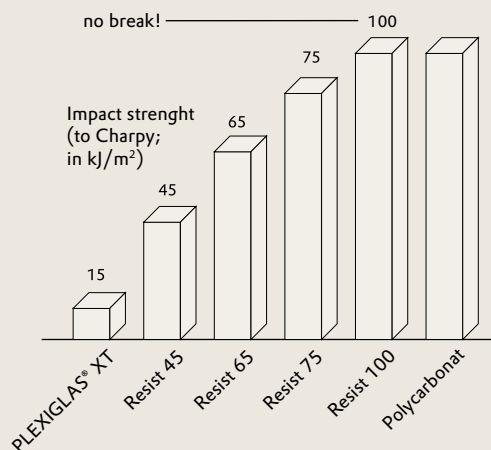
PLEXIGLAS® Resist is as easy to bond as the basic grades of PLEXIGLAS® XT, e.g. using the solvent-type adhesives ACRIFIX® 1S 0116 and 1S 0117 as well as the gap-filling polymerization adhesives ACRIFIX® 1R 0192 and 2R 0190. With the latter, it should be borne in mind that the joints show lower impact strength than the bonded parts made of PLEXIGLAS® Resist. The bond strength diminishes at increasing impact strength.

Forming

The forming conditions are the same as for PLEXIGLAS® XT basic grades. The thermoforming temperature should be between 140 °C and 160 °C, the range in which the material is thermoelastic. There is no need for pre-drying provided the sheets are stored correctly, covered with their protective PE masking.

The material turns white during heating but this color disappears again as the material cools down.

PLEXIGLAS® Resist can also be installed cold-curved, provided the minimum cold-curving radius is observed (see table).



Properties (This table summarizes the major physical properties typical values at 23 °C/50 % R.H)

Properties	PLEXIGLAS® Resist 45 Clear 0RA45	PLEXIGLAS® Resist 65 Clear 0RA65	PLEXIGLAS® Resist 75 Clear 0RA75	PLEXIGLAS® Resist 100 Clear 0RA00	Unit	Test Standard
Density	1,19	1,19	1,19	1,19	g/cm ³	ISO 1183
Impact strength (Charpy)	45	65	75	no break	kJ/m ²	ISO 179/1 fu
Notched impact strength (Charpy)	3,5	6,5	7,5	8,0	kJ/m ²	ISO 179/1 eA
Tensile strength	60	50	45	40	MPa	ISO 527-2/1B/5
Nominal elongation at break	10	15	20	25	%	ISO 527-2/1B/50
Elastic modulus (short-term value)	2700	2200	2000	1800	MPa	ISO 527-2/1B/1
Flexural strength	95	85	77	69	MPa	ISO 178
Cold-curving radius, min.	270 x thickn.	210 x thickn.	180 x thickn.	150 x thickn.	–	–
Coefficient of linear thermal expansion (0 to 50 °C)	7·10 ⁻⁵ (= 0,07)	8·10 ⁻⁵ (= 0,08)	9·10 ⁻⁵ (= 0,09)	11·10 ⁻⁵ (= 0,11)	1/K (mm/m °C)	DIN 53752-A
Permanent service temperature, max.	70	70	70	65	°C	–
Reverse forming temperature	> 80	> 80	> 75	> 70	°C	–
Vicat softening temperature	101	100	100	97	°C	ISO 306, Method B50
Transmittance (380–780 nm)	91	91	91	91	%	DIN 5036, Part 3
UV transmission	none	none	none	none	–	–
Surface resistivity	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	Ohm	DIN VDE 0303, Part 3
Fire rating	B2	B2	B2	B2	–	DIN 4102
Water absorption (24 h, 23 °C) from dry state; specimen 60 x 60 x 2 mm ³	41	45	46	49	mg	ISO 62, Method 1

Coating and Screen Printing

The same paints and inks can in principle be used as for the basic grades of PLEXIGLAS® XT. However, we recommend carrying out prior tests in each case.

Cleaning and Care

PLEXIGLAS® is easy to clean. Do not rub dry. Dusty surfaces can be cleaned with warm water to which some dishwashing liquid has been added, using a soft cloth or sponge. The "Antistatische Kunststoff-Reiniger + Pfleger (AKU)" (Antistatic Cleaning + Care Agent for Plastics) from Burnus GmbH, Darmstadt, is most suitable for PLEXIGLAS® Resist.

Physical Forms

Sheets of PLEXIGLAS® Resist are supplied with a smooth surface and protective PE masking on both sides. The standard size is 3050 x 2050 mm. Standard grades (Clear, White) and thicknesses are available from stock.

On request, we will be pleased to inform you about other sizes (e.g. greater lengths), colors, sizes/cut-to-size sections, degrees of impact strength, thicknesses up to 20 mm and other terms of delivery.

* = registered trademark PLEXIGLAS is a registered trademark of Evonik Röhm GmbH, Darmstadt, Germany.

Certified to DIN EN ISO 9001 (Quality) and DIN EN ISO 14001 (Environment)

Evonik Industries is a worldwide manufacturer of PMMA products sold under the PLEXIGLAS® trademark on the European, Asian, African and Australian continents and under the ACRYLITE® trademark in the Americas.

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