ACRIFIX®
Adhesive

ACRIFIX® 1R 9016
1-Component Polymerization Adhesive

Product and Use

Type of Adhesive
1-component polymerization adhesive.
Transparent clear, slightly purple, solution of low viscosity of an acrylic resin in methyl methacrylate that polymerizes upon exposure to UVA light.

Applications
Adhesive primarily for inside fillet joints (display case design) but also area bonding. Preferably used for bonding clear acrylic (PMMA), especially PLEXIGLAS® GS, PLEXIGLAS® XT, or components made of PLEXIGLAS® molding compounds, with each other.

For commercial use only.

Special Features
ACRIFIX® 1R 9016 can be used to thicken ACRIFIX® 1R 9019.

Storage/Transport

Keep containers tightly closed in a cool place **protected from light.**
UN 1133

Working Instructions

Preparing the Parts to Be Bonded
Degrease the surfaces to be joined using ACRIFIX® TC 0030 or isopropyl alcohol. Internally stressed parts must be annealed before joining in order to avoid stress cracking. The annealing conditions depend on the type of material, the degree of forming and the thickness of the parts to be bonded.

Bonded parts made of extruded or injection molded acrylic generally always need to be annealed. Typical annealing times – also for cast acrylic – are 2 to 4 hours in an airflow oven at 70 to 80 °C.

Bonding Technique
Fix the parts to be bonded in the desired position (avoid shading). Introduce ACRIFIX® 1R 9016 into the joint by means of a glue dispenser, PE disposal pipette or disposable syringe. The bond is then exposed to a suitable UVA light source until fully cured (see section “Curing”). So-called superactinic fluorescent tubes, as they are used in fly traps, are preferred here, since they cause optimal hardness of ACRIFIX® 1R 9016. When producing display cases, curing via UV-A LED strips is possible, since these can be placed immediately next to the bonding area due to their small size.

The bonding areas should always be exposed indirectly through the PLEXIGLAS® to be bonded, as otherwise a direct lighting of the bonding agent can cause the formation of shrinkage bubbles in the fillet joint.

More Information
Adhesion to unfinished surfaces of cast acrylic can be improved by roughening the areas with water abrasive paper (grit 320 to 400) or non-woven.

To improve the joint annealing after joining is recommended. Typical annealing times are 2 to 4 hours in airflow oven at 70 to 80°C. Severly stressed bonds or those intended for outdoor exposure should be annealed as a matter of principle.

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ACRIFIX® 1R 9016 must not get into closed cavities (e.g. double glazing, tube interiors etc.), as these conditions significantly impair the curing process, posing the risk of cracks forming in the part to be bonded. If bonding in a cavity cannot be avoided, the cavity must be gently flushed with air for at least 20 minutes after adhesive application. For bonding tubes together, we likewise recommend gently flushing the inside of the tubes during the bonding process.

For more details, see our guideline "Joining PLEXIGLAS®", Ref. No. 311-3.

Properties of Bonds

Subsequent treatment of bonded items
- 2 to 6 hours after curing.
- Sanding and polishing can be performed after 24 hours.

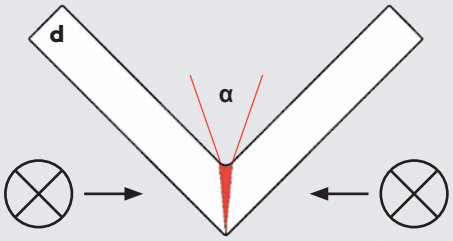
Strenght of Bonds
The bonds only acquire their final strength after about 24 hours or after immediate annealing as soon as the adhesive has cured.

Tensile shear strength (v = 5mm/min)		
Material (to itself)	**non-annealed**	**annealed for 5 hrs at 80 °C**
PLEXIGLAS® GS 0F00	27 – 37 MPa	45 – 55 MPa
PLEXIGLAS® XT 0A000	30 – 40 MPa	45 – 55 MPa
cured using superactinic UV-A light		
Annealing increases the strength and also improves the weather resistance.		

Appearance of Bonds
Transparent clear, almost colorless, surface may be slightly yellowish.

Curing (System: polymerization by UV-A light)		
	Illuminant	**curing time (at 25 °C)**
Bond/lamp and lamp/lamp spaced at approx. 20 cm and 10 cm, respectively	Fluorescent lamp, illuminant 840 Cool White	15 – 30 min
	Superactinic UV-A fluorescent lamp, e. g. Sylvania Blacklight BL 368	10 – 20 min
	Tanning studio UV-A/B fluorescent lamp, e. g. Philips Cleo Performance	10 – 15 min
Bond/lamp spaced at min. 15 mm	UV-LED (380 - 405 nm) e. g. Deep Dream 5M UV black light LED strips	10 – 20min
	direct sunlight	10 – 20 min
	Pot life (at 200 g in glass vessel with diffuse indoor lighting)	~ 30 min (at 25 °C)

Angle bonding with inside fillet joint (opening angle and saw angle to be used on different sheet thicknesses)		
PLEXIGLAS® material thickness d [mm]	**Opening angle of the V-seam α [°] (~ Recommended gap dimension 0.6 mm)**	**Sawing/milling angle to be used for the bonded parts [°]**
3	11	50.5
4	8	49
5	7	48.5
6	6	48
8	4	47
10	3	46.5
15	2	46
20	1	45.5



Angle bonding with inside fillet joint
(schematic representation and arrangement of the UVA light sources)

Limitation of Liability

Our ACRIFIX® adhesives and other service products were developed exclusively for use with our PLEXIGLAS® products and are specially adjusted to the properties of these materials. Any recommendations and guidelines for workshop practice therefore refer exclusively to these products.

Claims for damages, especially under product liability laws, are ruled out if made in connection with the use of products from other manufacturers.

Safety Measures and Health Protection

For further information on safety measures, the exclusion of health risks when handling adhesives and on their disposal, see our Safety Data Sheet.

Availability according to the current sales range.

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Typical Values	
Properties	**Values**
Viscosity; Brookfield II/6//20 °C	500 – 800 mPa · s
Density (20 °C)	1.02 g/cm³
Refrative index n_D^{20}	~1.44
Color	transparent clear to slightly purple
Flash point; DIN 51755	~ 10 °C
Solids content	25 – 28 %
Storage stability	2 years after filling, if correctly stored
Storage temperature	Max. 30 °C
Packaging materials	Colored glass and aluminum
Thinner	ACRIFIX® 1R 9019
Cleaning agents for equipment	ACRIFIX® TC 0030, ethyl acetate

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