COLLACRYL

Adhesives for acrylic sheets

SOLVENT - BASED ADHESIVES

1.1 General description

Solvent-based adhesives for physical hardening.

Products based on special solvents and polymeric resin.
These products act through partial dissolution of the surfaces to be welded and through evaporation and diffusion of the solvents in order to create a solid bond of the two joined partes.

ATTENTION: suitable for transparent colourless, or also opaque-coloured, PMMA methacrylate sheets and allow very good initial bond strength.

The joint obtained are totally transparent and colourless, very solid and often free of bubbles; good thickness fillers can also be executed.

They can be exposed to external light and weather conditions with improved performance whether subjected to further annealing.

Suitable to weld acrylic PMMA material, casted or extruded, not crosslinked and not scratch resistant: in such cases perform preliminary tests in order to evaluate the usability and the final toughness of the weld.
In the case of satin sheets the surface aesthetic appearance is modified. In
case of coloured sheets, colour migration phenomena can occur.
In the case of highly pigmented sheets (for example densely colored white sheets) reductions in the final toughness of the bond may occur.

In the case of hi-impact sheets, a diminished elastic property in the area adjacent to the junction is manifested.
In the case of fire-resistant sheets there are slower hardening and lower toughness.

Available products :

K 365	viscous for general use and for laser-cut edges.
K 360	fluid for general use and for laser-cut edged
K 25	viscous for general use
K D	viscous for general use of lower aesthetic
K 450	no chlorine viscous for general use
K 440	no chlorine fluid for general use
K 430	no chlorine liquid for general use
K 400	no chlorine thinner
K 90	not filling solvent based adhesive with immediate contact adhesion
K 320	not filling solvent based adhesive with immediate contact adhesion on polycarbonate and PETG

Packaging: box containing 6 aluminium bottles of 1 liter each

Storage: locked in a cool area (ideal in a refrigerator, no freezer)

Dispensers: optimal in PE

Tools cleaning: with K 400 and K 90 thinners or DCL 20 cleaner or pure acetone

1.2 Typical values

Values estimated at 23° C and with a relative humidity UR=50%

	K 365	K 360	K 25	K D
Viscosity, Brookfield (mPa*s)	900-1.200	500-600	900-1.200	900-1.200
Density (g/cm3)	≅ 1,17	≅ 1,18	≅ 1,22	≅ 1,20
Solid content (+/- 2%)	13	6	15	15
Maximum dilution with K 90 (%)	10	10	10	10
Tensile strength (MPa) (DIN 53455, ISO 527)	28-30	25-28	24-26	23-25
Setting time (sec) casted	20-30	10-20	20-30	20-30
Setting time (sec) extruded	10-15	5-10	10-15	10-15
Processing time (hours)	3	3	3	3

	K 450	K 440	K 430
Viscosity, Brookfield (mPa*s)	900-1.200	500-600	1,0 – 5,0
Density (g/cm3)	≅ 1,12	≅ 1,05	≅ 1,00
Solid content (+/- 2%)	13	11	≅ 1,00
Maximum dilution with K 400(%)	10	10	
Tensile strength (MPa) (DIN 53455, ISO 527)	30-35	35-40	35-40
Setting time (sec) casted	60-90	40-80	30-60
Setting time (sec) extruded	30-45	20-40	20-40
Processing time (hours)	3	3	3

	K 90	K 320
Viscosity, Brookfield (mPa*s)	0,8-1,0	0,8-1,0
Density (g/cm3)	≅ 1,30	≅ 0,90
Solid content (+/- 2%)	1	1
Tensile strength (MPa) (DIN 53455, ISO 527)	30-35	≅ 20
Setting time (sec) casted	5-10	
Setting time (sec) extruded	0-5	
Setting time (sec) to polycarbonate		5-10
Processing time (hours)	3	3

1.3 Working instructions

A slight yellowish color of product does not affect the final result.

The presence of possible whitening in the junction show excessive humidity and compromises the final toughnesses of the bond.

The further working processes can be performed already after the hardening, preferably after 3 hours, in any case, bear in mind that the stabilization will be definitive after 24 hours.
Heat tends to shorten the hardening process and could encourage the formation of cracks. Reduced bonding times could cause a lower final toughness.

Products can be mixed if an optimal customized viscosity is required.

The dilution with the thinners allows to regulate the viscosity according to the type of use, the employment temperature and the equipment used.
It is not recommended to dilute the adhesives with quantities exceeding those advised. Dilution tends to a greater aggressiveness of the product on the sheet.

Adhesives have to be chosen according to rapidity and viscosity.

The solvent based adhesives are not ideal to the bond of very extended flat surfaces, as in the central areas, there might be an excess of retention of the solvents and the resulting formation of bubbles.

The solvent based adhesives can also be used with the dipping technique, prior covering of the parts not involved with PE tapes and films, polyester or cellulose acetate.
The submerged surface softens in a few seconds (see specific setting times), and then it must be bonded with the second part kept firm for at least 30 seconds until the initial stabilization of the bond.

It is possible colouring K 25 and KD adhesives using suitable dyes prior specific test.

1.4 General processing techniques

The products should be used at room temperature of 20-25° C, preferably in low humidity areas. If stored in the refrigerator, they must be taken to room temperature before use.

Preventive cleaning of the parts to be welded must be done by using specific detergent Cleaner CL 70.
The junction area can be roughened with sandpaper (320-400 grain) to encourage and improve the adhesion.

The areas adjacent to those of application, have to be covered with suitable PE adhesive tapes or with PE adhesive sheets or with special water-based peelable paints.

Adhesives have to be kept is the dispenser, as much as is required for the complete disaeration, especially with the most viscous ones.
Attention has to be paid in order to eliminate even finer bubbles which are more difficult to be identified. The adhesives have to be locked in order to avoid the formation of hardened surface film.

The parts of adhesive which emerge from the joint section, have to be removed in a short time (few minutes), using Cleaner DCL 20, which allows to remove them without affecting the sheet and without forming halos.

Place the pieces to be joined and apply the adhesive with a dispenser or with disposable syringe after having waited for the elimination of the air included; pay attention to apply slowly without forming bubbles and without moving the pieces of the junction.
Apply a slight pressure for a few minutes to consolidate the bond; avoid excessive pressure and subsequent release for possible inclusion of air and retreats.
Excessive pressure may cause cracks on the bonded parts.
The formation of air bubbles and retreats may depend on an inadequate wetting of the surfaces of the joint.

Do not allow the adhesive to enter the closed cavities for strong slowdown of hardening with possible formation of cracking of the parties.

Bonding of two flat surfaces can be executed pouring the adhesive on one of the two surfaces following the diagonals and then addind the second sheet, placed on side, bonding it rapidly and gently eliminating the possible air bubbles in the edges.
Provide a base that allows the dripping of excess product, or seal the edges with suitable tapes in order to prevent spillage.

Very heavy sheets and blocks have to be spaced in order to allow optimal thickness of adhesive and prevent excessive pressure.
In the same case, but with vertical positioning, should be attention to the greater formation of bubbles which must have the time to escape from the top.

Remember that usually there are volume retreats after curing.

In corner bonds it is better to create an adhesive drawstring along the edges in order to create a stockpile of material which can diminish both the formation of the retreats and the air inclusions.
Maintain an opening angle, by sawing the border in oblique, in order to facilitate the entry of the adhesive. The opening angle will be greater for low thicknesses that need more material to create the right toughness.
With angles of reduced opening, very fluid adhesives which enter in the capillarity can be used to execute bonds, in such case pay attention to the complete wetting of the junction edge.

To prevent cracking, and in particular in case of extruded material, a preventive annealing of the pieces to bond has to be done.

The time required depends on the quality of the material, the size and thickness of the sheets, and indicatively will be of 2 - 4 hours at temperatures of 70-80° C with subsequent slow cooling.
In order to obtain high resistances both mechanics and to external exposure of the articles joined, perform the annealing of the pieces already welded.

The overlapping of two polaroid sheets on transparent colourless pieces allows to visualize possible differences with the finding of possible iridescences in the tight areas.

Laser-cut edges are always very stressed, in such case use specific solvent products, or follow the described procedure of annealing.

The further working processes can be performed already after the curing, in any case, bear in mind that the stabilization will be definitive after at least 24 hours.
Heat tends to shorten the hardening cycles and could encourage the formation of cracks and bubbles.

Alternative materials joinable with PMMA

PC	possible with solvent product K 90
	PC + PC with specific product K 320 solvent or K 90 solvent
PETG	K 320 solvent
ABS	K 270 2 components reactive
PS	K 450 and K 440 solvent
PVC	K 365 and K 360 solvent
	PVC Copolymers
	Neutral Silicone
UP	
PPO	neutral Silicone
PES	PUR acrylate with primer
PSU	
CAB	K 270 2 components reactive
	Neutral Silicone
PE	
PP	Not coupled
PTFE	
GLASS	K 201, K 151, K 121 with KGL 51 additive
	Neutral Silicone
	PUR acrylate with primer
WOOD	K 270 2 components reactive
	Neutral Silicone
METALS	neutral Silicone
STONES	
CORK	neutral Silicone
LEATHER	

In all cases it is absolutely expected a preliminary test, being general information without a guarantee.

For different materials, take into account the different extensions if thermally stressed.
In the case of not metals and plastic materials, consider the possible humidity which creates both obstacles in the bonding and aesthetics.
In the case of porous materials it is always advisable to work with fluid adhesives which improve permeability.

To join small surfaces it can be used also cyanoacrylic adhesive with rapid grid.

1.4 Safety and waste

Complete information regarding safety are contained on the pertinent sheet.
All products are exclusively designed for professional use.

Empty packages must be disposed by companies authorized to transport hazardous waste with the encoding of the European List of Wastes:

LoW code : 15 01 10
Waste description : Packagings containing contaminant residuals

1.5 Informative annotations for the sale

The buyer is responsible for verifying the compliance and the suitability of the goods received.

Eventual damages during the transport and the eventual verification after the delivery, must be recorded by a copy of the document of transport stamped and signed for receipt, with the specific description in the notes of “acceptance with reserve”.

Any claim by the side of the buyer must be received by the Company in writing with reference to the purchase invoice of material object of dispute and should be offered the opportunity to examine the defect and its possible causes.

In case of regular complaint, verified the veracity of the complaint, the Company undertakes to replace the defective material with the same or with other equivalent, whether the approval is clearly expressed by the sales department.

The ordering part is responsible for the use of the material received.

Eventual analyses and/or tests regarding the performances of the product supplied could be executed exclusively by qualified staff and under the exclusive responsibility of the buying part.

The material must be transported, stored and worked by qualified staff and in compliance with the described specifications that, at the act of the confirmation order, are considered acknowledged by the purchaser together with the safety regulations described in the specific security technical sheet.

Information about the proper use and maintenance of the products have a knowledge-sharing scope, describing the characteristics and the possible use and do not constitute any warranty expressed or implied to the buyer who has the responsibility to verify the functionality and/or the possibility of application to its use with qualified personnel.

The conditions and working methods taking place by the final user, are unknown and out of control of the supplier company and therefore fall under full responsibility of the first.

The buying part and eventual users of the material are responsible for observing all the enforced laws, allowing the workers and their representatives to have access to the information supplied in relation to their professional activity.

The information of the technical sheet and any other advice yonder contained correspond to the present state of the knowledges and the experiences of the manufacturer company.

The information of the technical sheet do not involve any obligation or responsibility by the part of the Company, also in presence of intellectual property rights of third parties and, in particular, of patent rights.

In particular the information of the technical sheet do not involve any responsibility and/or guarantee, expressed or implicit, on the qualities and the characteristics of the article described.

The manufacturer company reserves the right to modify the products in relation to knowledges and experiences deriving from the technological progress or further activities of development.

The content of the technical sheet is modifiable exclusively by the company manufacturer.

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