



PRODUCT DOCUMENTATION

::: biacryl :::

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1. PRODUCT IDENTIFICATION

::: biacryl ::: is the brand name for high molecular cast acrylic glass produced by the company CMC Biacryl SA. The sheets are manufactured from 100% MMA.

2. APPLICATIONS

::: biacryl ::: sheets and blocks are primarily used for:

- lighting covers, lighting advertising, sight glass
- architectural art: as construction material and picture carrier as well as safety screen
- special glazing: e.g. for architecture projects
- over sized glazing, which cannot be realized with glass, like for example viewing panels for aquaria and pools,
- video projection screens

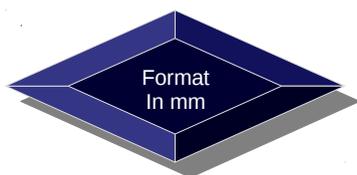
3. PROPERTIES

- Transparency of about 93% (thus, acrylic glass is the most transparent plastic)
- High impact strength (more than ten times higher than that of glass)
- Weatherproof and UV-resistant (no appreciable aging in ten years in outdoor use)
- Excellent thermal and acoustic insulation
- Lightweight compared to glass (about half), with a density of 1.2 kg / dm^3 , it is only slightly heavier than water
- Hardness similar to that of aluminum
- Scratches in acrylic are very easily repaired with polishing paste
- On combustion, no toxic gases arise
- Tremendous ease of machining and shaping

4. PRODUCTS

4.1 Sheets

::: biacryl ::: cast acrylic sheets colourless transparent.



Format In mm	6mm	8mm	10mm	12mm	15mm	20mm	25mm
3500x2540		★	★	★	★	★	★
3800x2750	★	★	★	★	★	★	★
3100x3100	★	★	★	★	★	★	★
4100x3100	★	★	★	★	★	★	★
5100x3100	★	★	★	★	★	★	★
6100x3100		★	★	★	★	★	★
8000x3100			★	★	★	★	★

4. PRODUCTS

4.1.1 Information

Biacryl produces oversize cast acrylic sheets with cell cast technology.

Sheets are delivered untrimmed with double-sided transparent PE protective film.

Cuts are possible with extra charge.

The light transmittance for all formats and thicknesses is $> 92\%$ (measured according to DIN EN 410, considering 3cm thick specimens).

The values may vary depending on the instrument used.

The material conforms to ISO 7823-1 and is UV transparent.

4.1.2 Tolerances and Shrink Value

Tolerances

thickness	for length and width untrimmed	regarding cuts	for planarity deviation from a straight line
+/- 20%	+/- 20mm	+/- 3mm	$\leq 5\text{mm}$

Shrinkage

in length and width by heating to forming temperature $\leq 2\%$

Sheets and blocks are usually delivered uncut, sizes are about 40 mm larger than the trade size.

4. PRODUCTS

4.2 Blocks



Format In mm	40 mm	45 mm	50 mm	60 mm	65 mm	70 mm	80 mm	90 mm	100 mm	110 mm	120 mm	130 mm	140 mm	150 mm
2050x3050	★	★	★	★	★	★	★	★	★	★	★	★	★	★
3100x3100	★	★	★	★	★	★	★	★	★	★	★	★	★	★
4100x2000	★	★	★	★	★	★	★	★	★	★	★	★	★	★
4100x3100	★	★	★	★	★	★	★	★	★	★	★	★	★	★
5100x2000	★	★	★	★	★	★	★	★	★	★	★	★	★	★
5100x3100	★	★	★	★	★	★	★	★	★	★	★	★	★	★
6100x2200	★	★	★	★	★	★	★	★	★	★	★	★	★	★
6100x3100	★	★	★	★	★	★	★	★	★	★	★	★	★	★
8000x3100	★	★	★	★	★	★	★	★	★	★	★			

4.2.1 Information

The light transmittance for all formats and thicknesses is > 92 % (measured according to DIN EN 410, considering 3cm thick specimens).

The values may vary depending on the instrument used.

The material conforms to ISO 7823-1 and is UV transparent.

4. PRODUCTS

4.2.1 Information

biacryl produces blocks monolithic, respectively in one cast, up to a thickness of 150mm. With lamination up to 340 mm (only order related).

Larger or thicker blocks are glued. Preferred is bonding in house to still transportable sizes.

Cuts are possible with extra charge

Custom-made products are effected order related. Delivered is the entire production unit or a multiple thereof . Under deliveries are possible.

Unit of trading will be quoted upon request. Please specify the required net number when ordering.

Delivery times, prices and other conditions we will tell on request.

The mass production of oversize acrylic blocks by biacryl has been preceded by a multi-year development work, which was characterized by:

- The optimizing of the cell cast technology with high-quality oversize float glass sheets
- Achieve a very consistent polymer made of 100% methyl methacrylate
- The implementation of a high degree of flexibility in thicknesses and formats
- Minimizing of production energy input

4. PRODUCTS

4.2.1 Information

Biacryl produces oversize acrylic blocks on an own facility. Besides the usual characteristics of cast acrylic such as high transparency and light transmission, no yellowing, thermoplastic, elastic material, good mechanical transformation and thermoforming, Biacryl blocks are standing out by:

- better material properties
- high-molecular
- larger modulus of elasticity and yield point concerning long-term stress
- lower internal stress
- other sizes and thicknesses
- the largest produced widths in Europe (up to 3100 mm)
- monolithically cast thicknesses up to 100 mm
- order-related all between thicknesses from 40 mm possible
- smaller thickness tolerances
- better body structure
- very good planarity
- scratch free
- marketable
- marketable delivery conditions
- good disposability

4. PRODUCTS

4.2.2 Tolerances and Shrink Value

Tolerances

thickness	for length and width untrimmed	regarding cuts	for planarity deviation from a straight line
+/- 5mm	+/- 20mm	+/- 3mm	< /= 5mm

Shrinkage

in length and width by heating to forming temperature
< = 2%

Sheets and blocks are usually delivered uncut, sizes are about 40 mm larger than the trade size.

4.3 Bonding

::: Biacryl ::: cast can be bonded with PMMA acrylate glue in good quality.

To determine the suitability of the glue preliminary tests are necessary, we support you in planning.

5. TECHNICAL INFORMATIONS

PROPERTY	TEST METHOD	UNITS	VALUE
THERMAL			
Vicat Softening Point	ISO 306A	°C	>110
Heat Deflection Temperature (load)	ISO 75A	°C	>95
Linear Coefficient of Expansion	ISO 11359-2	1/K	7x10 ⁻⁵
Ignition temperature	DIN 51794	°C	>400
OPTICAL			
Light Transmission uncolored	DIN 5036-3	%	>92
Light Transmission 10 years	DIN 5036-3	%	>90
Light Transmission UV over 395 nm	ISO 13468-1	%	>90
After 1000 h Xenon test (ISO 11341-1, 6 mm)	ISO 13468-1	%	>88
Haze	ISO 7724-3	%	1
Refractive Index	ISO 489	%	1,49
MECHANICAL			
Tensile Strength 20 °C	ISO 527-2/1B/5	N/mm ²	>72
Tensile Strength 65 °C	ISO 527-2/1B/5	N/mm ²	>36
Elongation	ISO 527	%	
Flexural Modulus	ISO 178	N/mm ²	>3400
Modulus E	ISO 527-2/1B/5	N/mm ²	>3300
Shear Modulus	ISO 527-2/1B/5	N/mm ²	1700
Specific Gravity	ISO 1183-1	Kg/cm ³	1,19
Flexural Strength (10 ⁶ LW)	ISO 178	N/mm ²	>100
Izod Impact Strength		kJ/cm ²	1,6
C harpy Impact Strength maximum load up to 40 °C (consulted)	ISO 179-1	kJ/m ² N/mm ²	>13 5 - 10
GENERAL			
Relative Density	ISO 1183-1	g/cm ³	1,19
Rockwell Hardness	ISO 2039-2	M Scale	>100
Shrinkage first heating		%	<1,5
Water Absorption	ISO 62 (24 h RT)	%	0,3
Flammability	DIN 4102		B 2, normal inflammable

The above data represents typical results obtained using standard test pieces, it should not form the basis of specifications.

Information contained in this publication is based on our general experience and is given in good faith, but we are unable to guarantee its accuracy or to accept responsibility in respect of factors outside our knowledge or control. Freedom under patent, copyright and registered designs cannot be assumed.

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6. SURFACE PROTECTION

To protect the sheets a 70 my PE cast film with 3 overlapped layers is applicated.

The overlapped area is marked with the ::: biacyl ::: inscription.

The film is made without glue and water-resistant for 3 month.

Without direct sunlight and temperature under 30 degree the film can be left until 12 month.

For thermal transformation the film has to be taken away.

Please contact us for other technical questions.

7. STANDARDS

::: biacryl ::: cast acrylic sheets and blocks are produced with great care and commitment to continued monitoring, the quality is based on ISO 7823-2.

Thereafter, the polymer must have a smooth surface and shall nowhere have scratches, marks or other surface defects of more than 3 square millimeters (mm²).

In addition, no bubbles, inclusions, cracks or other errors greater than 3 mm² may be present that could affect the serviceability of the sheets for their intended use.

Negligible are surface defects with less than 1 mm², acceptable surface defects are 1-3 mm². Within an area of 1 square meter (m²) there must be no accumulation of small errors, which size is by definition set to be negligible.

At a distance of 500 millimeters (mm) must be no further errors occur in or on the board, which size is by definition set as acceptable.

8. MANUFACTURING TECHNOLOGY AND PROCESSING

::: biacryl ::: cast acrylic is suitable for sawing, milling, grinding, polishing, bending, shaping and gluing.

::: biacryl ::: can be treated easily.

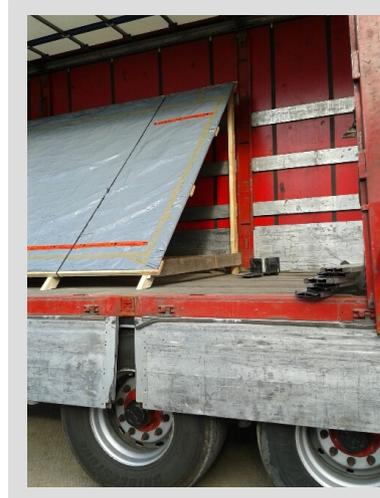
It is suitable for usual machining techniques and is particularly suitable for thermoforming.

9. SALES TERMS AND DELIVERY CONDITIONS

9.1 Logistics

The goods are shipped worldwide with external forwarders. Forwarding prices are day rates and are requested from us order related in the case of exports.

For transportation, we manufacture made-to-measure pallets.



For custom-made products and very large sizes we manufacture horses made of steel that guarantee a safe transport.

9. SALES TERMS AND DELIVERY CONDITIONS

9.2 General Sales Terms and Delivery Conditions

Scope

These terms and conditions apply to all business between CMC Biacryl SA and its customers in the respective, at the time the contract was amended.

Our terms and conditions apply exclusively. Opposing or deviating from our terms and conditions of the customer are not recognized, unless CMC Biacryl SA has expressly agreed in writing in individual cases.

Offers, Contracts

Our offers are made subject to confirmation. A contract is only formed when we give order confirmation in writing or when orders are fulfilled by us.

Place of Performance, Shipment

The place of delivery or performance shall be our place of production or storage. If shipment has been agreed to be included, we shall ship the goods at purchaser's risk. Furthermore, we shall determine the manner of shipment, shipment route and carrier.

Supply, Shipping Costs

CMC Biacryl SA will deliver the ordered goods to the address specified by the customer in the order. CMC Biacryl SA is entitled to partial deliveries. without additional costs for the customer. Delivery is to the individual case stated shipping costs.

9. SALES TERMS AND DELIVERY CONDITIONS

9.2 General Sales Terms and Delivery Conditions

The delivery time is approximately 4 to 10 weeks, however, depends on the respective production time as well as the delivery destination. Information on the estimated delivery time is not binding, unless CMC Biacryl SA should have promised the customer in individual cases in writing.

Retention of Title

The goods sold shall remain our property until all our claims against purchaser arising from our business relationship with purchaser have been satisfied. In case of default we are entitled to withdraw from the contract and reclaim the goods.

We reserve the right, even after conclusion of the contract, to carry out a credit check and withdraw from the contract in case of a negative result.

In the event that a supplier of us, despite a contractual obligation, does no more deliver the ordered goods which leads to a undeserved, not only temporary impediment of performance for us, we are entitled to withdraw. In case of withdrawal, we will inform you immediately about the unavailability and refund already paid considerations without delay.

Customs

For goods imported into countries outside of Switzerland and the EU, import duties may incur which the customer has to bear. These vary in different customs territories. The customer is responsible for the proper payment of the necessary duties and fees. Import duties are no shipping costs.

9. SALES TERMS AND DELIVERY CONDITIONS

9.2 General Sales Terms and Delivery Conditions

Guarantee

Are the delivered goods at the time of transfer of risk defective, we will ensure the elimination of the defect or replacement. In case of failure of the repair or replacement, you can demand a price reduction or cancellation of the contract of your choice.

Our liability for own negligence, as well as those of our legal representatives and agents is limited to intent and gross negligence. This does not apply to the breach of contract and the lack of guaranteed properties. Liability under the Product Liability Act remains unaffected

Claims due to wrong pictures, text and prices or late delivery are excluded. Price changes are reserved.

Applicable Law and Place of Jurisdiction

The provisions of Swiss law are applied, even if ordered from abroad or supplied to foreign countries. Jurisdiction for all claims in connection with your order is Neuchâtel. We are entitled to sue at your general place of jurisdiction. The ineffectiveness of individual provisions shall not affect the validity of the contract and these Conditions.

Miscellaneous

We only sell to merchants or legal persons (commercial customers and resellers). The contract can be canceled free of charge as commercial customer within 1 week after receiving the order confirmation. Offered prices are valid for four weeks up from the quotation date.

9. SALES TERMS AND DELIVERY CONDITIONS

9.3 Delivery Services

By delivery service we mean the fulfillment of our customer's wishes with regard to material, delivery date and location. Our delivery periods from receipt of the customer's order to date of shipment, within the agreed loading days, are:

Delivery period

Article

for articles in stock* in standard packaging
for cut-to-size orders from stock
for articles not in stock

Delivery time

1 to 5 workdays
5 to 10 workdays
depending on feedstock, production capacity and quantity ordered

9.4 Storage

Correct storage of material

::: biacryl ::: sheets and blocks in general are not delivered on storage pallets because of the oversize formats and logistics optimization. Correct storage of material is on horizontal storage pallets or storage locations. The caddies are unsuitable for storage.

10. ENVIRONMENT AND RECYCLING

::: biacryl ::: is due to its characteristics, a material which is used for high-quality, durable goods, so no classic consumer and throwaway product.

His aging and weather resistance ensures that :::biacryl ::: even after years of use is still fully functional and does not need to be exchanged and replaced early.

If material has been correctly processed :::biacryl::: emits no pollutants into the environment.

::: biacryl ::: cast acrylic is recyclable to 90%.

11. CLAIMS/TRANSPORT DAMAGES

11.1 Proceeding in case of the need to issue a claim

The quality of our products and services is an important component of our strategic position. If errors are nevertheless committed, they are due to human failings. It is our firm intention and obligation to learn from our mistakes. That is why we do our utmost to establish the cause of any errors or defects, in order to strive for constant quality improvement.

However, so as to ensure prompt handling and answering of your complaint despite the time required for research into the causes, we have compiled a summary of points from our company instructions for handling complaints, points to be dealt with by our staff on the spot.

We are convinced that it is useful for all those concerned to have the same up-to-date and detailed information. This will enable you to contribute right from the start to rapid handling of the complaint.

Instructions for handling complaints

1. The significance of complaints and objectives of complaint processing

Complaints are a cost factor for both the manufacturer and the purchaser of a product. The main aim is to stop complaints arising through efficient error prevention measures. Should complaints occur, coordinated and rapid action is essential to limit negative consequences, particularly loss of satisfaction, as far as possible. Complaints must be handled with high priority.

11. CLAIMS/TRANSPORT DAMAGES

11.1 Proceeding in case of the need to issue a claim

2. Receipt and passing on of complaints

Complaints may be made in writing or verbally. The recipient of a complaint must pass it on without delay, if applicable with the relevant sample, to the responsible of the sales representative from Biacryl. The latter is responsible for handling the complaint and for any coordination involved.

3. Minimizing damage

All parties concerned (fabricators, stockists, agencies and manufacturer) are urged to take all measures in their power to minimize damage.

4. Information required for prompt processing of complaints

The following are required:

- date of delivery
- invoice number
- number of test certificate, where applicable
- sample of material giving rise to complaint
- value of complaint (potential total value of complaint)
- total value of goods delivered
- machined state of material
- replacement material required?
- distribution route
- date of installation or use (copy of invoice)
- quality tests carried out (final test by CMC biacryl SA; examination by customer upon receipt of goods?)
- nature or extent of defect/error giving rise to complaint
- evidence with photos

11. CLAIMS/TRANSPORT DAMAGES

11.1 Proceeding in case of the need to issue a claim

Hints on cause of complaint

To avoid the recurrence of defects/errors, it is essential to recognize their cause. This makes precise description of the defect/error particularly important. To determine possible causes, the following aspects must be considered:

- field of application
- conditions of installation
- environmental conditions
- negative influence of chemical
- correct storage of material (on distribution route/at premises of claimant)
- correct transport of material (to the customer, at the customer's premises)
- correct fabrication or installation of the material
- construction elements with a negative chemical and physical influence
- errors in construction
- production defects
- faulty instruction/advice
- contributory causes on the user's side or on that of other third parties

5. Handing over the sample of material giving rise to complaint

A sample permitting clear identification of the defect giving rise to complaint should be sent directly to CMC biacryl SA by the customer in order to ensure prompt handling. The sample should be of adequate size in relation to the nature of the defect.

11. CLAIMS/TRANSPORT DAMAGES

11.1 Proceeding in case of the need to issue a claim

6. Order for return

The material giving rise to complaint shall remain with the customer until the complaint has been processed. Only when the complaint has been recognized by CMC biacryl SA a decision shall be made about the final destination of the material. If the complaint is recognized in full by a credit note or replacement, the material is to be withdrawn from the market (pick up or destroyed on the spot).

11.2 Proceeding in case of transport damages

In cases where the recipient does not make claims for damage during transport to his own insurance company or the shipping agent/freight carrier, according to the agreements on transport insurance or the risk of loss, he must submit the following documents concerning the damage to the sender CMC biacryl SA:

1. The original bill of lading, including an exact description of the nature and extent of damage during transport, with the date and signature of the driver of the consignment. General indications on the bill of lading such as „accepted with reservations“ are not sufficient.

In the case of damage during transport which is not notice-able externally, the recipient must present the damage to the shipping agent/freight carrier within one week at the latest, hold the former liable and send CMC biacryl SA a copy of the letter establishing responsibility together with the original bill of lading.

The reply, confirmation or recognition of the shipping agent/freight carrier is to be submitted as soon as received. In the case of rail transport, the railway company must be asked to provide a formal statement of affairs, which is to be submitted. This statement should include the cause and extent of the damage.

11. CLAIMS/TRANSPORT DAMAGES

11.2 Proceeding in case of transport damages

2. A detailed calculation of damage and residual value
3. the certificate of damage of a claims agent in the case of damage exceeding 2,500 Eur (addresses can be found in the directory of transport insurers or of the Gerling Group)
4. A declaration from the insurance company on the transport insurance or the non-insurance of the transport risk by the recipient
5. A subrogation assignment transferring to CMC biacryl SA the claim for damages to the shipping company/freight carrier.

12. FINAL REMARK

Our information are according to our current knowledge and experiences to the best of our knowledge. We, however, imply no liability.

Subject to change in the scope of technical progress or further developments are possible.

Our information describes merely the state of our products and services and are not guarantees.

The customer is not released from a careful examination of the functions and applications of incoming goods by qualified personnel. This also applies to the trade mark rights of third parties.

Mention of trade names of other companies is neither a recommendation and does not preclude the use of other similar products.