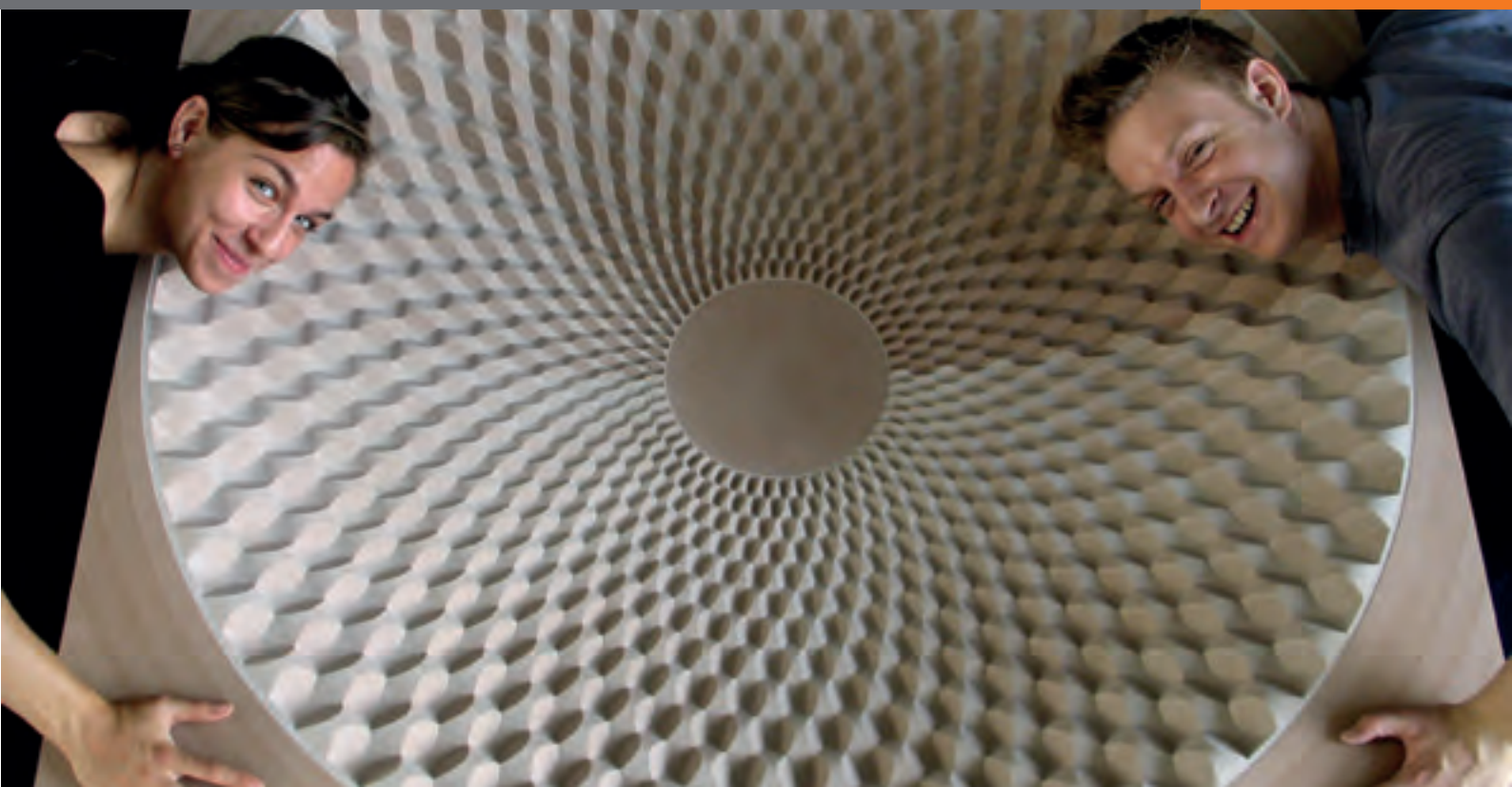
obo®

Your partner for the realisation of your ideas!

obomodulan®

Boards and block materials made of polyurethane as well as RenShape® epoxy boards for model, tool and mould making



Picture on front page: By kind permission of Werk5 GmbH, Berlin

OBO-Werke GmbH: Your strong business partner

Since 1869 OBO: It was a long way from a sawmill for tropical timber to a supplier of a broad range of tooling products for model, tool and mould making.

Today we are your competent partner with a team of service oriented professionals for the implementation of your ideas. No matter if you are looking for standard blanks, glued blocks, close contour cast blocks, tooling resins, modelling pastes according to your requirements or cut sized parts – individual solutions combined with flexible quantities are our strengths!

Please contact us. We will be happy to advise you of PU and Epoxy boards, close contour parts, modelling pastes and tooling liquids.

OBO-Werke GmbH: Facts and Figures

Development process:

- 1930th: technical plywood for aviation industry
- 1950th: manufacturing of school table tops and seatshells
- 1970th: manufacturing of impregnated compressed wood
- 1980th: delivery of the first obomodulan® boards made of polyurethane
- since 2000th:
  - » implementing further production facilities for PU
  - » since 2003 subsidiary of MBB SE
  - » since 2006 certified according to DIN EN ISO 9001 standard
  - » since 2015 new product range with obocastulan®
- employees: above 80

We deliver: 100 % quality, 100 % service, 100 % flexibility

By kind permission of Miele & Cie KG, Gütersloh

obomodulan®

We develop and produce model and tooling boards, for the model, tool and mould making industry.

We are pleased to deliver cast parts made of PU and epoxy materials.

Our advantages are:

- a comprehensive range of different densities from 80 up to 1600 kg/m³
- probably the largest range of standard board dimensions up to 2000 x 1000 x 420 mm depending on type and density
- profile following bonded block constructions
- full service programme offering cutting, bonding and machining of boards

Properties

obomodulan® convinces by:

- homogeneous and smooth surfaces
- even, fine cell structure
- high edge strength
- low coefficient of thermal expansion
- easy machining with low dust generation and low abrasion
- being generally recognized as physiologically neutral
- being neutral in odour

Best quality for different kind of applications

By kind permission of:
Werk5 GmbH, Berlin

obomodulan® boards

standard types and dimensions

technical data
measured average values, they are only limited suitable to determine specifications

Types	**80**	**210**	**240**	**302**	**400**	**502**	**500**	**630**	**652**	**652 HT**	**700**	**750**
Colour	yellow	light grey	mint	pink	orange	orange	magma	mokka	mokka	terracotta	terra	turquoise
Applications	• design studies • data control models • underconstruction for seamless modelling pastes	• design studies • data control models • master models	• styling models • visualizing models • laminating models • thermoplastic deep drawing models • architectural models	• design studies • laminating models • master models	• design studies • laminating models • master models	• design studies • laminating models • master models	• design studies • laminating models • master models	• design studies • laminating models • master models • vacuum forming moulds • foundry patterns	• design studies • laminating models • master models • vacuum forming moulds • foundry patterns	• laminating models • master models • vacuum forming moulds	• design studies • laminating models • master models • vacuum forming moulds • foundry patterns	• laminating models • master models • vacuum forming moulds • foundry patterns
Properties	• fine cell structure • easily shaped and machined • high deflection temperature up to 120°C	• homogeneous and smooth surface • easily shaped and machined	• fine cell structure • easily machined • low dust	• homogeneous and smooth surface • easily shaped and machined	• homogeneous and smooth surface • easily shaped and machined	• homogeneous and smooth surface • easily shaped and machined	• homogeneous and smooth surface • easily shaped and machined • good dimensional stability	• fine cell structure • easily shaped and machined	• fine cell structure • easily machined • high edge resistance	• high deflection temperature up to 120°C • fine surface structure • easily machined	• very fine surface structure • easily machined • high edge resistance	• very fine surface structure • easily machined
Density approx. **kg/m³**	77 – 82	200	240	300	400	470	500	600	650	650	720	750
Compressive strength (DIN EN ISO 604) approx. **MPa**	0,5 – 1	2 – 4	3 – 5	5 – 7	8 – 11	13 – 15	14 – 16	15 – 20	25 – 30	25 – 30	30 – 35	30 – 35
Bending strength (DIN EN ISO 178) approx. **MPa**	0,5 – 1	2 – 4	4 – 6	5 – 7	11 – 13	14 – 16	17 – 19	20 – 25	25 – 30	25 – 30	25 – 30	35 – 40
Linear thermal expansion coefficient temperature from approx. 25 up to 70 °C (according to DIN 53752) **$10^{-6} \cdot K^{-1}$**	50 – 80	55 – 60	40 – 45	55 – 60	50 – 55	50 – 55	45 – 50	50 – 55	50 – 55	55 – 60	45 – 50	55 – 60
Shore-D (DIN 53505) **Shore-D**	18 – 22 Shore-A	16 – 28	27 – 40	29 – 46	36 – 52	45 – 59	49 – 61	55 – 65	57 – 68	55 – 65	69 – 77	65 – 75
Deflection temperature **°C**	115 – 120	85 – 90	90 – 95	80 – 85	80 – 85	80 – 85	80 – 85	80 – 85	80 – 85	115 – 120	80 – 85	90 – 100
Standard dimensions **mm**	2000 x 1000 x 200 2000 x 1000 x 420	1500 x 500 x 100 2000 x 500 x 100 2000 x 1000 x 100 2000 x 500 x 150 2000 x 1000 x 150 2000 x 500 x 200 2000 x 1000 x 200	2000 x 500 x 100 2000 x 1000 x 100 2000 x 500 x 150 2000 x 1000 x 150 2000 x 500 x 200 2000 x 1000 x 200	1500 x 500 x 50 2000 x 500 x 50 2000 x 1000 x 50 1500 x 500 x 100 2000 x 500 x 100 2000 x 1000 x 100 1500 x 500 x 150 2000 x 500 x 150 2000 x 1000 x 150 1500 x 500 x 200 2000 x 500 x 200 2000 x 1000 x 200	1500 x 500 x 50 1500 x 500 x 75 1500 x 500 x 100 1500 x 500 x 150	1500 x 500 x 50 2000 x 500 x 50 2000 x 1000 x 50 1500 x 500 x 75 2000 x 500 x 75 2000 x 1000 x 75 1500 x 500 x 100 2000 x 500 x 100 2000 x 1000 x 100 1500 x 500 x 150 1500 x 500 x 200	1500 x 500 x 50 2000 x 500 x 50 2000 x 1000 x 50 1500 x 500 x 75 2000 x 500 x 75 2000 x 1000 x 75 1500 x 500 x 100 2000 x 500 x 100 2000 x 1000 x 100 1500 x 500 x 150 1500 x 500 x 200	1500 x 500 x 25 1500 x 500 x 50 1500 x 500 x 75 1500 x 500 x 100 1500 x 500 x 150 1500 x 500 x 200	1500 x 500 x 50 2000 x 500 x 50 1500 x 500 x 75 2000 x 500 x 75 1500 x 500 x 100 2000 x 500 x 100 1500 x 500 x 150	1500 x 500 x 50 1500 x 500 x 75 1500 x 500 x 100	1500 x 500 x 25 1500 x 500 x 50 2000 x 500 x 50 2000 x 1000 x 50 1500 x 500 x 75 2000 x 500 x 75 2000 x 1000 x 75 1500 x 500 x 100 2000 x 500 x 100 2000 x 1000 x 100 1500 x 500 x 150 1500 x 500 x 200	1000 x 500 x 50 1500 x 500 x 50 2000 x 500 x 50 1000 x 500 x 75 1500 x 500 x 75 2000 x 500 x 75 1000 x 500 x 100 1500 x 500 x 100 2000 x 500 x 100 1500 x 500 x 150
	other dimensions on request	other dimensions on request	other dimensions on	other dimensions on request	other dimensions on request	other dimensions on request	other dimensions on request	other dimensions on request	other dimensions on request	other dimensions on request	other dimensions on request	other dimensions on request

The technical data relating to the material and its processing has been compiled carefully and is correct to the best of our knowledge. The information cannot, however, be taken to be legally binding nor as any commitment that the material has certain properties or is suited for any particular purpose.

Best quality for different kind of applications

obomodulan® boards

Epoxy

standard types and dimensions

technical data
measured average values, they are only limited suitable to determine specifications

Types	**850**	**1000**	**1200**	**1200**	**1400**	**1550**	**1600**	**1600**	**1700**	**RenShape® BM 5050**	**RenShape® BM 5055**
Colour	grey	creme	green	sahara	blue	grey	grey	sand	black	blue	light green
Applications	• laminating models • checking fixtures • vacuum forming moulds • foundry patterns	• checking fixtures • pattern plates • core boxes	• checking fixtures • core boxes • pattern plates	• checking fixtures • foundry models • pressing tools • hammer form tools	• lay up tools • foundry models • pattern plates	• jigs • pattern plates • fixtures	• jigs • thermoplastic deep drawing mould • vacuum forming moulds • fixtures	• jigs • pattern plates • pressing tools • hammer form tools • fixtures	• jigs • pattern plates • pressing tools • fixtures	• prepregs • data control models • cubing • vacuum forming moulds	• prepregs • data control models • cubing • vacuum forming moulds
Properties	• very fine surface structure • easily machined • high abrasion resistance	• very fine surface structure • easily machined	• very fine surface structure • easily machined	• very fine surface structure • easily machined	• very fine surface structure • easily machined	• very fine surface structure • easily machined • very high compressive strength	• high deflection temperature up to 120°C • low coefficient of thermal expansion • easily machined	• fine surface structure • easily machined • very high compressive strength • low coefficient of thermal expansion	• fine surface structure • easily machined • very high compressive strength • low coefficient of thermal expansion	• very fine surface structure • easily machinable • very good dimensional stability • high deflection temperature up to 110 °C	• very fine surface structure • easily machinable • very good dimensional stability • high deflection temperature up to 140 °C
Density approx. **kg/m³**	810	950	1200	1200	1200	1550	1600	1600	1600	740	710
Compressive strength (DIN EN ISO 604) approx. **MPa**	30 – 35	45 – 50	80 – 85	80 – 85	90 – 95	95 – 100	90 – 95	105 – 110	105 – 110	60 – 65	60 – 65
Bending strength (DIN EN ISO 178) approx. **MPa**	30 – 35	50 – 55	90 – 95	85 – 90	95 – 100	95 – 100	60 – 65	75 – 80	75 – 80	35 – 40	40 – 45
Linear thermal expansion coefficient temperature from approx. 25 up to 70 °C (according to DIN 53752) **$10^{-6} \cdot K^{-1}$**	50 – 55	50 – 55	60 – 65	60 – 65	70 – 75	50 – 55	50 – 55	45 – 50	45 – 50	30 – 35	35 – 40
Shore-D (DIN 53505) **Shore-D**	65 – 77	74 – 80	83 – 87	82 – 86	83 – 87	85 – 90	85 – 87	88 – 90	87 – 89	74 – 79	73 – 76
Deflection temperature **°C**	90 – 100	85 – 90	80 – 85	85 – 90	80 – 85	80 – 85	110 – 120	80 – 85	85 – 90	105 – 110	135 – 140
Standard dimensions **mm**	1000 x 500 x 50 1500 x 500 x 50 2000 x 500 x 50 1000 x 500 x 75 1500 x 500 x 75 2000 x 500 x 75 1000 x 500 x 100 1500 x 500 x 100 2000 x 500 x 100 other dimensions on request	1500 x 500 x 50 1500 x 500 x 75 1500 x 500 x 100 other dimensions on request	1000 x 500 x 30 1500 x 500 x 30 1000 x 500 x 50 1500 x 500 x 50 2000 x 500 x 50 1000 x 500 x 75 1500 x 500 x 75 2000 x 500 x 75 1000 x 500 x 100 1500 x 500 x 100 2000 x 500 x 100 other dimensions on request	1000 x 500 x 50 1000 x 1000 x 50 1000 x 500 x 75 1000 x 1000 x 75 1000 x 500 x 100 1000 x 1000 x 100 other dimensions on request	1000 x 500 x 30 1500 x 500 x 30 1000 x 500 x 50 1500 x 500 x 50 1000 x 500 x 75 1500 x 500 x 75 1000 x 500 x 100 1500 x 500 x 100 other dimensions on request	750 x 500 x 50 1500 x 500 x 50 750 x 500 x 75 1500 x 500 x 75 750 x 500 x 100 other dimensions on request	750 x 500 x 50 1500 x 500 x 50 750 x 500 x 75 1500 x 500 x 75 750 x 500 x 100 1500 x 500 x 100 other dimensions on request	750 x 500 x 50 1500 x 500 x 50 750 x 500 x 75 750 x 500 x 100 other dimensions on request	750 x 500 x 50 1500 x 500 x 50 750 x 500 x 75 750 x 500 x 100 other dimensions on request	1524 x 610 x 50 1524 x 610 x 75 1524 x 610 x 100 1524 x 610 x 150 other dimensions on request	1524 x 610 x 50 1524 x 610 x 75 1524 x 610 x 100 1524 x 610 x 150 other dimensions on request

Bonding with:
RenGel® SW 18/Ren® HY 5159

Mix ratio: 100 : 16

Repair with:
bonding with original material or
RenGel® SW 18/Ren® HY 5159

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Further Information

We deliver all standard boards tempered, trimmed and sanded.

Boards, finished tools and models should be stored flat in dry conditions at room temperature.

Boards should be protect from sunlight to avoid fading.

The material should be acclimatized to 18 - 25°C prior to machining. Temperature variations should be kept as moderate as possible.

Machining

We recommend the use of high speed CNC-machine centres and traditional wood and plastic working machines for the purpose of machining obomodulan®. In principle, traditional metal working machines are also suitable for this purpose.

Carbide milling cutters should be used for machining purposes. Solid carbide for small milling cutters and reversible carbide tips for larger cutter diameters.
The cutting edge geometry is identical to that used for machining aluminium.

On request we also manufacture cut to size or special dimensions according to your drawing or sketch.

Beside our CNC machines we have other machines for special machining in house. Please ask us and we are pleased to submit an offer to you.

We can send you the detailed machining processing information by fax or email.

Horizontal cut boards

Beside our large variety of standard boards we offer you the following special service:

We cut boards starting at a thickness of 5 mm in every requested thickness with our horizontal saw. We surface calibrate the boards after cutting.

Your advantages:

- optimized dimensions
- easier handling
- reduced milling time
- less material waste

Bonding facility

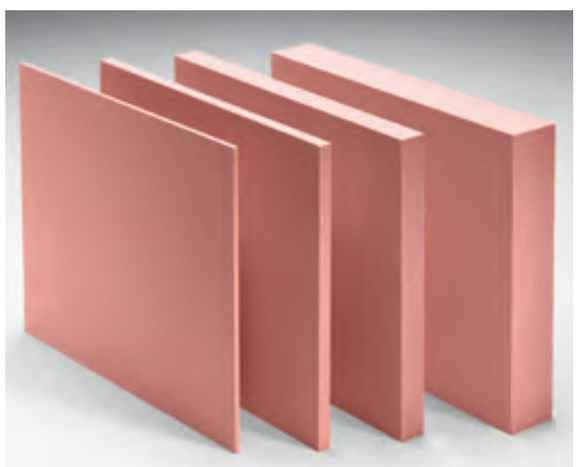
You can have all obomodulan® standard types bonded according to your requirements.

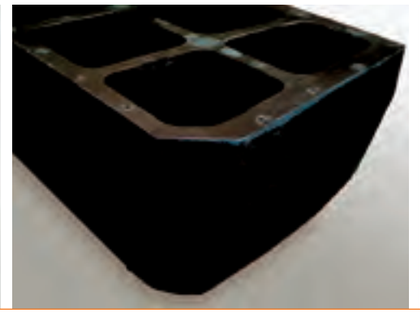
We use a two component epoxy based adhesive. However, you may also use any other polyurethane, epoxy or polyester based adhesive of your choice.

Just contact us, we are pleased to make you an individual and free offer.

This procedure offers the following important advantages:

- **bonded boards and block construction** of this facility give the highest level of stability during machining
- **minimal** and uniform glue joints
- **time and cost saving** production and processing
- **reduction** of waste





obocastulan® cast blocks / close contour casting

We are able to offer you the cast blocks and the close contour casting for the following types:

technical data
measured average values, they are only limited suitable to determine specifications

Advantages:

- improved economic efficiency by reduced material consumption
- no glue joints
- profile following cast block
- reduced machining time by optimized shape

Types	**720**	**850**	**850**	**1200**	**1600**	**1750**	**1850**	**RenShape® BM 5055**
Colour	terra	brown	grey	blue	sand	black	blue	light green
Applications	• design studies • laminating models • vacuum forming moulds • checking fixtures	• design studies • laminating models • leather covering models • checking fixtures • cubing models	• design studies • laminating models • leather covering models • checking fixtures • cubing models	• foundry models • pattern plates • laminating models • jigs	• design studies • laminating models • vacuum forming moulds • checking fixtures	• design studies • laminating models • vacuum forming moulds • checking fixtures	• laminating models • galvano bath models	• prepreg tools • checking fixtures • cubing models • vacuum forming moulds
Properties	• very fine surface structure • easily machined • high edge resistance	• very fine surface structure • easily machined • high edge resistance	• very fine surface structure • easily machined • high edge resistance	• very fine surface structure • easily machined • high abrasion resistance	• very fine surface structure • easily machined • high edge resistance	• very fine surface structure • easily machined • high edge resistance	• very fine surface structure • high deflection temperature • chemical resistance • high abrasion resistance	• very fine surface structure • easily machined • high dimension stability
Density approx. **kg/m³**	720	850	850	1200	1600	1740	1840	710
Compressive strength (DIN EN ISO 604) approx. **MPa**	30 – 35	35 – 40	35 – 40	90 – 95	105 – 110	105 – 110	130 – 135	60 – 65
Bending strength (DIN EN ISO 178) approx. **MPa**	25 – 30	40 – 45	40 – 45	95 – 100	75 – 80	65 – 70	70 – 75	40 – 45
Linear thermal expansion coefficient temperature from approx. 25 up to 70 °C (according to DIN 53752) **$10^{-6} \cdot K^{-1}$**	45 – 50	55 – 60	55 – 60	70 – 75	45 – 50	40 – 45	35 – 40	35 – 40
Shore-D (DIN 53505) **Shore-D**	69 – 77	71 – 74	71 – 74	83 – 87	88 – 90	88 – 90	91 – 92	73 – 76
Heat resistance **°C**	80 – 85	70 – 75	70 – 75	80 – 85	80 – 85	80 – 85	115 – 120	135 – 140
Close contour casting (CCC) possible	yes	yes	yes	limited	yes	yes	yes	limited
Min. wall thickness in **mm**	40	50	50	30	50	50	60	60
Max. wall thickness in **mm**	220	350	350	130	350	350	500	400
Min. cast volume in **L**	30	150	150	50	150	150	150	100
Max. cast volume in **L**	250	600*	600*	130	2000*	2000*	2500*	400
Recommended offset for each surface in **mm**	20	20	20	15	10	10	10	20 – 25

*The max. cast volume depends on the geometry of the part.

We supply large scale or close contour cast obocastulan® blocks at a reasonable price. The tools are produced at OBO promptly, but you may also provide your own mould if convenient.

Please send us your drawing or CAD data and we will competently work out your request.

We deliver the cast blocks generally demoulded and tempered with cast surfaces. We are also able to mill one nominated side of the block in order that you can start with CNC milling straight away.

*The max. cast volume depends on the geometry of the part.

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OBO-Werke GmbH

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Business hours:
Monday until Thursday
08:00 a.m. until 04:00 p.m.
Friday 08:00 a.m. until 02:00 p.m.

email: info@obo-werke.de
www.obo-werke.de

Pick-up address / warehouse:
Werk I
Nordstraße
31655 Stadthagen
Germany

phone ++49/5721/7801-67
fax ++49/5721/7801-77

Business hours:
Monday until Friday
07:00 a.m. until 01:30 p.m.

Further Information

You can obtain the following information by fax or email:

- machining data
- material safety data sheets

edition: February 2018

Your sales distributor:

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E-mail: info@abylafrance.com