

November 19

PROCESSING RECOMMENDATIONS

Duopal HPL Compact

Duopal Compact Worktop



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1. SAFETY

- Before beginning work employees should be familiar with the available tools, the processing recommendations and the safety requirements.
- Personal protective equipment such as gloves, goggles, ear protection, dust / respiratory protection and safety shoes must be worn.



<https://downloadcenter.bgrci.de/shop/symbib>

- Only authorised individuals may enter the work area.
- All tools must be grounded to protect against electrical shocks and static electricity.
- All adjusting spanners and other spanners must be removed from the machine.
- The work area must always be kept clean and orderly.
- The workpiece must be secured and fixed in place with screw clamps if necessary.
- Only undamaged tools and the recommended accessories may be used.
- Tools must be reviewed before each use to ensure they are intact and may never run unsupervised.
- Duropal Compact worktops are heavy. They should always be carried by two workers. Be careful on steps and around corners during transportation.
- Hazardous materials, glues and other toxic or flammable materials must be stored according to the manufacturer's instructions for the specific material.
- Dust production should be reduced by using tools equipped with a vacuum or suction device.
- When working with materials that emit vapours, work areas must always be well-ventilated for health and safety reasons.

2. TRANSPORTATION AND PACKAGING

Duropal Compact worktops are heavy and high-value items. Therefore they are subject to special requirements related to transportation and storage.

Sufficiently large, flat, and stable pallets must be used to transport compact worktops. Worktops must be protected against slipping while stacked. Abrasive dirt particles in the worktop stack may leave impressions or damage on the surface.

Compact worktops are delivered individually packaged in boxes. The box and the product itself are marked on the top side (face up) of the product at the factory. Ideally this label should remain in place until it is installed in the kitchen. The top of the worktop must always be carefully protected during installation and assembly.

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Useful information on transporting assembled worktops for final installation:

- Ready-made worktops must be packaged securely and protected against damage. Worktops must not hit against one another as this poses a danger of damage and injury!
- The floor of the transportation vehicle should be padded. Easy access and transportability to the installation location must be ensured.
- Cut-outs for sinks and hobs must be reinforced for transportation.
- Two people are required for safe manual handling. Ideally compact worktops should be carried on their sides using vacuum carrying aids. There is an increased danger of breakage if they are transported flat.

3. STORAGE, HANDLING AND CONDITIONING

Duropal Compact work surfaces must be stored in closed storage rooms under normal room conditions, with temperatures between 18 – 25°C and a relative humidity of 50 – 65%. They must be protected against rain, moisture and direct sunlight during storage.

Ideally, the individual cardboard packages should be stored with their full surface lying against a suitable even surface (pallet with packing panel). The stack of worktops with flush edges is wrapped in foil and weighed down with a cover panel. These storage conditions must be ensured after removing panels from the stack.



Figure 1: Storage rack (proHPL)

When handling individual, non-packaged compact worktops these must always be lifted and may never be pushed against one another or pulled over one another. Even small particles of dirt or processing residues can damage the surfaces of the compact worktop

Compact worktops must be conditioned sufficiently before processing and installation:

- Materials processed when wet tend to shrink which can result in cracks and warping.
- Materials that are too dry are difficult to work with; they may expand, which can also cause warping.

In general, climatic conditions that will apply during later use must be considered during planning and construction. Good conditioning requires a normal room climate (see above).

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4. TOOLS AND MATERIALS

The following list includes tools and materials that may be necessary to install Duopal Compact worktops:

- Gloves
- Goggles
- Ear protection
- Dust / respiratory protection
- Safety footwear
- CNC processing machine
- Vacuum cleaner / suction unit
- Sandpaper / 240 grain
- Carpentry tools
- Dust protection foil
- Cleaning cloths
- Clear denatured alcohol (ethanol may also be used)
- Plastic tape (e.g. Tesa repair tape extra power universal)
- Masking tape (e.g. Tesa robust masking tape)
- Handheld Jointer & jointing bolts (e.g. Unika Installation Kit)
- Biscuit joiners and biscuits (e.g. Unika Installation Kit)
- Glue (e.g. BERNER Power Adhesive All-purpose Glue Speed or Unika Installation Kit)
- Linseed oil or silicone-free oil

Tools that are conditionally recommended:

- Handheld circular saw
- Handheld overhead router
- Handheld jointer

5. GENERAL PROCESSING RECOMMENDATIONS

These processing recommendations apply to processing and processing results independent of the decor or the product core (black, grey, white).

Successful processing with a high-quality professional finish always depends on having suitable new or freshly sharpened tools. Ideally products are assembled using workshop machines like a horizontal pressure beam saw and CNC processing. On site installation adjustments (construction site) are not possible or only possible to a limited extent and typically cannot be completed satisfactorily with "handheld" equipment.

Tool wear is higher due to the material's hardness and panel thickness. Depending on the quantities to be completed it is a good idea to select suitable tools and machines after own testing.

In general, local overheating due to incorrect tool guidance or using the wrong or unsharpened tools must be avoided during processing procedures.

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6. SAWING

Sawing should always be considered pre-machining as an initial oversize cut. The use of a saw is not recommended for final finishing on visible edges. Typically final finishing is completed by milling or routing. If the saw cut is clean the smallest possible addition of 2-5 mm must be calculated for the milling process.

- Horizontal pressure beam saws are ideal for sawing Compact worktops: The workpiece is fixed in place and forward feed is automatic
- Tabletop circular saws are only recommended in some cases: The workpiece is not fixed in place (danger of recoil!) and feed is completed manually
- Processing using a handheld circular saw is only suitable in some cases.
- Jigsaws are definitely not suitable!



Figure 2: Using a jigsaw to cut a Compact worktop

Compact worktops must be sawn with low forward feed (max. 15 m/min). To prevent the underside of the worktop from breaking out, we recommend using a scoring/scribing saw.

We recommend:

- Saw blades with trapezoidal teeth / flat teeth.

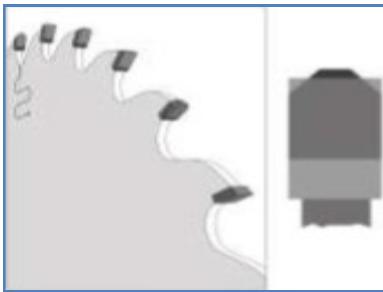


Figure 3: Saw blades with trapezoidal teeth / flat teeth (proHPL)

Our tool recommendation:

- LEITZ premium saw blade 163408 – 350x4.4 / 3.2x30 Z72 / 15.27 HW FZ/TR

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7. MILLING

Milling is typically used for final edge finishing: If suitable milling tools are used for processing, further finishing such as sanding is typically not required. Tools are selected based on production quantities and quality requirements.

Dia fitted milling cutters (roughing cutters with offset blades)

- Advantage: Longer tool life
- Disadvantage: Milled surface looks slightly unclean, uneven. This is visible particularly when the product core is black

Milling cutter with carbide insert

- Advantage: Exact, clean, smooth milled surface.
Reworking is typically not required in this case
- Disadvantage: Shorter tool life in comparison to Dia fitted milling cutters

Our machine recommendations:

- The high cutting pressure required during milling makes secure workpiece and tool guidance essential. As a result of this, finishing compact worktops on CNC processing centres is an ideal choice.
- Spindle moulders are suitable for milling grooves or tongues. Ensure that the top of the Compact worktop never moves across the machine table without protection.
- Manual finishing with a router is only suitable in some cases.

All edges and corners must be smoothed after milling. This reduces the danger of injury (cutting injuries) and notching effect (danger of cracking).

8. MANUAL PROCESSING

Machining with manual machines (sawing, milling), of in-cuts & cut-outs, draining boards, etc.

- As described under point 5 "General processing recommendations", a qualitatively satisfactory processing with hand-held machines is possible in an experienced manner.
- Due to the hardness of the material, we would like to refer again to our point 1 "Safety" at this point, as this demands even greater importance for manual machine processing.
- If manual machines are used for machining, it is imperative that you carry out your own tests in advance in order to be able to define the suitable machine selection and tooling, as well as the definition of the machining allowances. The machining result is to be assessed and determined according to one's own quality expectations.
- We recommend manual machines with the performance characteristics > 1,200 watts / > 5,000 rpm and its equipping with carbide, - or diamond tools.
- Machining results must be permanently monitored during the manufacturing process, since tool changes may have to be carried out in order to comply with the quality specifications defined by the user. In addition, we recommend surface protection such as a sturdy cardboard or a hard fibre board between the workpiece and the hand-held machine in order to prevent damage to the surface during machining.

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- The specifications of the machine and tool manufacturers must be observed.

If necessary, manual reworking is only practical on edges that have already been milled.

- Sharp or non-smoothed edges can easily be smoothed using sandpaper with a 240 grit. Any abrasive grit must be removed carefully.
- Finishing with a file, plane, or scraper is not recommended

9. DRILLING

Ideally drill holes ≥ 10 mm in Duopal Compact worktops should be produced using milling cutters. If drills are used, specialised plastic drill tips with a tip angle of roughly $60 - 80^\circ$ must be used.

Finishing must be completed on a solid, flat surface. All vibrations and wobbling of the worktop must be avoided. Sharp tool blades and smooth running tools are essential for good results.

If unsuitable tools are used, this will cause breakage, splintering, and warping at the edges of the drill holes. Notches may result, causing cracks.

To prevent splintering on the bottom when drilling through a workpiece the drill's feed speed must consistently be reduced. In blind holes the hole depth should be such that at least 1,5 mm worktop thickness (a) remains. When drilling parallel to the worktop surface the remaining thickness (b) must be at least 3 mm.

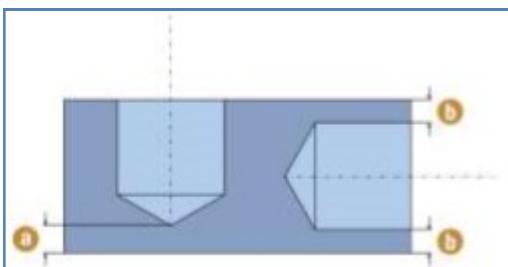


Figure 4: Drilling into Compact worktop, parallel and vertical to the worktop surface (proHPL)

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10. OTHER PROCESSING SYSTEMS

10. 1. EDGE BANDING MACHINE / SINGLE SIDED PROFILE SHAPER

Duropal Compact worktops do not require additional edgings, however edge banding machines can be used for the application of edgings to compact worktops:

- Elements pre-formed using a saw can be finished using milling, sanding, or buffing.
- The workpiece is fixed in place, and forward feed is automatic.
- Finishing is always completed on one side only.

Edge banding machines are useful for single orders and small series.

10. 2. DOUBLE ENDED PROFILE SHAPER

Double ended profile shapers a useful choice for finishing the long edges of compact worktops in large series production. In the classic sense these consist of two aggregate systems arranged in parallel and adjustable in relation to one another via an adjustment system. Finishing can be completed on two parallel edges at once.

The following aggregates can be used for example: Crosscut saws, vertical and horizontal drilling units, fixed and swivelling milling aggregates, sanding units.

11. EDGE APPEARANCE

Edge finishing can be completed using linseed oil or silicone-free oil. Finishing with oil will improve the visual appearance of the edge but will not affect its technical properties.

- In compact worktops with a black core and slightly uneven milling surface oil is a way to visually “fire” the piece making the edge appear intensively black when using the oil. If milled cleanly the edge appearance will also be ideal without using oil.
- Compact worktops with a grey or white core do not require oil treatment as the oil will give the edge surface a yellowish colour.

Our recommendations:

- Rubio MONOCOAT Oil Plus 2C
(https://www.rubiomonocoat.com/uploads/downloadsfile/orig/aa/de/RMC%20General%20Product%20Catalogue_A4_DE_lowRes6.pdf?v=1540972513)
- OSMO Top Oil 3058 (<https://www.osmo.de/opencms/de/navigation/suche.html>)

The top and bottom of the worktop must be taped off in the edge area to protect against contamination.

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12. GENERAL INSTALLATION RECOMMENDATIONS

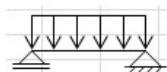
In general when building kitchens using Duopal Compact worktops please note that the height of cabinets in comparison to a Duopal worktop with a thickness of 39 mm will be reduced by 27 mm.

The design features of elements like hobs and sinks must be taken into consideration:

- Their height and attachment systems are frequently designed for worktops with a thickness of 39 mm. Therefore cladding and / or shadow gaps will often be necessary in designing furnishings or during installation.
- Cut-outs for hobs or sinks are always made in just one panel, never in two panels joined together.
- Heat sources like hobs must be installed at least 50 mm from the edge of the worktop.

Compact worktops can be subject to certain load requirements due to different installation situations. Please refer to the load tables for our recommendations.

Load tables:



panel width: 640/950mm

Maximum permissible uniform load on Duopal Compact panel with different span widths and bending criteria [kg/m ²]									
panel thickness in mm	Support distance (centre distance) in mm								Deflection criteria*
	100	200	300	400	500	600	700	800	
12	56206	12683	3758	1585	812	470	296	198	I/100
12	56206	8455	2505	1057	541	313	197	132	I/150



panel width: 640/950mm

Maximum permissible point load on Duopal Compact panel with different span widths and bending criteria [kg]							
panel thickness in mm	Support distance (centre distance) in mm						Deflection criteria*
	100	200	300	400	500	600	
12	1799	899	448	249	157	106	I/100
12	1799	674	297	165	103	69	I/150

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cantilever arm



The distance between the supports is shown incorrectly, the plate lies flat between the supports!

The plate is fixed in the whole field!

Maximum permissible uniform load on Duropal Compact panel with different cantilever arm lengths and bending criteria [kg/m ²]					
panel thickness in mm	Cantilever overhang in mm Recommendation (max. load situation)			Deflection criteria*	Deflection criteria*
	L	100	200	300	
12	10569	1321	391		I/100
12	7046	881	261		I/150



The distance between the supports is shown incorrectly, the plate lies flat between the supports!

The plate is fixed in the whole field!

Maximum permissible point load on Duropal Compact panel with different cantilever arm lengths and bending criteria [kg]					
panel thickness in mm	Cantilever overhang in mm Recommendation (max. load situation)			Deflection criteria*	Deflection criteria*
	L	100			
12	253			I/100	
12	168			I/150	

*For long-lasting loads, the loads that can be applied are reduced by approx. $\frac{2}{3}$ in order to permanently maintain the deflection limitation.

13. TONGUE AND GROOVE CONNECTIONS

When connecting Compact worktops with tongue and groove the groove width (a) and groove wall thickness (b) must be at least 3 mm. If the construction allows it the groove wall thickness (b) should be greater than the groove width (a). The groove depth should be kept as low as possible (max. 10 mm).

The interior edges of the T&G profiles must be chamfered. Sharp interior edges will increase the danger of notching.

Groove width (a)	= 3mm
Groove wall thickness (b)	\geq 3mm
Panel thickness (c)	> 10 mm

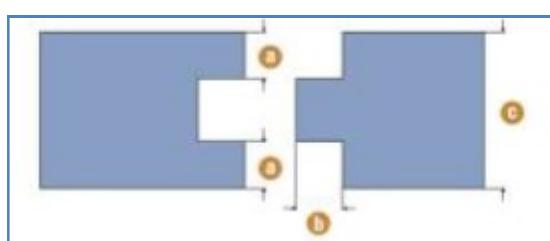


Figure 5: Connection via tongue and groove (proHPL)

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Due to possible dimensional changes, compact worktops must be installed with sufficient tolerance between the groove and tongue.

14. CORNER CONNECTIONS AND SLAB JOINTS

Panel edges must be milled cleanly; edges must be smoothed to the panel top and bottom surface and panels must be fit together tightly. An exact, even transition between panels is created by creating tongue and groove joints (see above) or biscuit joiners (<http://www.lamello.com>). Panels are fixed in place using connecting fittings and glue.

Our recommendations:

- Compact worktop width 640 mm: 3 pc. Worktop connectors plus 4-6 pc. Lamello biscuit joiners
- Compact worktop width 950 mm: 4 pc. Worktop connectors plus 6-8 pc. Lamello biscuit joiners
- Unika jointing kit or ZIPBOLT™ 100 Mini worktop connectors (see image below). ZIPBOLT™ 100 Mini worktop connector has a max. thickness of 13 mm, and will therefore overhang at least 4 mm. This must be taken into consideration in planning.
- Example adhesive: BERNER Power Adhesive All-Purpose Glue Speed – available in white and black https://shop.berner.eu/at-de/p/44197-klebstoff-kartusche-290-ml-ms-polymer.html?article_id=44197

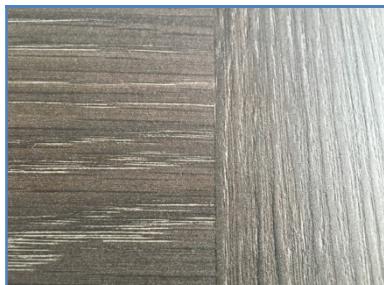


Figure 6/7: Corner connection – top of panel



Figure 8: Corner connection – bottom of panel

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Further recommendation:

- UNIKA Connection and Installation Set Compact Worktops (see Figure 9 – Set / Figure 10 – Worktop Connector)
http://www.unikainnovation.co.uk/?page_id=12019
- UNIKA sealant TopSeal (see figure 11)
http://www.unikainnovation.co.uk/?page_id=10789



Figure 9: Set



Figure 10: Worktop Connector



Figure 11: sealant TopSeal

15. INTERIOR OPENINGS AND CUT-OUTS FOR SINKS AND HOBS

When installing sinks and hobs and when creating drill holes for tap fittings, openings and cut-outs will need to be created in the compact worktop. All corners must always be rounded off. The interior radius must be as large as possible. With cut-outs that have edge lengths of up to 250 mm, a minimum radius of 5 mm is required. With cut-outs > 250 mm the radius must be increased step by step according to the side length. In addition a chamfer to the top and bottom sides of the panel is required.

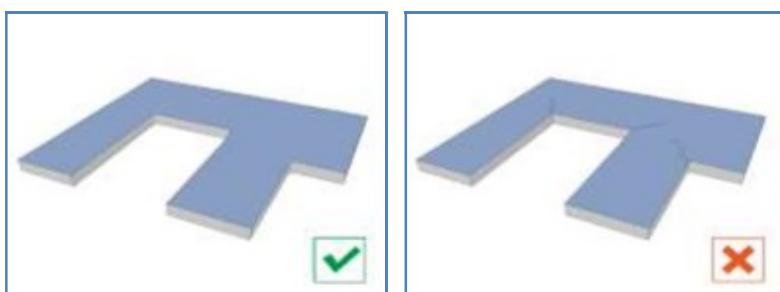


Figure 12/13: Designing interior cut-outs (proHPL)

Interior cut-outs must be rounded and sharp edges must be avoided in transitions to the surface, in particular when constructing the opening for the hob! Due to high heat levels these areas experience greater shrinkage stress.

Important note regarding cut-outs:

The waste cut piece must be supported during cutting to avoid the danger of breakage. The Compact worktop is weakened in the area of cut-outs. This must be taken into consideration in particular during transport and installation.

For recommendations regarding available sink models esp. for flush mounting please contact the manufacturer of the sink.

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16. SCREW FITTINGS

Frequently, screw fittings are required in Compact worktops, for instance to the body of the furnishing itself or wall connection profiles. All screws placed in Compact worktops must be pre-drilled.

Our recommendation:

- When using mounting screws the drill dimension must be 0.5 mm less than the screw diameter. If the worktop is not pre-drilled it may split and the screw may tear out!

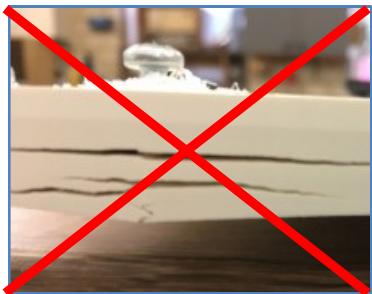


Figure 14: Danger of splitting in screw-holes that are not pre-drilled

17. BONDING

Ideally connections between the body of the cabinets and the compact worktop should be bonded. On the one hand this is typically a more suitable mounting option in comparison to screwing, although on the other hand it makes removal more difficult. Adhesive dots are applied to the mounting strip on the base cabinet. The Compact worktop is positioned on top of these.

18. DRAINING GROOVES

Duropal Compact worktops are ideal for creating draining grooves which must be combined with undermount sinks.

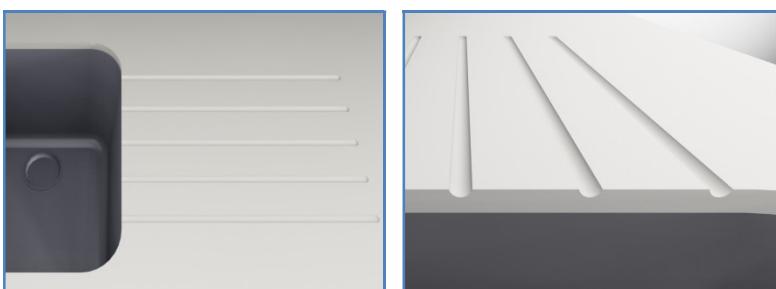


Figure 15/16: View of Compact worktop with sink and draining board, view of round groove profile

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These are created using a CNC machine. To avoid cracks due to notching, use a round groove profile with a maximum groove depth of 4 mm and a maximum groove width of 12 mm.

Using sharp ball cutters will reduce final machining work. Carefully sand the drainage grooves using 240 grit sandpaper. Ensure that the abrasive elements are always kept away from the decorative surface.

19. UPSTANDS

Enhance your Duopal Compact Worktop with a matching Duopal Compact Upstand. This accessory offers a cost-efficient and hygienic alternative to tiling. The upstand is used as a decorative element with a texture and core colour identical to the compact worktop. Upstands are available in every variation of the Duopal Compact worktop collection with a format of 4,100 x 120 x 12 mm.

- Cut upstand to length.
- One long edge is already milled and chamfered. This long edge is mounted with the exposed edge forward facing.
- A binding adhesive e.g. BERNER Power Adhesive All-Purpose Glue Speed is applied in dots on the back of the upstand and the element is positioned on the wall surface. A permanently elastic seal (silicone) is used to seal the compact worktop



Figure 17: Upstand identical to Compact worktop

20. FURTHER INFORMATION

- Product information – Duopal Compact Worktop
- Technical data sheet - Duopal Compact worktop, black, grey, white core
- Cleaning recommendation - Duopal HPL and DecoBoard

PM HPL/elements

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