

## USE AND MACHINING RECOMMENDATIONS

Duropal SolidColor  
Duropal SolidColor XTreme

Duropal SolidColor is an attractive surface material for surface and edge applications, which has the high-performance characteristics of the well-known Duropal HPL products. Both the decorative surface of the product and the product core are melamine resin-based. Due to the high melamine resin fraction, however, Duropal SolidColor is not only harder but also somewhat more brittle and therefore requires particular care during handling, storage and use or machining.

Duropal SolidColor XTreme is the ideal symbiosis of surface and product core. The matt, low-reflection surface XTreme Matt has an impressive velvety soft touch. It is extremely hardwearing and easy care and invites people to touch it – without leaving behind any fingerprints and traces of grease. Duropal XTreme is thus the optimum alternative to conventional matt surfaces in areas with large numbers of public visitors.

To achieve the required results, all the familiar use and machining principles and safety rules of conventional Duropal products must be followed. Equally, identical machines and tools are suitable for machining Duropal SolidColor and Duropal SolidColor XTreme. These use and machining recommendations document our own experience and the results from numerous production tests by our industrial and installer partners. The recommendations provide information about particular features of the product and point out possibilities for short-term and at the same time aesthetically valuable solutions for furniture and interior finishes using Duropal SolidColor and Duropal SolidColor XTreme.

## TRANSPORT, STORAGE AND HANDLING

The principles of the general use and machining recommendations for HPL apply to transport and storage. Particular safety measures are not required. HPL and thus Duropal SolidColor are not dangerous goods as defined by transport regulations. Labelling is therefore not required.

Due to its slightly higher brittleness compared to conventional HPL products, Duropal SolidColor requires careful handling. The material must therefore always be stored only horizontally; vertical storage is not recommended due to the risk of edge damage. Goods delivered as a roll (carton packaging) must be unrolled in advance, for example overnight, before use.

Duropal SolidColor boards must be stacked flush on top of each other, as protruding boards can become damaged at the edges. If an edge is damaged despite this, particular care is required during handling to prevent further tearing of the board in these places.

The climatic storage conditions are identical to those of conventional Duropal laminates. A cover board or panel is to be placed on the top to protect against mechanical damage.

It is always best for whole boards to be handled by two persons. Due to possible sharp edges, in general safety gloves must be worn when handling laminates. We recommend that safety glasses/goggles be worn to prevent eye injuries.

## FILM COVERING

We recommend that the protective film be left on the surface and – if present – on the edge during the entire machining process.

Please note that depending on the specific area of use, the spatial light conditions and the respective decor, visual impairments due to low surface orientation can occur with Duropal SolidColor XTreme. Such impairments do not constitute defects. To avoid possible aesthetic and visual impairments, we recommend that the orientation of the boards given on the protective film of the product always be followed - especially for large area applications.

## PRECONDITIONING

Duropal SolidColor and core material should be conditioned together in a room before the overlaying so that, as far as possible, they have the same moisture content during pressing. The best conditioning is achieved in dry storage (18 – 25 °C and 50 – 65 % relative humidity).

To make flat bonded elements, the front and rear are conditioned with the ground or sanded undersides facing each other. The conditioning takes place in a covered stack for at least three days.

## SAWING AND CUTTING

Duropal SolidColor is cut with identical tools and machines as those used for the usual Duropal HPL products. Sawblades must be hard metal (carbide) (HM), or even better diamond tipped (DIA). Please use sharp tools only! The condition of the tools is decisive for the result!

Due to the greater brittleness of Duropal SolidColor, splintering or chipping can occur on the HPL underside during sawing. We recommend the following precautions to reduce and splintering or chipping to a minimum:

- Use a precutter unit
- If not available, lower the sawblade deeper into the sawing bench
- Or use an additional substrate or backing, e.g. made of hard fibre, to reduce the free sawing gap opening
- Furthermore, use a sawblade with negative tooth angle (flat/trapezoidal tooth saw blade) in which cutting / milling with oversize for subsequent trimming is used.
- Do not use mechanical side pressure in automatic cut-to-size systems!

Saw blades with set teeth, (FZ/TR = flat/trapezoidal tooth) at 4,000 rpm are recommended. Good experience, especially with regard to Duropal SolidColor XTreme, has been achieved with, e.g. Leitz OPTICUT Z 72, diameter 350 mm, 4.4 mm thick blade, non-uniform tooth pitch.

Duropal SolidColor must be machined with suitable milling tools with high true running precision. The following also applies here: Diamond before hard metal tipped tools. Due to the manifold different use options of milling and cutting tools, it is difficult to give detailed tool recommendations. We recommend - where possible - cutters with shank angles (>30°). When using milling/cutting tools, please note and follow the recommendations of the tool manufacturers.

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Particular attention should be paid to the performance and function of the extraction system: Machining residues that are not removed worsen the result significantly!

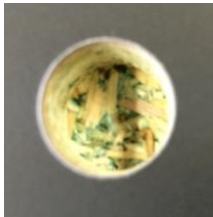
For further tool recommendations please refer to the use instructions of the tool manufacturers Leitz and Leuco regarding Duropal XTreme.

## DRILLING

For drilling, HM drill bits for machining plastic, with centring tip and tip angle of 50 – 60° are to be used; only sharp drill bits are to be used. For through and blind holes a low speed = feed rate must be chosen, or if possible a substrate/backing.

For rows of holes or concealed hinge holes we recommend, among other things, Leitz solid carbide drill pins or solid carbide Forstner bit. Note and comply with the speeds and feed rates of the manufacturer.

Due to the material, drilling Duropal SolidColor XTreme causes a raised edge effect on the drillhole edge. This property has no effect on the surface quality of Duropal SolidColor XTreme. The raised edge effect can be reduced by reducing the feed rate.



Duropal SolidColor XTreme, blind hole, diameter 16 mm

## PUNCHING

A laminate punch is not suitable for cutting Duropal SolidColor to size.

## FINISHING

Chamfering or deburring with diamond or carbide tipped taper or chamfer milling tools with high true-running precision are recommended. Equally, manual rework with abrasive paper is possible; we recommend abrasive paper > grit 240. Use of chisels and cabinet scrapers is not recommended.

## INTERNAL RECESSES AND CUTOUTS

Internal recesses require good room climate conditions for Duropal SolidColor and the core material. Small moisture differences can lead to stresses. Even if the minimum radius of 8 mm is complied with, cracks can still occur. The basic rule is: The larger the cutout the greater the risk of cracking. To avoid cracks the cutout corners must always be founded off with the largest possible radius. The cut surface must be reground/sanded to achieve a notch-free edge.

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In general, it is the responsibility of the processor/installer to determine a suitable core material through their own tests. Even small moisture differences between Duropal SolidColor and the core material – before or even after working on finished elements – can lead to stresses, which cause cracks despite the above-named minimum radii at the inside corners.

## BACKING

Pfleiderer recommends that identical Duropal SolidColor be used as the backing material. Use of different backing materials is the responsibility of the processor/installer and must be determined by their own tests. Attention must be paid to ensuring that the machining/grinding direction of the HPL is the same on the front and back

Asymmetrical product layout is possible, depending on the core thickness, the product format or size and the SolidColor texture.

For the end result it is extremely important that the board/panel and the coreboard are adequately conditioned and that Duropal SolidColor for the front and rear are pressed with the coreboard at the same time.

## ADHESIVE BONDING AND PRESSING

Virtually all adhesives can be used for the adhesive bonding of Duropal SolidColor; however, we recommend consultation with the adhesive manufacturer! As Duropal SolidColor does not have the brown phenol resin core of the conventional Duropal HPL products, incorrect selection can mean a visually unacceptable result.

- Transparent curing PVAc adhesives produce the best results, but require a corresponding pressure diagram
- Matching colour or transparent hot-melt adhesives or PVAc adhesives for bonding the edge, PVAc adhesive for bonding the surface

Duropal SolidColor can be both hot and cold pressed.

The requirements are:

- Uniform glue distribution with full application, especially in the edge areas
- approx. 3 bar uniform pressing pressure over the whole area
- Contact adhesives are not recommended

The best results are achieved if the coreboard is bevelled first, then calibrated (recommended grit 150) and the surfaces are bonded. See “SolidColor special machining” section.

We recommend cold pressing with PVAc white glue D3 / D4 with the longest possible pressing cycles to ensure adequate curing of the bonded joint without risk of warping. The bonding instructions of the adhesive manufacturer must be followed!

For hot pressing, we recommend PVAc white glue D3 / D4 at 70° temperature with a pressing cycle of approx. 3 - 4 minutes. Especially for hot pressing, always note the temperature resistance of any protective films used.

## ABS / PP EDGES

Applying ABS and PP edges on Duropal SolidColor flat-bonded elements and furniture elements using an edge banding machine is basically possible. Due to the product's specific properties, additional effort may be required regarding the machine configuration and test production. The following information relates to production attempts using the HolzHer edge banding machine, type Arcus 1334.

All tools must be carbide (HM), or better diamond tipped (DIA). Please use sharp tools only! Precutting units with milling/cutting tools and shank angles must be used. In our experience the ideal feed rate is 10 – 12 m/min.

For this we recommend the use of a release and cleaning product spraying unit. (Example for release agent: Riepe - LPZ/II, Example for cleaning agent: Riepe – LP163/93, Manufacturer: Riepe GmbH & Co. KG, D-32226 Bünde)

The radius cutting must be configured through production tests and set to the edge material thickness. The radius scraper must also be adjusted. Use of a surface cabinet scraper must be tested. Use of buffer machines is only recommended in conjunction with the spraying unit.

Burrs can be removed in the usual way using carbide tipper taper or square cutters. Larger chamfers (45°) can be created at the crown point. It must be noted that wide chamfers, for visual reasons alone, require time-consuming fine machining work.

## COREBOARDS

Each coreboard that is suitable for conventional Duropal HPL products can also be used together with Duropal SolidColor. To achieve the best surface uniformity possible, however, it is advisable to use MDF cores. We achieved particularly good results with Pfleiderer StyleBoard MDF plus.

## POSTFORMING

Duropal SolidColor is not suitable for postforming.

## SOLIDCOLOR SPECIAL MACHINING

Duropal SolidColor sets itself apart due to its homogeneous through-dyed high-pressure laminate with jointless look. This means that the product core with perfectly matched colour can be used to achieve a modern and monochrome design for the highest aesthetic, functionality and durability standards without any visible abutting edges or joints whatsoever. The material properties of the SolidColor core must be taken into account and highlighted during use and machining. In the following the edge material is processed first and then the surface material Duropal SolidColor.

On calibrating the already bevelled coreboard in wide-belt sanding machines, the grit of the sanding belt must not be coarser than grit 150. Untidy crossovers can then occur on subsequent surface facing or overlaying with Duropal SolidColor (if insufficient adhesive has been

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applied in the edge areas). Even the smallest remaining overhang will lead to a visible edge joint!

In the case of the SolidColor machining described here we recommend glue systems (e.g. PVAc white glue D3 / D4) with the maximum possible open glue time. Here, under pressure, the glue in the edge area exudes over the full surface and ensures a clean, closed joint appearance between the edge and surface material. A clean working environment and dust-free materials (HPL and core) ensure perfect work results.

Overhanging HPL is removed by means of a router with ring guide or bench-type miller/cutter with limit stop removed. We recommend that the protective film be left on the surface and – if present – on the edge during the entire machining process. Surplus glue is removed in most cases on detaching the protective film



Starting materials



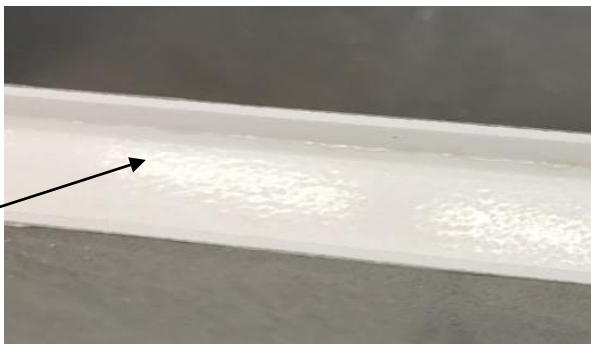
Edge after calibration



Full surface glue application



Before pressing



Closed glued joint



After the cutting/milling process

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Remove the protective film



Result

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## PM HPL / Elements / Lacquered boards

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