Norbord®

make it better

Caberwood®

www.norbord.co.uk

About Norbord

Norbord is one of the world's leading manufacturers of engineered wood-based panel products. Our products are used extensively in the construction, furniture and DIY sectors.

Norbord's success comes from the pursuit of excellence in all areas. This is a key driver within Norbord and is integral to how we manage our business. Across all functions we aim to deliver the highest level of achievement as standard.

The result is a company that is responsive with dependable and dedicated customer service without compromising safety or the environment.

Norbord is committed to sourcing all of its timber from responsibly managed forests. All of our European manufacturing facilities have the capacity to produce products certified to Forest Stewardship Council standards.

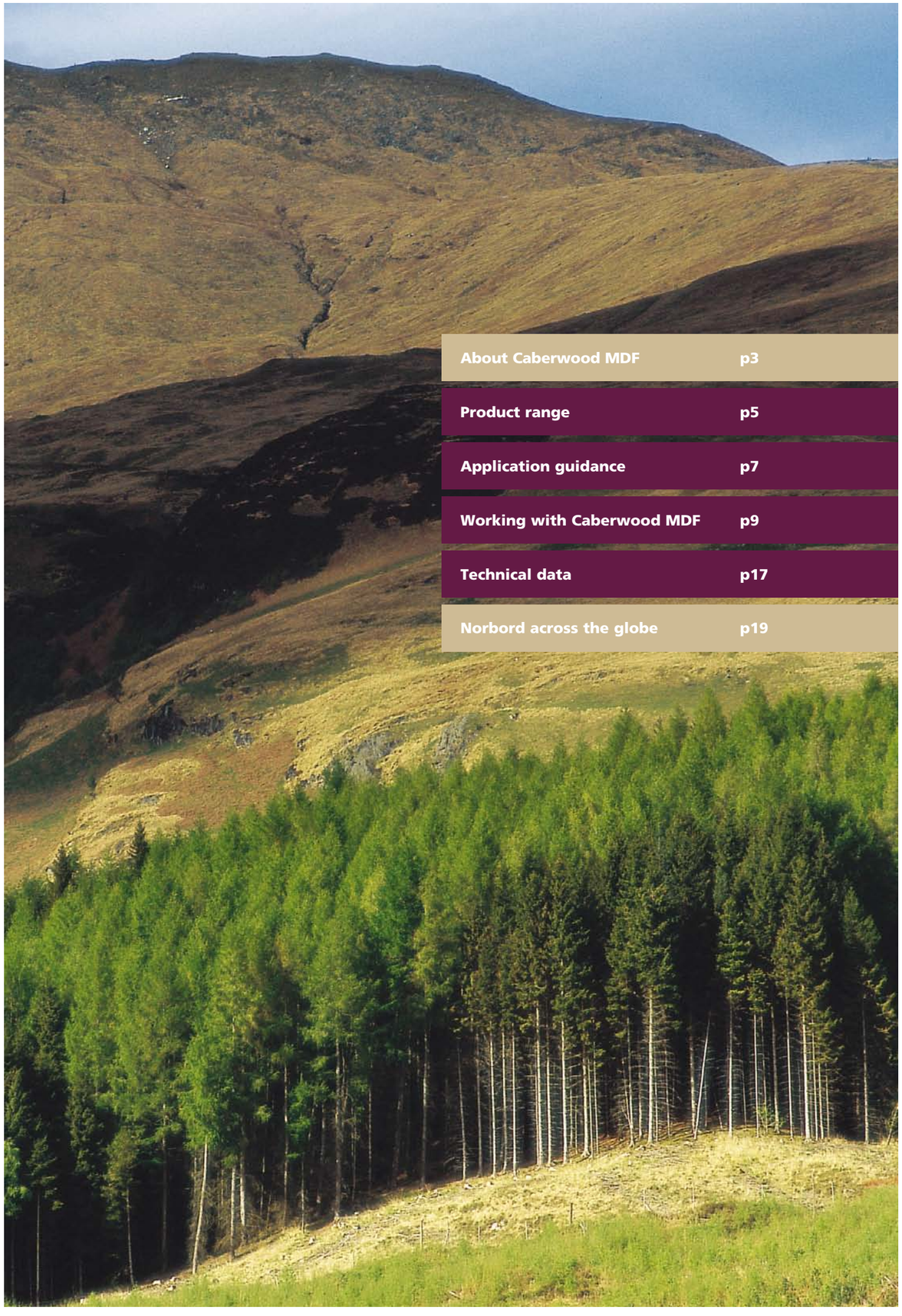
The FSC product label allows consumers worldwide to recognise products that support the growth of responsible forest management. In an increasingly environmentally aware marketplace, many demand the FSC mark on their wood products. With Norbord it comes as standard.

OUR VALUES

TRUST

EXCELLENCE

CUSTOMERS



About Caberwood MDF

Norbord had the distinction of owning the world's first site to manufacture MDF. The mill in Deposit, USA, started MDF production in 1966 and has now been decommissioned.

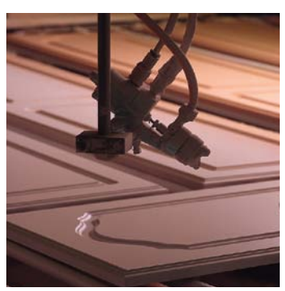
Today, MDF is one of the most popular materials used in the furniture and building industries. Norbord continues to be a leader in MDF production and development.

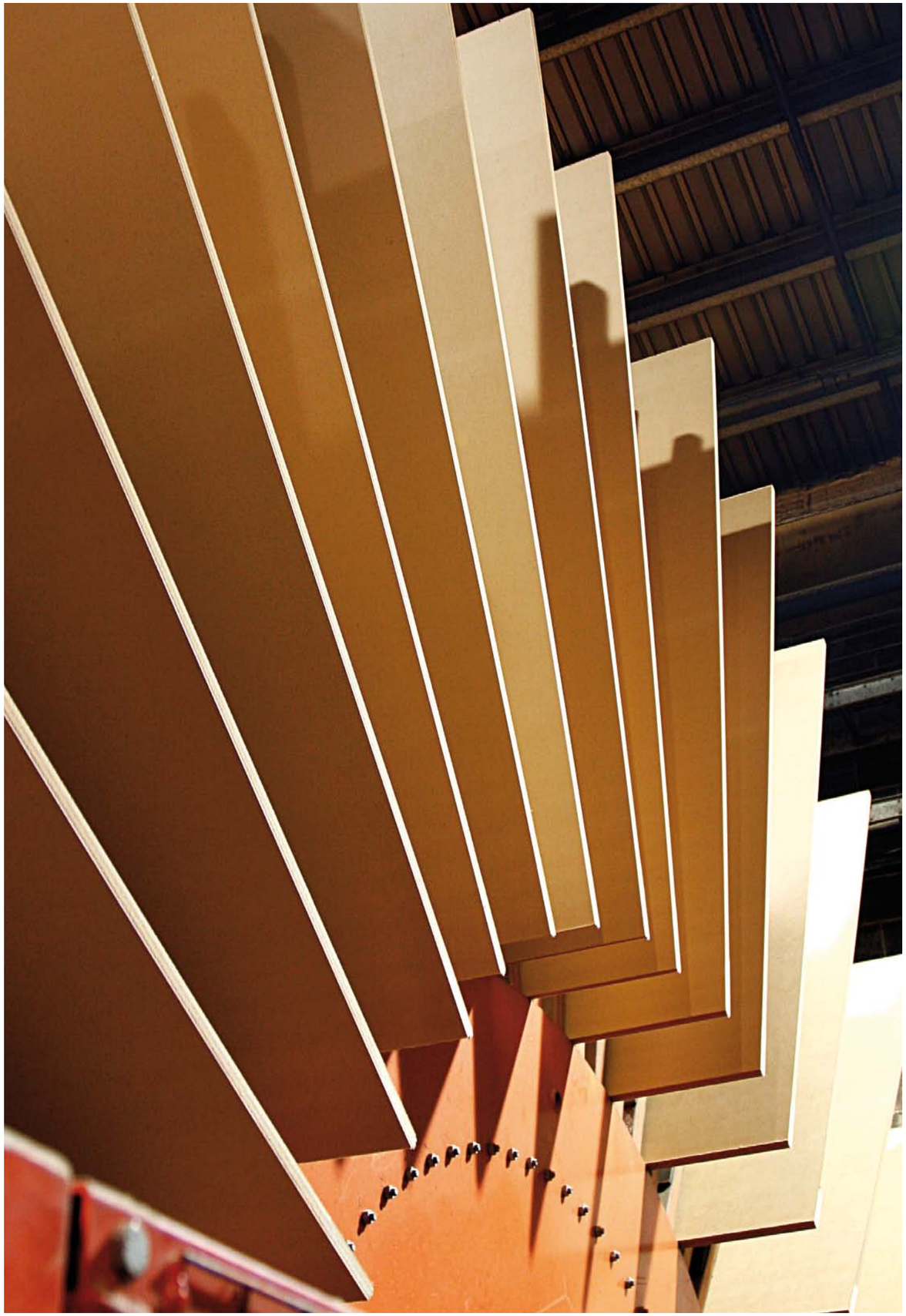
Caberwood MDF is designed to exacting tolerances, to give you peace of mind that the product you are using is engineered to perform.

Investing in the next generation

Although we were the first MDF manufacturer in the UK, we are never complacent. This means constantly looking at improving our manufacturing process – by investing in plant, energy conservation and new product development.

So when you specify Caberwood MDF, you know you are buying a product that is the best it can be.





Product range

Trade

Engineered to perform, MDF Trade is a versatile, high quality MDF, ideal for end uses where weight is a design requirement – such as shop fitting, exhibitions, stage design and caravans.

- Lighter board
- Versatile and useful in many applications
- Ideal for painting & grain painting

Trade Moisture Resistant

Providing good stability in damp conditions, MDF Trade Moisture Resistant is a premium grade MDF designed for interior applications in humid environments.

It gives you all the benefits of MDF Trade with the added advantage of moisture resistance.

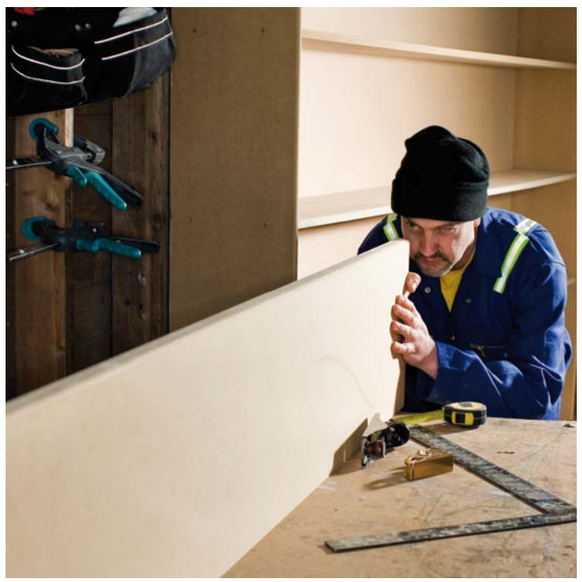
- Ideal for humid environments - kitchen and bathroom furniture and wall paneling
- Easy applications - saw, drill and shape

Pro

Used extensively throughout the building and furniture industries, MDF Pro is a premium grade MDF.

Suitable for straight-forward machine and surface finishing, it gives you the benefits of timber without the natural defects.

- Superior screw and fastener holding
- Intricate edge profiling and surface routing opportunities
- Suitable for finishes such as paper foils and veneers



Product range

Pro Moisture Resistant

Providing excellent stability in damp conditions, MDF Pro Moisture Resistant is a premium grade MDF designed for interior applications in humid environments.

It gives you all the benefits of MDF Pro with the added advantage of moisture resistance.

- Suitable for a number of applications in humid environments - furniture, sills, skirting boards and door architraves
- Good machining characteristics ideal for high quality surface finishes

Industrial

Caberwood MDF Industrial offers a high level of performance when being used with wood-working tools. It is the ultimate MDF, ideal for advanced routing, allowing more complicated profiles to be produced.

- Gives a superior routed finish
- Minimum surface preparation required
- Can be used in a wide variety of applications including routing, painting and high gloss PVC finishes

Application guidance

The following table provides general guidance. For advice on the best product for your specific application, please contact Norbord customer services or technical support on +44 (0) 1786 819449.

Product specification*		Applications					
Product	Thickness Range (mm)**	General purpose joinery	Simple designs with minimal profiles	Humid conditions	Deep routed profiles (e.g. membrane pressed PVC doors)	Designs with advanced deep routed profiles and painted finishes	Architectural mouldings – skirting architraves
Trade	12 - 25	✔					
Trade Moisture Resistant	12 - 25	✔		✔			
Pro	6 - 38	✔	✔				✔
Pro Moisture Resistant	6 - 30	✔	✔	✔			✔
Industrial	15 - 25	✔	✔	✔	✔	✔	✔

* Design criteria can vary significantly depending on specifications, the equipment you are using and the finish you intend to apply. The above table provides general guidance only. It is recommended that you conduct small scale pilot tests to ensure you have the correct grade for your end use.
** Other thicknesses are available on request.
✔ Suitable

Caberwood MDF Pro

Pro Moisture Resistant

Working with Caberwood MDF

Profiling

Profiled edges require no edge banding or lipping. Sculptured or textured effects can be machined or embossed, and narrow or small door frames can be produced from a single piece of board. Caberwood MDF has a smooth surface that is ideal for painting, grain printing or the application of paper foils and veneers. In many respects, Caberwood MDF can be treated as a high quality timber, but without the inherent defects of knots and grains.

A major advantage of Caberwood MDF is the relative ease of finishing perpendicular and moulded edges without the need for elaborate filling or the application of adhesive bonded edging materials. This characteristic derives from the uniform density of Caberwood MDF, and the absence of core voids which would require filling;

Sanding

Sanding after moulding or routing produces a much smoother finish. The moulded edges can be sanded with any number of different profile sanders. Various polyurethane based abrasive wheels are available to fit to spindle moulders or in line with a double end tenoner. These wheels can be shaped to the cutter profile using an abrasive paper glued to the desired edge profile. 80/100 grit should be used for the removal of cutter marks. 120/150 grit is usually used for finish sanding with finer grades available, if required.

Machining

Caberwood MDF is a homogeneous wood fibre material ideally suited to modern machine tooling.

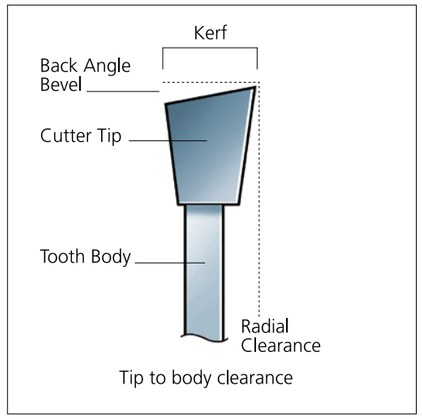
Caberwood MDF can be worked easily with all conventional woodworking machines. It saws cleanly and drills easily. It also shapes and routs exceptionally well, without splintering or chipping. Caberwood MDF is equally suited for use with most hand tools.

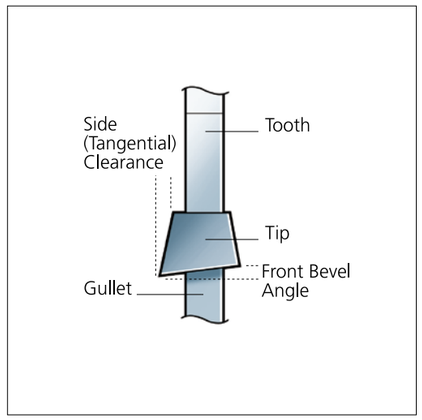
Sawing

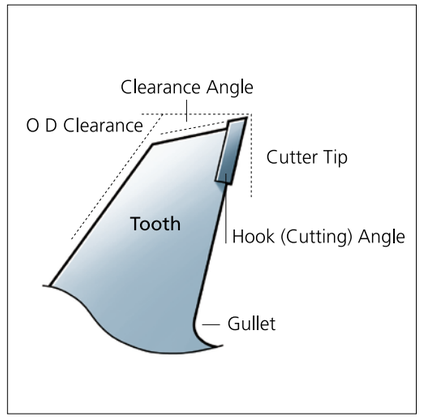
Follow these tips to ensure best results, minimum breakout and a longer tool life:

- Tungsten carbide saws are recommended for general use.
- Saw blades should have higher clearance angles and increased tool angles compared with normal wood-working saws.
- Clearance angles should be maintained when the saw is serviced. Reduced angles will increase the amount of resin build up. Increased angles will reduce the life between sharpening.
- Chipload – which is the thickness of chip cut by each tooth - should be in the range of 0.15 to 0.25mm. The feed rate required to produce this is calculated as follows:

Feed rate (mm/min) =
Chipload x r.p.m. x no. of teeth







Advice on fixing

Mechanical joints and fixings

Mechanical fittings developed for use with particleboard can be applied to MDF with the following recommendations:

- Wherever possible select fittings that depend upon face fixing.
- Avoid fittings which depend upon the expansion of a component inserted into the board edge.
- When using screws follow the pilot hole dimensions recommended below.

Screwing

The internal bond strength of Caberwood MDF gives substantially better screw holding over other types of panel product.

Type of screw
Most types of screw can be used. Best results are obtained with parallel thread screws. A high overall diameter to core ratio is desirable.

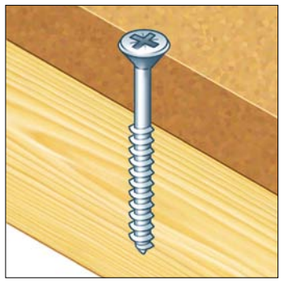
Positioning

Screws which are inserted into the **face** should not be less than 25mm from the corners. Screws inserted into the **edge** should not be less than 70mm from the corners. Do not over tighten screws as further turning after screws are tight will reduce the holding power.

Pilot holes

Larger diameter pilot holes than those recommended for solid wood and particleboard are required in faces and edges of MDF to accommodate the core of the screw. For GKN Superscrews the recommended pilot diameter should be 85% to 95% of the screw core diameter.

This requirement is particularly important when screwing into the edges of thinner boards. Pilot holes should be drilled approximately 1mm beyond the expected depth of insertion of the screws into the board.



Screw for panel jointing

Screw for fixing thin attachments

Parallel thread – satisfactory

Traditional woodscrew – less satisfactory

Nailing and stapling

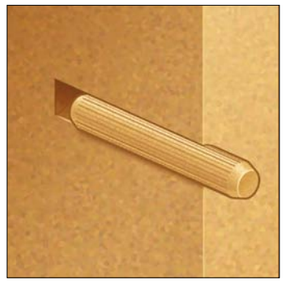
Where other methods of fixing are not practical, Caberwood MDF can be fixed with nails. Nails should be spaced 150mm apart to reduce the risk of splitting and at least 70mm from the corners. Nailing the edges of 9mm and 12mm Caberwood MDF is not recommended because of the risk of splitting.

Caberwood MDF can also be fixed using staples. For best results staples should not be inserted closer than 12mm from the edges and 25mm from the corners. This fixing method is only recommended for applications involving light loads. Close spacing of the staples is acceptable but the legs should be aligned at an angle of 15° to the plane of the board.

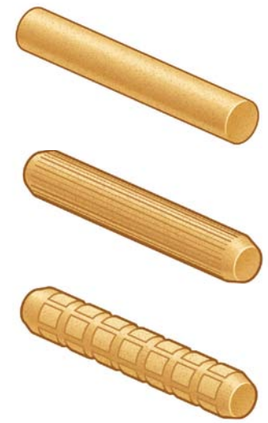
Dowel joints

Dowel holes should be machined with a sharp tool so that the surfaces are free from loose fibre. All dust should be removed prior to assembly. The dowel hole diameter should be slightly larger than the dowel. This will allow good adhesive cover and avoid splitting of the edge.

Dowels with multiple longitudinal or spiral groove patterns ensure uniform adhesive spread within the joint. For best results dowels should be given a total glue coverage. Adhesives such as Polyvinyl Acetate (PVA) or Urea Formaldehyde are preferred as they have good gap filling properties, and their high solid content counteracts absorption of adhesive into the machined edges of Caberwood MDF.



Dowel with 0.1mm all round clearance preferred

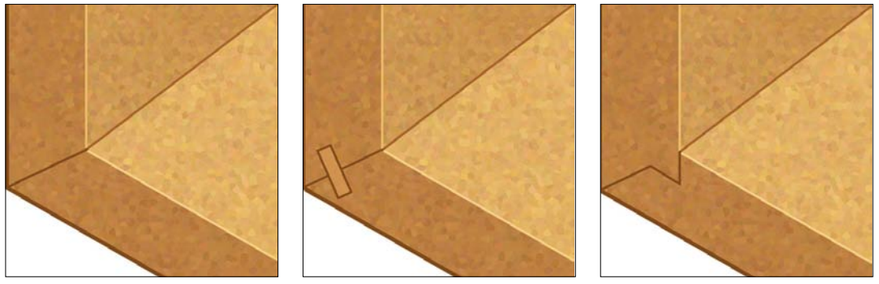


Smooth dowels are not recommended, grooved dowels are preferred

Adhesive bonded joints

A wide variety of jointing methods can be adopted providing the following simple guidelines are observed:

- The joint parts should be accurately machined.
- Sharp cutters should be used to avoid tearing or burnishing of surfaces to be bonded.
- A high solids content adhesive with gap filling properties should be used. (Polyvinyl Acetate or Urea Formaldehyde).
- Mating pieces should be accurately located and held under pressure while the adhesive is setting.
- The width of grooves machined in Caberwood MDF should be limited to about one third of the thickness of the board.
- The depth of groove should be about one half of the board thickness.
- Adhesive bonded joints should be allowed to condition for several days before sanding and finishing to avoid the appearance of sunken joints. This treatment is essential when using high gloss finishes.
- A tongue and groove joint is very efficient, provided the fit of the joints is not too tight as this may cause a split along the edge.
- When attaching lippings the tongue should be machined on the solid wood piece.



Mitre joints between Caberwood MDF panels

Wall panels

Caberwood MDF can be fixed using conventional dry lining techniques. For best results, follow these recommendations:

- Before fixing, condition the board for a minimum of 24 hours in the area of use.
- An expansion gap of 10mm or 2.5mm per metre (whichever is the greater) must be allowed, on length and width.
- Gaps are normally left as 'feature gaps', or they may be concealed by a suitable cover strip.
- Provision should be made to ventilate the side fixed to battens.
- Fix boards to supports with screws as specified at 200mm intervals, 25mm from edges. Screw length should be 2.5 times board thickness. Use 400mm centres for boards of less than 12mm.

Advice on laminating

Paper foils

The smooth, stable surface of Caberwood MDF makes it an ideal substrate for surfacing with decorative paper.

Flat platen presses developed for wood veneering are normally used for bonding heavier weight foils (80g/m^2 and higher). Short cycle platen presses and hot roller laminators are normally used for medium and lightweight foils. Adhesive coating weights in the range 80-100g/m^2 are typical for heavyweight foils and 60-80g/m^2 for medium and lightweight foils.

PVC foils

PVC foils are normally bonded at room temperature in a roller laminator using copolymer dispersions or epoxy adhesives. The panels emerging from the press should be stacked on a flat base for several hours to allow the bond to achieve full strength before further processing.

Heat transfer foil

Heat transfer foil can be applied to Caberwood MDF by a simple one-step drying process. When wood grain foil has been applied to a surface, a coat of lacquer can be applied by conventional methods to provide additional protection.

Resin impregnated papers

Melamine resin impregnated papers can be laminated to MDF by following the same procedures adopted for Melamine faced particleboard.

Wood veneering

The smooth surface of Caberwood MDF provides a suitable substrate for the application of wood veneer using Urea Formaldehyde (UF) or Cross Linked Polyvinyl Acetate (PVA) adhesives as the bonding agent. The close thickness tolerance on Caberwood MDF ensures uniformity of pressure over all panels in a press load.

Facing and backing veneers must have approximately equal thickness and moisture content to ensure flatness. Wood veneered Caberwood MDF panels should be stacked flat and allowed to cool for a minimum of eight hours before further processing.

Choice of adhesive

Caberwood MDF can be joined with excellent results with most commercial brands of adhesives available to the furniture and joinery Industries. The choice of a specific type of adhesive will be determined by the surface characteristics of the other materials being bonded to the MDF. Consult your individual adhesive suppliers for more detailed specific information.

Adhesive data

	Polyvinyl Acetate	Urea Formaldehyde	Neoprene	Copolymer Dispersion	Epoxide	Hot Melt	Polyurethane Solvent Based	PMDI
Wood Veneering	✔	✔			✔	✔		
Plastic Laminate Veneering	✔	✔	✔		✔			
Paper Foil Laminating		✔		✔				
PVC Foil Laminating				✔	✔			✔
Edge Lipping or Banding	✔	✔			✔	✔		
Assembly Jointing	✔	✔			✔	✔		
Veneer Foil Wrapping	✔					✔	✔	

✔ Suitable

Advice on sealing and painting

The smooth surface of Caberwood MDF makes it suitable for successful finishing with a wide range of coatings.

Alternatively, the natural appearance of the MDF surface can be enhanced using a transparent stain with a clear lacquer topcoat. High gloss or matt finishes can be achieved. The selection of the finishing system, on the basis of chemical type, will depend on the scale of production, application equipment, drying facilities and the expected performance of the finish in relation to the conditions of use. Modern combined systems are possible, e.g. u.v. sealers, basecoats / a.c. (acid catalysed) topcoat.

The surfaces to be finished should be free from dust or sanding marks. Caberwood MDF is suitable for most matt finishing treatments without further sanding. An additional light sanding with 180/220 grit is recommended when using high gloss finishes or where a minimum coating thickness is required. High absorption of lacquer or paint into the machined edges of MDF can be prevented by the application of an appropriate sealer such as shellac, polyurethane diluted polyvinyl acetate (PVAC) or specially formulated high solids sealers based on two-component catalysed resins. Edge sealing is recommended. The sealed edges can be stained if required, and then finished with one or two coats of clear or tinted lacquer to match the finish on the surface.

For information and advice on suitability of paints and lacquers contact the following:

FIRA
Furniture Industry Research Association
www.fira.co.uk

SDF
Scottish Decorators Federation
www.scottishdecorators.co.uk

PDA
Painting and Decorating Association
www.paintingdecoratingassociation.co.uk

Environmental credentials

Forest Stewardship Council

Norbord is committed to sourcing all of its timber from responsibly managed forests and therefore all of our European manufactured MDF products are certified to Forest Stewardship Council standards.

The FSC product label allows consumers worldwide to recognise products that support the growth of responsible forest management. In an increasingly environmentally aware marketplace many demand the FSC mark on their wood products: with Norbord it comes as standard.

At Norbord, all of our facilities are regularly visited by a team of environmental auditors, so there is always something better to strive for and a new standard to set. This combines with our open approach to business. Norbord is a name you can trust to deliver, and to keep its promises.

FSC
www.fsc.org
FSC® C012533

The mark of responsible forestry

Investing in the environment

Norbord has invested heavily in environmental improvements since 1995. This includes air-cleaning technology such as state-of-the-art WESPS (wet electrostatic precipitators). It also means investment in recycling facilities. We can generate as much as half our mill's energy needs by using wood residues as fuel – composting what is left.

By reusing and conserving, we safeguard the environment and keep our costs down. In turn, our products are good for the environment and also good for your budget.

All of our plants have obtained the coveted environmental ISO 14001 accreditation. The ISO 14000 family addresses environmental management. This means what the organisation does to:

- minimise harmful effects on the environment caused by its activities
- achieve continual improvement of its environmental performance

BM TRADA CERTIFICATION
ISO 14001:2004
UKAS ENVIRONMENTAL MANAGEMENT 012

Technical data

	Unit	Trade	Trade MR	Pro			Pro MR				Industrial		
Thickness	**mm**	**12/15/18 22/25**	**12/15/18/ 22/25**	**≥6**	**>12 - 25**	**>25**	**≥6-12**	**>12 - 25**	**>25 - 30**	**>30**	**≥6-12**	**>12 - 25**	**>25**
Thermal Conductivity 'K' Value	W/m.K	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Internal Bond	MPa	0.45	0.45	0.65	0.55	0.55	0.8	0.75	0.75	0.70	0.9	0.9	0.9
Modulus of Rupture	MPa	20	20	23	20	18	27	24	22	22	27	24	22
Modulus of Elasticity	MPa	2500	2500	2700	2200	2100	2700	2400	2300	2300	2700	2400	2300
Thickness Swelling 24hr	%	12	12	11	8	7	10	5	3	3	10	5	3
Moisture Content [ex-plant]	%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%	8 ± 3%
Reaction to Fire	EN 13501-1	Class D	Class D	Class D	Class D	Class D	Class D	Class D	Class D	Class D	Class D	Class D	Class D
Total Extractable Formaldehyde	mg/100g	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8

Fire rating >9mm D-s2, d0 6mm – 9mm Class E

Values are typical values in accordance with EN standards, EN 622-5 for Fibreboards: Specification – Part 5: Requirements for dry process boards (MDF).

Using BS EN 120.

Thickness tolerance for all grades is:
± 0.2mm ≤ 22mm
± 0.3mm > 22mm

PCP values are less than 5 ppm.

Low Emission

All Caberwood MDF products conform to the latest European low emission standards 'E1'. 'E1' signifies coated and uncoated MDF panels which characteristically give ≤8mg/100g formaldehyde when tested in accordance with BS EN 120.

Caberwood MDF Panel Weight Guide

For lifting & handling purposes using an 18mm panel thickness, the following should be used as a guide weight (kg per m^2).

Caberwood Trade MDF / Moisture Resistant	10 kg/m^2
Caberwood Pro MDF / Moisture Resistant	13 kg/m^2
Caberwood Industrial MDF	14.5 kg/m^2

Note: Calculations for guide weights for thicknesses other than 18mm, are pro-rata, e.g. 12mm Caberwood MDF Light = 10 kg/m^2 x 12/18 = 6.7 kg/m^2.

Transport and storage

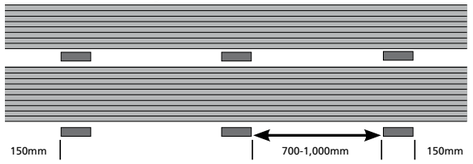
Caberwood MDF should be:

- Transported in uniform stacks on a flat base to avoid damage;
- Protected against the weather;
- Stored on a rigid flat base and adequately ventilated;
- Insulated from the ground to avoid dampness.

When wooden battens are used, they shall be of uniform thickness and placed in line. The distance between battens should be no greater than 700–1,000mm.

An HSE information sheet on the 'safe stacking of sawn material and board materials' is available on request.

Correct method of storage on battens



Conditioning

Wood panel products expand on taking moisture from surrounding air and shrink on losing it. As a guide, a small increase in moisture of 1% increases length and width by 0.25mm per metre. A decrease in moisture of 1% will have a corresponding shrinkage effect. It is clearly desirable to minimise these changes, which can be applied pro-rata, by taking a few simple precautions. Boards should be allowed to reach equilibrium by storing them under the atmospheric conditions in which they are to be used, for a minimum of 48 hours prior to laying. It is recommended that boards are loose stacked, on a minimum of 3 equi-spaced bearers, with spacers between each board to allow free air movement.

Moisture Content

All wood is hygroscopic. Its moisture content, therefore depends on its environment. The moisture content which wood and wood-based products will attain in service (equilibrium moisture content) depends primarily on the atmospheric humidity.

Relative humidity	Approximate equilibrium at 20°C moisture content
%	%
30	7
65	11
85	15

Norbord across the globe

Norbord across the globe

Norbord is one of the World's leading manufacturers of engineered wood-based panels. With our headquarters in Toronto, we employ some 2,500 people worldwide with approximately 900 of them in Europe. We are publicly owned and listed on the Toronto Stock Exchange.

Our facilities include

- 11 OSB Mills
- 1 MDF Plant
- 2 Particleboard Plants
- 1 Furniture Plant

The result is a successful company built on integrity, listening to our customers and always improving the way we work.

Industry sectors served

Our products are used extensively in the construction, furniture and DIY sectors. From tongued and grooved Caberfloor ideal for flooring solutions, to structural SterlingOSB designed to withstand the rigours of I-joists, all our products are manufactured to vigorous quality standards.

Norbord in Europe and quality credentials

In Europe, we have four sites

• Cowie, Scotland
Tel +44 (0)1786 812921
Fax +44 (0)1786 815622
Caberwood MDF
Caberboard
Caberfloor
Caberdek

• Inverness, Scotland
Tel: +44 (0)1463 792424
Fax: +44 (0)1463 791764
SterlingOSB2
SterlingOSB3
Sterling Roofdek

• South Molton, England
Tel: +44 (0)1769 572991
Fax: +44 (0)1769 572413
Conti
Caberboard
Furniture Components

• Genk, Belgium
Tel: +32 (0)89 500300
Fax: +32 (0)89 362971
SterlingOSB Zero

CE Marking

The CE mark (from the French, 'Conformité Européan') is intended to promote the free movement of products within the EU by showing that essential health and safety requirements have been met.

The CPD (Construction Products Directive) applies standards to the finished works into which construction products are to be used, rather than applying directly to the products themselves. These quality standards ensure that:

- The product has been subject to an appropriate system of attestation of conformity with one or more technical specifications;
- The product does, in fact, conform with the relevant aspects of the identified technical specifications; and
- Therefore, the product is fit for its express intended use or with its implied range of suitable uses.

Cowie Scotland

Inverness Scotland

South Molton England

Genk Belgium

Values and beliefs

The people of Norbord Europe have adopted a common set of values which have been built through open communication and dialogue reflective of mutual respect. They can be summarised in three words:

TRUST EXCELLENCE CUSTOMERS

Commitment to helping our customers be successful

Our people recognise that if our customer relationships are not based on win-win outcomes, then they are not sustainable.

This belief drives our strategy of focusing on key customers and working with them to ensure mutual benefits over the long term. Benefits based on continuing improvements in customer service, product and business development, supply chain effectiveness and technical support.

The only valid gauge of our success in this commitment, is whether our customers believe and say we're doing it.

Trust and personal responsibility in all relationships

We believe that each of our people has the capability and commitment to maximise his/her contribution and the desire to take responsibility for their actions.

Our collective goal is to set clear objectives and to deliver on all promises and commitments. This philosophy applies whether we're engaged with customers, suppliers, fellow members of Norbord, shareholders, or with the community at large.

Excellence as our standard

Our goal is to have an organisation which is capable of excellence and of delivering it consistently in the areas critical to our business.

These include the following:
- Safety
- Managing beyond customer expectations
- Supply chain management
- Cost management
- Capacity assurance
- Organisational effectiveness

Customer support

Logistics

At Norbord, we run our own specialist logistics service. A service known for its reliability; a service that guarantees availability.

Available to selected accounts, our unique Fastrack guarantee goes even further.

How Fastrack can work for you:
- Assured supply
- Direct delivery to your customers
- One order point for all products
- Improved stock turnover

Our range of logistical options adds up to on time and in full delivery.

Technical support

At Norbord, our experienced technical team is on hand to deal with enquiries from architects, builders, contractors – in fact anyone involved in the specification or use of Norbord's engineered wood-based panels.

Rest assured – our commitment will continue throughout your project and beyond.

MSDS
Material Safety Data-Sheets are available for all Norbord products. Please contact Norbord Technical Support or visit **www.norbord.com**

Training

For many years Norbord's technical sales personnel have been providing training aimed at improving the knowledge and skills of:
- Construction professionals
- Specifiers
- Merchant and distribution staff
- Technical support staff
- Sales personnel

BM TRADA CERTIFICATION ISO 9001:2008 UKAS QUALITY MANAGEMENT 012

Norbord® make it better

Caberwood®

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For more information on Caberwood MDF scan here

At Norbord, we realise the environment is fundamental to our future. This brochure has been printed on paper stock that is FSC (Forest Stewardship Council) certified.

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