# Technical information

Hesse Lignal
inspiring you
Hesse GmbH & Co. KG, Warendorfer Str. 21, D 59075 Hamm
www.hesse-lignal.de

## Coating: MDF coating

The wood material MDF (medium density fibreboard) was developed in the 60s. However, it was not until the mid-70s that a sophisticated technology was available for the production of high-quality boards. German products have only existed since 1987.

In the manufacture of MDF, the raw wood (primarily conifer) is split to the fibre of the wood and a new material is produced by means of heat, gluing and mechanical action, and unlike wood this new material has the same characteristics in both the longitudinal and transverse direction.
By diffusing the wood fibres with a binder, the so-called fibre cake, and subsequently compressing it, this produces a material which is strongly compressed on the outside and is porous on the inside.

Advantage:
High strength, good milling capability.

Disadvantage:
Edges and shaping require particular attention when coating.

Considering the production, it is clear that there must be large ranges in the quality, which differ in the bending strength, transverse tensile strength, screw-retaining strength and dimensional stability, to name just a few.
**The dimensional stability, i.e. the change in length and width due to moisture absorption, that is to say thickness swelling, is of crucial importance to you as the user and to us as the coating manufacturer. In addition to other problems that occur as a result of coating and storage issues, thickness swelling is primarily responsible for whether an MDF surface or edge tends to form cracks. In the event of doubt, please consult your board manufacturer/ supplier regarding suitability for the intended use and the ability of the MDF substrate material to be coated with lacquer.**

The requirements regarding thickness swelling differ depending on the application and sheet thickness. The European standard EN 622-5 specifies in section 4, among other things, requirements for thickness swelling following the test method EN 317 (immersion in water for 24 hours).

For instance on good quality MDF boards with a high bulk density (such as those with a board thickness of 19 mm > 700 kg/m³) products such as the following pigmented Hesse Isolation fillers can be used without transparent pre-isolation:

- PERFECT-FILL HDP 5650-9343
- COOL-FILL HP 6645-9343
- FANTASTIC-FILL DP 4755-9343

**MDF boards of lower qualities must be pre-insulated before the first filler layer is applied. These isolation coats can significantly reduce the risk of crack formation on edges and locations with deep milling.**

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Suitable transparent isolation fillers are:
- PERFECT-BASE HDG 5407
- PERFECT-TOP HDE 54004 or respectively HDE 54007
- MEGA-PUR Basecoat DG 4717-0005
- FANTASTIC-CLEAR DE 4877x(gloss level) in a mixing ratio (by volume) 10 : 1 with PU Hardener DR 4071 or in a mixing ratio (by volume) 5 : 1 with PU Hardener DR 4070

Please refer to the respective technical information for these products.

We generally recommend the use of moisture-resistant MDF boards capable of deep milling for use in rooms susceptible to moisture. Please contact the respective panel manufacturer for detailed information. Use on horizontal surfaces in rooms susceptible to moisture that are frequently exposed to water, e.g. around washbasins, is inadvisable.

**Notes on coating**:

Paint flaws/edge cracks can be avoided if you bear in mind the following:

- Choose a quality of MDF that is suitable for the field of application, see manufacturer details on EU standard EN 622-5, Point 4, test method EN 317 (requirements as to thickness swelling).
- Ideal panel moisture 5 - 7 %.
- Avoid sharp edges and milled cutaways, round off where possible; coat edges and milled cutaways with 2 coats of filler, do not sand through, if necessary apply another coat of primer.
- Thick boards that have been created by gluing together several thinner boards are, due to the variance in tension, susceptible to edge ridging; it is better to select a single MDF board of the appropriate thickness.
- Boards that have been glued together should always be sanded flat at the edges and sealed with a clear coating; for suitable materials see below. Any water introduced by the gluing process must be allowed to evaporate prior to coating.
- Surfaces treated with filler should be stored in air-conditioned facilities and promptly given a finish coating; failure to do so results in a risk of edge cracks.

**Application examples:**

<u>HYDRO coloured finishing procedure for living room furniture</u>
- Sand MDF surfaces and edges well using 220 - 280 grit
- Basecoat: 1 x 180 - 220 g/m² with the likes of COOL-FILL HP 6645-9343
- Drying: 3 h
- Intermediate sanding: 220 - 280 grit
- Basecoat: 1 x 180 - 220 g/m² COOL-FILL HP 6645-9343

## Coating: MDF coating

- Drying: 16 h
- Intermediate sanding: 280 - 400 grit
- Top coating: 1 x 150 g/m² COOL-COLOR HB 65285-(colour tone)
- Suitable for final coating, if desired, after 3 - 4 h
- Packable after drying for at least 16 h

Should absolute ring and colour abrasion resistance or another gloss level be desired, please apply a thinned finish coat of COOL-TOP HE 6509x(gloss level) or respectively PERFECT-TOP HDE 5400x(gloss level). See the corresponding technical information relating to the individual products.

HYDRO coloured finishing procedure for surfaces subjected to higher demands in kitchens and damp areas

- Sand MDF surfaces and edges well using 220 - 280 grit
- Basecoat: 1 x 180 - 220 g/m² with the likes of PERFECT-FILL HDP 5650-9343
  Mixing ratio (by volume) 8 : 1 with HYDRO Hardener HDR 5091
- Drying: at least 4 h, preferably overnight
- Intermediate sanding: 220 - 280 grit
- Basecoat: 1 x 180 - 220 g/m² PERFECT-FILL HDP 5650-9343
  Mixing ratio (by volume) 8 : 1 with HYDRO Hardener HDR 5091
- Drying: 16 h
- Intermediate sanding: 280 - 400 grit
- Top coating: 1 x 150 g/m² PERFECT-COLOR HDB 54345-(colour tone)
  Mixing ratio (by volume) 10 : 1 with HYDRO Hardener HDR 5091
- Suitable for final coating, if desired, after 3 - 4 h
- Packable after drying for at least 16 h (subjected to forced drying, already after around 2 h)

Should absolute ring and colour abrasion resistance or another gloss level be desired, please apply a thinned finish coat of PERFECT-TOP HDE 5400x(gloss level). See the corresponding technical information relating to the individual products.

Polyurethane application, coloured:

- Sand surfaces, edges and profiles using 180 - 280 grit
- 1 x 150 - 200 g/m² FANTASTIC-FILL DP 4755-9343,
  mixing ratio (by volume) 10 : 1 with PU Hardener DR 4071,
  add 15 % PU Thinner DV 4900 to the lacquer-hardener mixture
- Drying: > 2 h / 20 °C, preferably 16 h / 20 °C
- Gently sand the filler layer at 320 – 400 grit
- 1 x 150 - 200 g/m² FANTASTIC-FILL DP 4755-9343,
  mixing ratio (by volume) 10 : 1 with PU Hardener DR 4071,
  add 15 % PU Thinner DV 4900 to the lacquer-hardener mixture
- Drying: > 2 h / 20 °C, preferably 16 h / 20 °C

## Coating: MDF coating

- Sanding of the filler with grain 320 - 400
- 1 x 120 - 180 g/m² FANTASTIC-COLOR DB 4888x(gloss level)-(colour tone), mixing ratio (by volume) 10 : 1 with PU Hardener DR 4071, Add 10 - 30 % PU Thinner DV 4900 to the lacquer-hardener mixture
- Drying > 16 h / 20 °C

Should absolute ring and colour abrasion resistance or another gloss level be desired, please apply a thinned finish coat of FANTASTIC-CLEAR DE 4877x(gloss level), FANTASTIC-CLEAR-ULTRAMATT DE 48770-0, UNA-PUR DE 4259x(gloss level) or MEGA-PUR DE 4503x(gloss level) – (see the corresponding technical information relating to the individual products).

**Suitable pigmented lacquer systems for direct coating on MDF, including edges and milled areas:**

- COOL-FILL HP 6645-9343
- PERFECT-FILL HDP 5650-9343
  Mixing ratio (by volume) 8 : 1 with HYDRO Hardener HDR 5091
- PERFECT-COLOR HDB 5434x(gloss level)-(colour tone)
  Mixing ratio (by volume) 10 : 1 with HYDRO Hardener HDR 5091
- FANTASTIC-FILL DP 4755-9343
  Mixing ratio (by volume) 10 : 1 with PU Hardener DR 4071
- PU Isolating filler DP 4791-9343
  Mixing ratio (by volume) 4 : 1 with PU Hardener DR 4058
- UNA-COLOR DB 45245 (colour tone)
  Mixing ratio 10 : 1 with PU Hardener DR 4070
- FANTASTIC-COLOR DB 4888x(gloss level)-(colour tone)
  Mixing ratio (by volume) 10 : 1 with PU Hardener DR 4071

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**Suitable clear coating systems for sealing MDF edges and milled cutaways:**

- PERFECT-TOP HDE 54004 or HDE 54007
  Mixing ratio 10 : 1 with HYDRO Hardener HDR 5091
  Optional: add a maximum of 10 % water
- PERFECT-BASE HDG 5407
  Mixing ratio 5 : 1 with HYDRO Hardener HDR 5091
  Optional: add a maximum of 10 % water
- MEGA-PUR Basecoat DG 4717-0005
  Mixing ratio 5 : 1 with PU Hardener DR 4070
  + 20 - 30 % PU Thinner DV 4900
- PU Isolating primer DG 4720-0001
  Mixing ratio 2 : 1 with PU Hardener DR 4040
  + 15 - 20 % PU Thinner DV 4900
- FANTASTIC-CLEAR DE 48772 - DE 48777
  Mixing ratio 10 : 1 with PU Hardener DR 4071
  + 15 - 20 % PU Thinner DV 4900
- UNA-PUR DE 42592 - DE 42597
  Mixing ratio 5 : 1 with PU Hardener DR 4070
  + 15 - 20 % PU Thinner DV 4900
- PU Multicoat lacquer DE 45002 - DE 45007
  Mixing ratio 10 : 1 with PU Hardener DR 4070
  + 5 - 10 % PU Thinner DV 4900
- MULTI-PUR DE 45322-0004 - DE 45327-0004
  Mixing ratio 5 : 1 with PU Hardener DR 4070
  + 10 - 15 % PU Thinner DV 4900
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**Important information:**

- Please note the quantity of thinner specified!
- Clear edge insulation must always be provided with a further coat on the same day, following sanding with grain 320!
- Please apply a test coat under real conditions!

**Note:**
Please consult the latest technical information relating to the respective products for the special characteristics and processing parameters of individual coating systems.

This information is for advice and is based on the best knowledge available and careful research in line with current state of the art practice. This information cannot be held as legally binding. We also refer you to our terms and conditions of business.
The Material Safety Data Sheet according to the regulation (EC) No. 1907/2006 is available.