Series 551 – Single Coat for MDF

HIGHLY REACTIVE POWDER COATING FOR THE DECORATIVE AND FUNCTIONAL COATING OF MDF AND OTHER WOOD MATERIALS

Typical application

Industrial coating of MDF (medium density fiberboard) and other heat sensitive wood and composite materials for interior applications.

Product details

Standard Packaging	In original boxes of 20 kg each
Specific Gravity (ISO 8230-2)	1.2 - 1.7 g/cm^3 depending on pigmentation
Theoretical Coverage	at 80 µm coating thickness 7.3 - 10.4 m^2/kg depending on density, see guideline no.1072
Storage Stability	3 months from date of delivery under dry conditions at no more than 15 °C, avoid direct and extended heat exposure
Solid Content	100 %

Features

- high reactivity
- good chemical resistance
- very good mechanical properties
- good lightfastness for interior applications

Finish | Colors

- micro texture, matte and semi-glossy
- smooth design textured, matte and semi-glossy
- baby-skin smooth, silk-matte

On special demand fine textures, rough textures and orange peel surfaces are available. Custom colors are available after inquiry.

Safety

Safety instructions can be found in the material safety data sheet.

Pre-treatments

All surfaces to be coated should be free of dust and grease. The substrates should be pre-treated in an appropriate way to achieve optimum surface texture and adhesion. MDF and other wood materials should be carefully routed and sanded and possibly thermo-smoothened. Generally, the pre-treatment has to be individually checked in suitability tests.

MDF substrates should be electrically conductive to a certain degree allowing electrostatic powder application. Usually an electrical surface resistance of 10^{10} - 10^{11} Ω/□ will be sufficient. In case the substrate material is not sufficiently conductive the coatability can be adjusted in many cases by a pre-heat process.

Jigging

The MDF is electrically grounded by the hook. It is important that the electrical contact between hook and MDF is well controlled.

TIGER Drylac® MDF Single Coat (SC)

The TIGER Drylac® MDF Single Coat can be applied as single layer topcoat on MDF and other heat sensitive substrates. For achieving optimum and crack-free MDF coating qualities of the TIGER Drylac® Series 551 MDF Single Coat, it is recommended to apply high enough coating thickness, especially on the edges of the MDF. The following coating thickness is advised:

- on MDF edges and routings: 150 µm or higher
- on MDF surfaces: 80 - 100 µm

For highest surface requirements it is recommended to apply two layers of Series 551 topcoat. When applying two Series 551 layers it is generally advantageous not fully curing the first layer before overcoating with the second one. Depending on production line design the curing process has to be defined and adjusted case by case in order to achieve blister- and crack-free coating qualities.

Powder application

Corona guns with electronic control are used most commonly. The powder application should be performed using automatic guns, counter electrodes and substrate scanning systems. The applied coating thickness should be controlled within small tolerances.

Curing conditions

Depending on process and oven design different curing times may be reached. The here mentioned values are indicators only and have to be verified on the actual coating line. Due to the poor thermal conductivity of MDF, curing by IR ovens will lead to best results. Pure convection heat ovens did not prove suitable for MDF powder coating. The temperature values given here indicate the temperatures on the surface of the MDF or the actual temperature of the powder coating layer itself (object temperature):

- minimum 5 min dwell time at 130 °C or
- minimum 3 min dwell time at 140 °C

The curing conditions have to be controlled carefully on all sides of the MDF including the edges as resulting surface quality depends strongly on the degree of cure. Insufficiently cured powder coatings are brittle and tend to crack. Exceptional risk of cracks exists on the edges and routings especially during moisture treatment and swelling of the wood materials. Such type of cracks may sometimes occur after several months of use. For measurement of the degree of cure chemical resistance tests are not fully suitable and only of limited use. In addition to surface quality testing according to furniture standards, it is advised to perform additional moisture and aging tests on coated substrates containing drill holes for construction. Because of the manifold of wood materials and various oven technologies the detailed curing conditions have to be exactly defined case by case.

Product data sheet

MDF Quality

MDF qualities have to be tested for suitability for the powder coating process. Properties such as thermal stability, density, density profile, internal bond strength, moisture content, type of binder and type of wood fiber play a crucial role. These properties have to be adjusted to the curing technology. Excessive thermal stress of the MDF during the coating process may cause edge cracking. Thermally damaged MDF may show edges cracking even several months after production. Depending on the application of the coated part, it is advised to use MDF qualities with low water swelling behavior to avoid edge cracking. Edge or surface cracking can be caused by dimensional changes due to moisture uptake from the surroundings.

Test results

Testing parameters:

- MDF type: EGGER MBP-L (19 mm)
- Curing: 3 min at 140 °C (IR-oven)
- Powder: TIGER Drylac® 551 SC Series

Test method	Test	TIGER Drylac® MDF Single Coat
DIN 50986 ISO 2808	**Surface coating thickness Series 551 Top-coat**	80 - 100 µm
DIN 50986 ISO 2808	**Edge coating thickness Series 551 Top-coat**	≥ 150 µm
ISO 2813	**Gloss – 60°**	10 - 80
ISO 2409	**Adhesion***1 2 mm cutting distance	Class 0
DIN 68861-1	**Chemical Resistance***1	1 B – C
DIN 68861-2	**Abrasion Resistance***1	2 B
DIN 68861-4	**Scratch Resistance***1	4 D
EN 12722 DIN 68861-7	**Dry Heat***1	7 B - C
EN12721 DIN 68861-8	**Wet Heat***1	8 A - B
ANS/KCMA A161.1, Section 9-2*2, AMK-Richtlinie*3	**Temperature-Moisture Climate Cycle Test**	No changes
EN 15187	**Light Fastness**	≥ 6
VDI 2015	**Water Swelling Test***4	≥ 24 h

*1 Depending on color and surface texture; further details are available upon special request
*2 American National Standard/Kitchen Cabinett Manufacturer Association, USA
*3 Arbeitskreis Moderne Küche, Germany
*4 According VDI 2015 guideline for powder coating of MDF and wood-based materials

Product data sheet

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Product data sheet

certified according to
EN ISO 9001 / 14001
IATF 16949

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