

hybrid | WHITE

General information

HybridWHITE is a novel hybrid coating for high performance applications with unique features. Due to ceramic backbone and inherent hydrophobicity, it displays strong anti-corrosive and easy-to-clean properties. It creates coatings with very low surface tension and an extremely smooth and non-porous hard surface which makes it especially suitable for industrial applications.

HybridWHITE is available in two versions

	HybridWHITE 100	HybridWHITE 250
system	2-component	1-component
max. operating temp [°C]	130	250
max. cured film thickness [µm]	250	150
colour scale	RAL	limited
curing conditions	RT	180°C, 30 mins
pot life after mixing	10 h	-

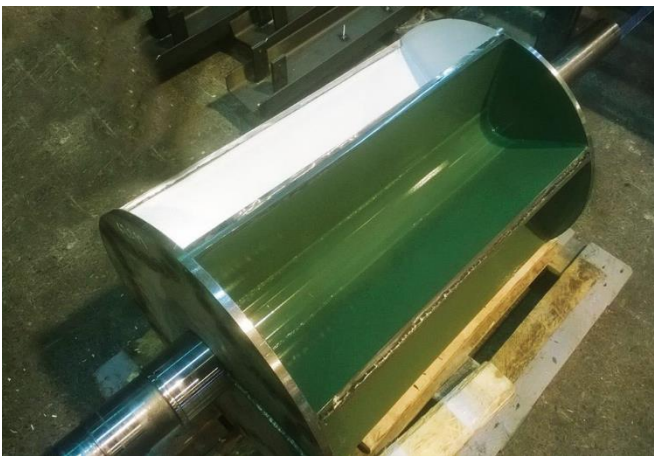
Key properties

- ✓ smooth and hard, yet tough finish
- ✓ anti-graffiti properties
- ✓ excellent corrosion resistance
- ✓ excellent temperature resistance
- ✓ outstanding adhesion
- ✓ resistant to various chemicals
- ✓ easy to apply with conventional spraying equipment
- ✓ solvent based, high solid system
- ✓ fast tack-free time
- ✓ wide application window

Applications

- ✓ various industrial applications where cleanability and easy release are key factors
- ✓ indoor and outdoor
- ✓ steel and aluminium mould coatings
- ✓ applications where high heat and chemical resistance is needed

Application examples



Other information

Impact-Test (ISO 6272)	
Front [cm]	15,0
Back [cm]	< 2,5
Pendulum-Hardness (König) (ISO 1522) [seconds]	
	148
Buchholz-Hardness (ISO 2815)	
Mark Length [mm]	11,5
Depth of Impression [µm]	11
Indentation Resistance of Buchholz	87

Taber abraser test procedure was implemented according to ASTM D 1044. One cycle equals 1000 revolutions with a weight of 250g.

<i>mass lost</i>	<i>HybridWHITE</i>		<i>2-component, solvent borne polyurethane coating</i>	
	mg	%	mg	%
<i>cycle 1</i>	0,24	0,04	6,9	0,76
<i>cycle 2</i>	2,8	0,47	12,1	1,3
<i>cycle 3</i>	9,3	1,55	51,4	5,6

Following chemicals were tested and the appearance was checked visually.

	HybridWHITE 100		HybridWHITE 250	
	24h @ RT	1h @ 80°C	24h @ RT	1h @ 80°C
<i>petrol</i>	no change	blisters	no change	no change
<i>Diesel gasoline</i>	no change	no change	no change	no change
<i>hydraulic oil</i>	no change	no change	no change	no change
<i>NaOH (10%)</i>	slightly matt	haze	no change	slightly matt
<i>HCl (10%)</i>	slightly yellow	slightly matt	no change	no change
<i>H2SO4 (10%)</i>	slightly matt	slightly matt	no change	no change

Further chemical resistance tests were implemented according to DIN 68861. Evaluation after 24 hours and 7 days except for boiling water.

	HybridWHITE 100		HybridWHITE 250	
	24 h	7 days	24 h	7 days
<i>Acetic acid (10%)</i>	2	4	0	1
<i>Citric acid (10%)</i>	0	1	0	0
<i>Lactic acid (85% w/w)</i>	2 – 3	3	0	1
<i>xylene</i>	1	2	0	0
<i>MEK</i>	2	2 – 3	0	0
<i>ammonia (25%)</i>	0	1	0	0
<i>Crude oil</i>	0	0	0	0
<i>boiling water (30 min)</i>	0	0	0	0
<i>styrene</i>	2	4	0	0

evaluation marks

- 0 = no change
- 1 = minimal change in colour and gloss
- 2 = slight changes in colour and gloss
- 3 = coating largely undamaged
- 4 = coating damaged
- 5 = coating destroyed

Fog/Spray EN ISO 9227, substrate: zinc phosphate steel, coated direct to metal. Exposure time: 1500 hours. No visual change in gloss or colour.

Usage

The working temperature should be 15 – 24°C. Curing agent is supplied with resin part. Add the curing agent accordingly. The mixing ratio is given in the label. The product is ready to use but can be diluted with butyl acetate or xylene if required. Working time is ca. 10 hours depending on the ambient temperature and moisture. HybridWHITE 250 is one component system and requires no curing agent but post-curing at elevated temperature.

Application with conventional spray gun (needs ca. 10% dilution with Solvent 22):

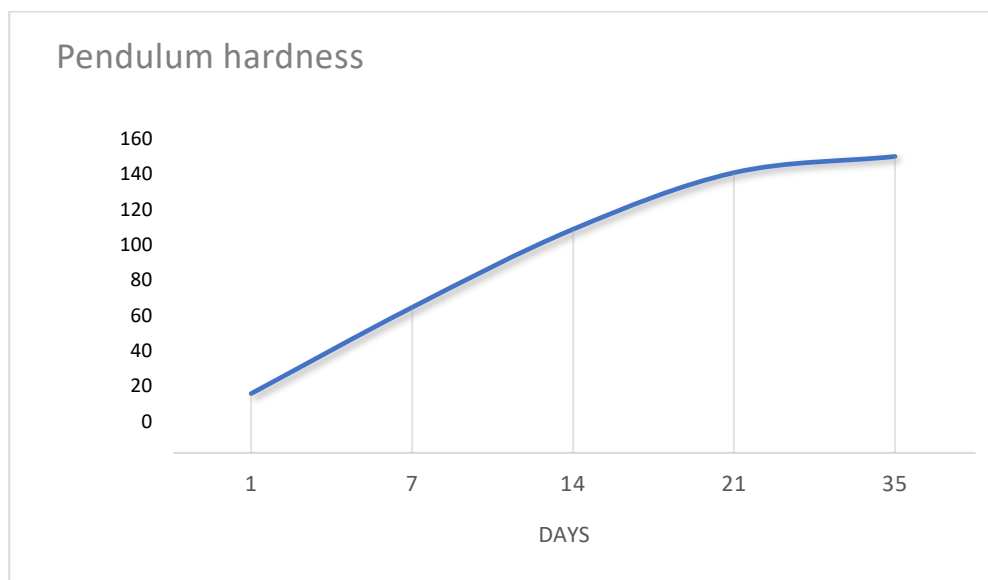
- nozzle size: 1,4 – 1,5 mm
- pressure: 2,5 bar

Application with high pressure spray gun;

- nozzle size: 615 - 617
- pressure: 120 - 160 bar

Spray 3 – 4 layers wet-to-wet to reach total recommended wet film thickness. The product can be applied also with brush or roller, but proper surface smoothness is not achieved. Clean tools with acetone or equivalent.

HybridWHITE 100 is double curing system where initial tack-free cure occurs with ambient moisture. This is rather fast reaction and tack-free surface can be achieved within 30 mins to 1 hour depending on the conditions. The second reaction is cross-linking, which is relatively slow process and highly dependable on temperature. At room temperature achieving the high cross-linking density can take two to three weeks. This needs to be taken account when testing product. The surface will go harder and harder within following weeks as shown in a below chart.



However, initial cross-linking can be accelerated with increasing ambient moisture content – while avoiding direct water contact. After tack-free surface, elevated temperature can be applied. This can range from 50°C to 120°C and from 8 hours to 1 hour and any variation between.

When using ventilation and under pressure extra care must be taken not to exclude all the humidity from the “drying room”. If no water is present, the surface will stay tacky for days and only cross-linking happens which can lead to gloss reduction. Same happens if heat is applied too early.

If the ambient humidity is very low i.e. in the winter, a bucket of water on the floor will be sufficient.

HybridWHITE 250 is heat curing system where initial tack-free dry occurs within 30 minutes at ambient temperature. After the surface is dried, the post-curing needs to be applied in order to reach very high cross-linking density and final properties. 20 to 30 minutes at 180°C is normally sufficient. Full cure can be tested with acetone wipes – when fully cured, acetone should not leave any marks.

Safety and Handling

The content of an opened package is influenced by air moisture. Keep tightly capped when not in use. Handle in a well-ventilated area. Store at room temperature in the original containers kept tightly closed. Protect from direct sun light. Shelf life is at least 12 months if stored properly. Detailed safety information is contained in a material data safety sheet.