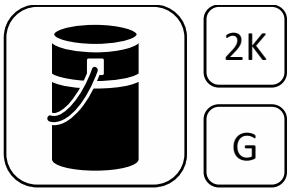
Installation guideline

Wecryl H PMMA Sealing System



Brief description
Wecryl 130 is a fast-curing, low-viscosity and solvent-free primer for concrete. Wecryl 130 is tested on the basis of the “Technical Delivery Specifications / Technical Test Specifications for Catalyzed Resins for Primers, Sealants and Scratch Coats under Asphalt Surfacing on Concrete”, (TP-BEL-EP) and the additional H PMMA requirements and may be used for the production of waterproofing systems consisting of a welded polymer-bitumen sheet on a PMMA-based seal coat, primer or scratch coat for civil engineering structures. Wecryl 130 is approved for application to young concrete (> 7 d). The application and usability on structures and components of the Federal Transport Network is verified in the "Compilation of certified substances and substance systems according to TL-BEL-EP”, a list by the Federal Highway Research Institute (BASt).

Material

2-component, fast-curing, catalysed PMMA-based resin
(PMMA = polymethyl methacrylate)

Properties and advantages

- Increased penetration depth also at low temperatures
- Tested against damp penetration from behind
- Fast-curing
- Hydrolysis- and alkali-resistant
- Improved heat-resistance (welded sheet, mastic asphalt)
- Fills pores and cracks
- Solvent-free
- Stabilises the surfaces of inferior grades of concrete
- Can be used at temperatures as low as 0 °C

Approval / Areas of application

The product can be used for new surfacing or existing surfacing that needs to be fully or partially replaced and that is applied to concrete bridge deck slabs, with welded polymer bitumen sheeting as the waterproofing layer.

Wecryl 130 is approved and tested in accordance with TL/TP-BEL-EP and H PMMA as well as the compatibility tests in accordance with TL/TP-BEL-B, part 1 and can therefore be applied on bridge deck surfacing on concrete with a welded polymer-bitumen sheeting as waterproofing layer.

Approved Welded polymer-bitumen sheeting:

- BÖRNER OK 50 N - Welded polymer-bitumen sheet
- VEDAPONT BE – Welded polymer-bitumen sheet
- AXTER, B3A SA-P - Polymerbitumen-Schweißbahn
- SikaShield Ergobit Pro

System build-up suitable for the concrete surface or roughness heights

The system build-up (primer or finish/seal or scratch coat) must be selected to suit the ascertained roughness heights and the age of the concrete. At roughness heights up to 1.5 mm in the concrete surface a primer or sealer must be applied. At roughness heights > 1.5 mm a scratch coat must be applied.

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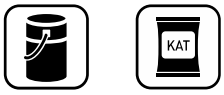
Individual depressions in the concrete, up to 5 mm in depth and approx. 500 cm² in area, may also be filled with Wecryl 131 K (scratch coat).
The roughness height must be determined in accordance with ZTV-ING - part 1 General Information, section 4, "Determination of Roughness Height".

Possible system build-up:

Build-up	Age of concrete	Roughness height	1. Layer	2. Layer	3. Layer
Sealer	> 7 days	< 1.5 mm	Wecryl 130 approx. 600 g/m² + QS 0.7 - 1.2 mm (3.0 - 3.5 kg/m²)	Wecryl 130 approx. 600 g/m²	
Sealer	> 7 days	> 1.5 mm	Wecryl 130 approx. 600 g/m² + QS 0.2-0.7 mm (800 g/m²)	Wecryl 131 K at least 1.7 kg/m² + QS 0.7 - 1.2 mm (1.0-1.5 kg/m²)	Wecryl 130 approx. 600 g/m²
Primer	> 21 days	< 1.5 mm	Wecryl 130 approx. 500 g/m² + QS 0.2-0.7 mm (800 g/m²)		
Primer	> 21 days	> 1.5 mm	Wecryl 130 approx. 500 g/m² + QS 0.2-0.7 mm (800 g/m²)	Wecryl 131 K at least 1.7 kg/m² + QS 0.2-0.7 mm (800 g/m²)	

Pack size



Summer:		Winter:	
25.00 kg	Wecryl 130	25.00 kg	Wecryl 130
0.80 kg	Wekat 900	1.60 kg	Wekat 900
25.80 kg		26.60 kg	

Colour

greenish

Storage

Store products sealed in their original airtight container and in a cool, dry and frost-free place. Unopened products have a shelf life of at least 6 months. Direct sunlight on the containers should be avoided, including on site. After removing some of the contents, reseal the containers so they are airtight.

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Application conditions

Temperatures

The product can be applied within the following temperature ranges:

Product	Temperature range, in °C			
	Air	Substrate	Material	Atmospheric moisture
Wecryl 130/ Wecryl 131 K	0 to + 35	0 to +30*	+3 to +30	≤90%

The surface temperature must be at least 3 °C above dew point.

Dew-point table:

Air temperature	Dew point in °C at relative humidity of										
	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
2	-7.8	-6.6	-5.4	-4.4	-3.2	-2.5	-1.8	-1.0	-0.3	0.5	1.2
4	-6.1	-4.9	-3.7	-2.6	-1.8	-0.9	-0.1	0.8	1.6	2.4	3.2
6	-4.5	-3.1	-2.1	-1.1	-0.1	0.9	1.9	2.7	3.6	4.5	5.4
8	-2.7	-1.6	-0.4	0.7	1.8	2.8	3.8	4.8	5.7	6.5	7.3
10	-1.3	0.0	1.3	2.5	3.7	4.8	5.8	6.8	7.7	8.5	9.3
11	-0.4	1.0	2.3	3.6	4.7	5.8	6.7	7.7	8.6	9.4	10.2
12	0.4	1.8	3.2	4.5	5.6	6.7	7.8	8.7	9.6	10.5	11.3
13	1.3	2.8	4.2	5.4	6.6	7.7	8.7	9.6	10.5	11.4	12.2
14	2.2	3.8	5.1	6.4	7.6	8.7	9.7	10.7	11.6	12.6	13.4
15	3.1	4.7	6.1	7.4	8.5	9.6	10.7	11.7	12.6	13.5	14.4
16	4.1	5.6	7.0	8.3	9.5	10.6	11.7	12.7	13.6	14.6	15.5
17	5.0	6.5	7.9	9.2	10.4	11.5	12.5	13.6	14.5	15.4	16.2
18	5.9	7.4	8.8	10.1	11.3	12.4	13.5	14.6	15.4	16.3	17.3
19	6.8	8.3	9.8	11.1	12.3	13.4	14.5	15.5	16.4	17.4	18.2
20	7.7	9.3	10.7	12.0	13.2	14.4	15.5	16.5	17.4	18.4	19.2
21	8.6	10.2	11.6	12.9	14.2	15.4	16.4	17.4	18.4	19.3	20.2
22	9.5	11.2	12.5	13.9	15.2	16.3	17.4	18.4	19.4	20.3	21.2
23	10.4	12.0	13.5	14.9	16.0	17.3	18.4	19.4	20.4	21.3	22.2
24	11.3	12.9	14.4	15.7	17.1	18.2	19.2	20.3	21.4	22.3	23.2
25	12.2	13.8	15.4	16.7	18.0	19.1	20.2	21.4	22.3	23.3	24.2
26	13.2	14.8	16.3	17.7	18.9	20.1	21.3	22.3	23.3	24.3	25.2
27	14.1	15.7	17.2	18.6	19.8	21.1	22.2	23.3	24.3	25.2	26.1
28	15.0	16.6	18.1	19.4	20.9	22.1	23.2	24.3	25.3	26.2	27.2
29	15.9	17.6	19.0	20.5	21.8	23.0	24.2	25.2	26.2	27.3	28.2
30	16.8	18.4	20.0	21.4	23.7	23.9	25.1	26.1	27.2	28.2	29.1
32	18.6	20.3	21.9	23.3	24.7	25.8	27.1	28.2	29.2	30.2	31.2
34	20.4	22.2	23.8	25.2	26.5	27.9	28.9	30.1	31.2	32.1	33.1
36	22.2	24.1	25.5	27.0	28.4	29.7	30.9	32.0	33.1	34.2	35.1
38	24.0	25.7	27.4	28.9	30.3	31.6	32.8	34.0	35.0	36.1	37.0
40	25.8	27.7	29.2	30.8	32.2	33.5	34.7	35.9	37.0	38.1	39.1

Moisture

The relative humidity must be ≤90%.
The surface to be coated must be dry and ice-free.
The dryness of the concrete surface must be tested by heating a small area with a hot-air blower or fan (moist concrete will get noticeably lighter).
The surface must be protected from moisture until the coating has hardened.

Concrete replacement systems

Since the primer has been developed specifically for concrete, its application on concrete replacement systems must be checked in each case as problems might arise with curing.

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Reaction times, Required amount of catalyst und Consumption rates

	(at 20 °C, 1.5% catalyst)	
	Wecryl 130	**Wecryl 131 K**
Pot life	approx. 10 min	approx. 12 min
Rainproof	approx. 30 min	approx. 30 min.
Can be walked on/ overcoated	approx. 60 min	approx. 60 min
Curing time	approx. 3 hours	approx. 3 hours

Higher temperatures or greater proportions of catalyst will reduce reaction times. Conversely, reaction times will increase at lower temperatures or with smaller proportions of catalyst.
The following table indicates the recommended amount of catalyst required to adjust the curing reaction to the temperature.

Product	Workable life > 10 minutes at substrate temperature Required amount of catalyst							
	0 °C	+3 °C	+5 °C	+10 °C	+15 °C	+20 °C	+25 °C	+30 °C
Wecryl 130, 25 kg tub	6% = 1500 g	6% = 1500 g	4% = 1000 g	3% = 750 g	3% = 750 g	1.5 % = 375 g	1% = 250 g	1% = 250 g
Wecryl 131 K 25 kg tub	2% = 500 g	2% = 500 g	1.5 % = 375 g	1.5 = 375 g	1% = 250 g	1% = 250 g	0.5% = 125	0.25% = 65 g

Technical data

Density: Wecryl 130: 1.00 g/cm³
Wecryl 131 K: 1.70 g/cm³

Consumption: see “**System build-up suitable for the concrete surface or roughness heights**”

Product application




Application equipment / tools

For mixing the product:

- Mixing tool with twin-paddle stirrer

For applying the product:

- Rubber squeegee (ensure adequate consumption rate), then use the sheepskin roller to smooth over.
- Brush (only for areas not accessible with roller)

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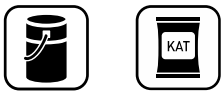
Substrate preparation
The substrate shall be prepared according to ZTV-ING, part 7, section 1.
The primer must only be applied to a prepared substrate. The bonding and adhesion of the sealer or primer to a mineral substrate is based on careful and intensive substrate preparation. High strength concrete, vacuum concrete or extremely smoothed, very highly compacted concrete surfaces require more intensive preparation of these surfaces compared to normal concrete surfaces. After preparation, the embedded aggregates should be visible. A trial patch should be created in individual cases.
Once the substrate has been prepared, the bond strength of the concrete must be checked. The mean bond strength must be at least 1.5 N/mm². The lowest individual value must not be less than 1.0 N/mm².



Mixing
First stir the tub contents thoroughly for at least 1 minute.
Then add the catalyst while stirring the resin at the slow-speed setting and mix for 2 minutes. Make sure that the product on the base and sides of the container is mixed in.
At product temperatures < 10 °C the product should be stirred for 5 minutes, as the catalyst will take longer to dissolve. This applies especially if you are preparing a scratch coat.

Work interruptions
It is vital that the topped primer or the first topped layer of the sealer is reworked before work is interrupted overnight. When applying the primer before interrupting work, the welded polymer-bitumen sheet must be applied. When applying the sealer, it is vital that the second layer is applied before interrupting work.

System build-up based on roughness heights and age of concrete
Roughness heights < 1.5 mm

Primer on concrete (age of concrete ≥ 21 days):
Wecryl 130 is used for this. The product largely fills the pores in the surface of the concrete and creates a permanent bond between the concrete and the next coating. The primer is topped.
Wecryl 130 is poured onto the substrate at a rate of at least 500 g/m² until the surface is saturated. It is then spread with a rubber squeegee and smoothed with a sheepskin roller. Broadcasting of (kiln-dried) quartz sand 0.2 - 0.7 mm (quantity: approx. 500 - 800 g/m²) must begin while the primer is being applied.

On no account must topping be applied to excess. Any topping that is not firmly incorporated in the primer after curing must be removed.

Sealer on concrete (age of concrete ≥ 14 days):
Wecryl 130 is used for this. The product fills the pores in the surface of the concrete and creates a permanent bond between the concrete and the next coating. Two coats are applied, with a topping of quartz sand in between. The second coat is not topped with quartz sand.
As a first coat, Wecryl 130 is poured onto the substrate at a rate of at least 600 g/m² until the surface is saturated. It is then spread with a rubber squeegee and smoothed with a sheepskin roller. Begin with broadcasting of quartz sand (kiln-dried) 0.7 - 1.2 mm in excess (grain to grain, consumption approx. 1.0 - 1.5 kg/m²) while the resin is being applied. Any sand that is not firmly incorporated in the first layer of the sealer after curing must be removed. The second coat of Wecryl 130 can be applied with a sheepskin roller or rubber squeegee after just 30 - 45 min. (temperature-dependent) at a quantity of at least 600 g/m². The particle tips must be fully covered with Wecryl 130.

Application to concrete that is at least 7 days old:
The product is applied to concrete that is at least 7 days old as described for the build-up "Sealant / Finish on Concrete".
The surface of the concrete must be dry. To determine whether the concrete surface is dry, it must be heated locally with a hot air blower or fan. If the concrete is moist, this will make it noticeably lighter, in which case the product must not be applied.

Roughness heights > 1.5 mm

Scratch coat on concrete
This is designed to level out major roughness heights > 1.5 mm and is applied on top of the cured primer. The scratch coat (Wecryl 131 K) must be smoothed over the particle tips. Wecryl 131 K must be topped with fire-dried quartz sand 0.2 to 0.7 mm so that the same surface is achieved as when a primer is applied. Any sand that is not firmly incorporated in the scratch coat after curing must be removed.
If scratch coat and sealer are combined side by side on one surface or if a scratch coat must be applied instead of sealer, the surface of the scratch coat must be topped with quartz sand 0.7 to 1.2 mm in excess (grain to grain, consumption approx. 1.0 to 1.5 kg/m²).
Any sand that is not firmly incorporated in the scratch coat after curing must be removed. The Wecryl 131 K is then sealed with Wecryl 130 at a consumption rate of approx. 600 g/m².

Creation of a scratch coat

Quartz sand	Mixing ratio	Anti-flow additive – WestWood® 910
0.4-0.8 mm	Resin:Sand = 1:1	400g to 25kg of resin
0.4-0.8 mm	Resin:Sand = 1:2	400g to 25kg of resin
0.7-1.2 mm	Resin:Sand = 1:2	400g to 25kg of resin

We do not recommend creating a scratch coat without anti-flow additive WestWood® 910, as the quartz sand sinks relatively into the resin and therefore the homogeneity of the mixture cannot be guaranteed.
The scratch coat must be created using quartz sand. The inclusion of other additives is not recommended.

Wecryl 131 K is manufactured with quartz sand at the factory. No further quartz sand needs to be mixed in.

Application
Use the rubber squeegee to apply the recommended amount and then roll on with the sheepskin roller for an even and film-forming coat of primer. Due to the low viscosiosity, Wecryl 130 penetrates deep into the substrate, therefore wait two to three minutes before topping to see if the Wecryl 130 still forms an even film on the concrete surface. If the material penetrates too deeply into the substrate, you need to add a further amount of Wecryl 130. Only this way it can be ensured that the quartz sand remains embedded in the Wecryl 130.

If too little material is applied, this can result in problems with the curing process, as polymerisation is interrupted.

Cleaning

When work is interrupted or completed the tools must be cleaned thoroughly with WestWood® Cleaning Agent within the pot life of the product (approx. 10 minutes). This can be done with a brush. Do not use the tools again until the Cleaning Agent has evaporated fully.
Simply immersing the tools in the Cleaning Agent will not prevent the material from hardening.

Information on safety and risks

Please refer to the safety data sheets for the products used.

Wecryl H PMMA Sealing System

General information

The above information, especially information about application of the products, is based on extensive development work as well as many years of experience and is provided to the best of our knowledge.
However, the wide variety of requirements and conditions on site mean that it is necessary for the product to be tested to ensure that it is suitable for the intended purpose. Only the most recent version of the document is valid. We reserve the right to make changes to reflect advances in technology or improvements to our products.

Rev.: 01 January 2024

System drawing

Wecryl H PMMA Sealing System

Sealer build-up for roughness heights < 1.5 mm

Substrate

1 e.g. Concrete

Primer layer of first waterproofing layer

2 Wecryl 130 + WestWood® Quartz Sand topping 0.7 – 1.2 mm

Primer layer of second waterproofing layer

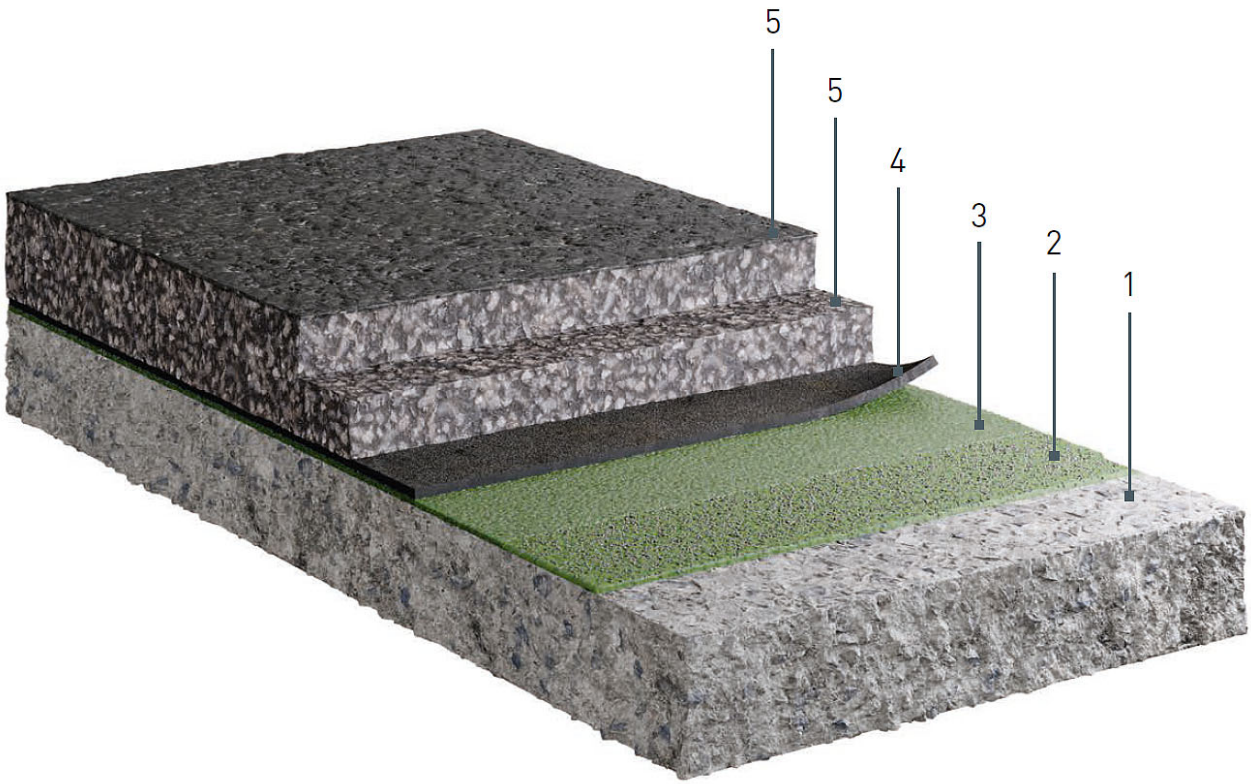
3 Wecryl 130

Waterproofing layer

4 Welded polymer-bitumen sheeting

Finished surface

5 Two layers of mastic asphalt



System drawing

Wecryl H PMMA Sealing System

Sealer build-up for roughness heights > 1.5 mm

Substrate

1 e.g. Concrete

Primer layer of first waterproofing layer

2 Wecryl 130

Primer layer of scratch coat

3 Wecryl 131 K + WestWood® Quartz Sand topping 0.7 – 1.2 mm

Primer layer of second waterproofing layer

3 Wecryl 130

Waterproofing layer

4 Welded polymer-bitumen sheeting

Finished surface

5 Two layers of mastic asphalt