



TECHNICAL CARD:

WB COLD ZINC



PRODUCT DESCRIPTION AND APPLICATION

WB COLD ZINC is a single-component, ready-to-use preparation (*having properties similar to the ones of a traditional paint*) that can be utilized for **cold galvanizing of all kinds of steel surfaces and structures**. The product contains **90% of dry micronized zinc** (*in both micro- and nano- forms, characterized the highest purity of 99.995%*), in an acrylic resin binder.

The preparation ensures cathodic and barrier-based protection of ferrous metals. **WB COLD ZINC is an alternative to hot-dip galvanizing or hot-dip zinc spray metallization**. It is characterized by protective properties that are comparable to the ones of the aforementioned methods. The product can be utilized as a stand-alone system (*in the environment of up to C3 its shelf life is H and in the C4 environment it is M*). It can also be used as a supplementary and repair system for hot-dip galvanizing, hot-dip zinc spraying, as well as for covering initial WB COLD ZINC coatings. The discussed product can also be used as a steel protection system in concrete and hydrotechnical structures (*e.g. reinforcing bars, anchors, weir guides, etc.*)



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I. TECHNICAL DATA

Wet coating

- **composition:** micronized zinc powder (in both micro- and nano- form), acrylic binder and thinner
- **density:** 2.08 kg/dcm³
- **content of solids: by volume** 74.21%
- **thinner:** aromatic hydrocarbon - xylene
- **ignition point :** > 40 °C
- **content of volatile substances VOC** 406 g/l

Dry coating

- **hue:** matt gray (similar to RAL 7001) or to aluminum
- **zinc content in dry matter:** 90% (± 1%)
- **product properties/resistance:** excellent with regard to UV rays
 - pH resistance in the ambient environment from 3.5 to 12.5
 - pH resistance when submerged in water from 6.0 to 10.5
 - resistance at ambient temperature minimum: - 40 °C
 - resistance at ambient temperature maximum: 120°C
 - resistance at ambient temperature periodically: 150 °C
- **hardness (basing on Koenig's pendulum)** 0.349
- **toxicity :** dry coating is not toxic

II. SURFACE PREPARATION

New steel structures

- **undertake machining works according to the requirements of P3 (basing on PN-ISO 8501-3), round the edges to make their radius $R = 2 \div 4$ mm. Clean the surface after welding and the edges after cutting by means of grinding based on the utilization of a coarse abrasive (remove chips, burrs, and sinters),**
- **degrease the substrate (according to ISO/DIN 8502-7) and clean to Sa 2.5 or St 3 (according to PN-EN ISO 8501-1),**



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- **obtain the roughness profile Ry_5 (Rz) of $50\ \mu\text{m} \div 70\ \mu\text{m}$ (according to PN-EN ISO 8503-4) and Ry_5 (Rz) of $30\ \mu\text{m} \div 40\ \mu\text{m}$ for anchors and reinforcing steel (recommended dry film thickness always refers to values being above the peaks of the Ry_5 / Rz roughness profile).**
- **clean the surface and obtain the required degree lower than 3 (according to PN-EN ISO 8502-3) immediately before applying the WB COLD ZINC coating,**
- **in the case of elements cut with a laser or plasma cutter, carry out machining with a coarse grinding wheel on the edges (shot-blasting or sandblasting will not remove the residue created during the process of laser or plasma cutting. Said residue may remarkably lower the adhesion of the coating),**

Steel structures to be repaired or renovated by using the WB COLD ZINC system

- **prior metallized and painted surfaces should be cleaned to reach Sa 2.5 or PSa 2.5 (according to PN-EN ISO 8501-1), leave well-adhering coatings in their unchanged state,**
- **obtain the Ry_5 (Rz) roughness profile of $50\ \mu\text{m} \div 70\ \mu\text{m}$ (according to PN-EN ISO 8503-4) and of $30\ \mu\text{m} \div 40\ \mu\text{m}$ in the case of anchors and reinforcing steel**
- **clean the surface and obtain the required degree not higher than 3 (according to PN-EN ISO 8502-3) immediately before applying the WB COLD ZINC coating,**

Preparing a previously galvanized surface

- **degrease the entire galvanized surface (for example: by means of steam of the pressure of about 14 MPa), roughen the surface by lightly sweeping it with a fine pointed abrasive, by using a non-metallic agent or chemically; afterwards - rinse with clean water, dry the surface with unpolluted, compressed air, and apply WB COLD ZINC to achieve the desired thickness,**

Localized large damages should be degreased and cleaned with an abrasive agent (manually or mechanically). Afterwards, remove chips, flakes, and residues, clean the surface, and finally - apply WB COLD ZINC locally,

- **WB COLD ZINC can be applied directly to hot-dip metallized coatings (provided that the coating is not contaminated), without the need to utilize additional sealants.**

Preparation of the "old" zinc coating

Remove impurities (ionic substances, oxides, chlorides, fats, and other contaminants) from the coating, wash it with warm water with the addition of detergents (for example: the ones with NaOH or ammonia, characterized by a slightly alkaline pH) applied under the pressure of up to 20 MPa and rinse with water. Remove rust spots and flaking old coating with a mechanical or manual abrasive, clean the surface, wash it, and then - apply WB COLD ZINC to achieve the desired thickness.



III. APPLICATION-SPECIFIC CONDITIONS

- **ambient temperature** *minimum* : - 15°C
maximum: + 40°C
- **relative humidity** maximum: 95%
- **surface temperature (without water or ice)** *minimum* 3°C > dew point
maximum: + 60°C
- **optimal product temperature during application:** *between* 15 - 25 °C

Please note:

Lower or higher temperatures may adversely affect the smoothness of the coating after drying, without negatively affecting its condition (the effect will then be purely aesthetic; there may also be some cleaning issues); do not use on a wet or damp surface

IV. EXPECTED EFFICIENCY

depending on coating thickness:

Assumed dry film thickness (G _{ws} - in µm)	Thickness of the wet layer (G _{wm} - in µm)	Expected efficiency (in m ² /kg)	Expected capacity (in m ² /liter)
40	54	8.91	18.55
50	68	7.13	14.84
60	81	5.94	12.36
70	95	5.09	10.60
80	108	4.45	9.27
90	122	3.96	8.24
100	135	3.56	7.42
110	149	3.24	6.74
120	162	2.97	6.18

Please note:

- **WB COLD ZINC** **1 kg = 0.481 liters**

- G_{wm} value is rounded up to achieve values without decimal points,

- provided results do not include the loss factor, which is: ± 1.2 - 1.8, depending on the application method opted for.

Two types of losses that should be taken into account:

- *apparent losses: when the paint remains on the surface and does not create the coating of a desired thickness, caused by surface profile/roughness and paint excess,*

- *actual losses: when paint is wasted, left in containers or in equipment, caused by the lack of attention of painters, brush dripping, and losses during spraying.*



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V. DRYING TIME AND THE APPLICATION OF CONSECUTIVE LAYERS

The WB COLD ZINC coating dries by means of thinner evaporation.

The drying process is influenced by: *the total thickness of the wet layer, the temperature of the surface and the environment, as well as by air circulation.*

Drying time

For 40 µm dry film thickness at 20°C in a well-ventilated room,

- **dry to the touch:** after 15 minutes
- **portability:** after 1 hour
- **complete hardening:** after 48 hours
- **ready to be submerged in water:** after 2 hours

Application of a consecutive layer of WB COLD ZINC

- **with a brush:** 2 hours after the surface is dry to the touch
- **by spraying:** 1 hour after the surface is dry to the touch

The maximum recoating time depends on the ambient conditions. If zinc salts are formed or secondary impurities occur, they must be removed.

Each new layer of WB COLD ZINC combines with the previous layer of WB COLD ZINC to form one homogeneous layer.

Elements or structures previously covered with the WB COLD ZINC coating may, after thickness decreasing or mechanical damages occurring, be supplemented with a new layer of WB COLD ZINC. For detailed information on the preparation of old WB COLD ZINC coatings, contact a WATER BLOCK SWISS GROUP representative.

Application of subsequent, compatible coatings

WB COLD ZINC 720 can be covered with a wide range of topcoats. Nevertheless, it is sensitive to foreign solvents, similarly to other zinc-rich systems. In order to avoid the formation of blisters, pinholes, or other coating defects (*which may negatively affect the protective effectiveness of the WB COLD ZINC layer*), it is recommended to apply the paint between layers by opting for the mist coating technique, followed by a comprehensive coating. Initially, a thin, continuous layer should be applied, which will allow air to pass through and the solvent to evaporate. Said layer will also protect the surface against hazardous solvents in the interlayer or topcoat paint.

- **mist coating:** *application after at least 6 hours from the moment of WB COLD ZINC coating becoming dry to the touch,*
 - **dry layer thickness:** 25 to 30 µm (continuous layer)
 - **dilution:** *according to the data in the technical data sheet of the topcoat*
- **comprehensive coating:** *application after at least 2 hours from the moment of the mist coating*



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becoming dry to the touch

- **specified coating thickness minus 25-30 µm** (mist coating)
- **dilution:** according to data in the technical data sheet of the topcoat

To avoid possible issues with the adhesion of interlayer or topcoat paint, it is recommended to perform trial painting.

VI. APPLICATION METHODS

Brush and roller

- **dilution:** **WB COLD ZINC** is a preparation suitable for brush or roller application. Nevertheless, to ensure the optimal coating effectiveness and smoothness, dilute the product in 3-5% thinner.
- **initial layer:** initial layer should never be applied with a roller, but rather with a brush, in order to fill the gaps and make the surface of the component wet.
- **type of brush and roller:** brush with short bristles (round), industrial roller with short bristles.

Application by means of low-pressure spraying

- **dilution:** up to 15% (by volume), depending on nozzle thickness. Greater dilution by using the same nozzle will result in a smoother surface
- **nozzle pressure:** 1.5 – 3.0 bar (0.15 - 0.30MPa)
- **nozzle size:** 1.6 - 2.0 mm (0.06 - 0.08 inch)

Application by means of high-pressure spraying

- **dilution:** up to 10 % (by volume), depending on nozzle thickness. Greater dilution by using the same nozzle will result in a smoother surface
- **nozzle pressure:** approx. 150 bar (15 MPa)
- **nozzle size:** 0.40 - 0.80mm (0.02 - 0.03 inch)

VII. OTHER USEFUL INFORMATION

- **WB COLD ZINC preparation**, due to the high content of zinc at the bottom of the can, must be thoroughly mixed before its use. During use, the can should be also mixed every 20 minutes or so (it is recommended to use mechanical stirrers or painting aggregates with agitators),
- **painting equipment:** thoroughly clean with thinner (including brushes and rollers).
Do not use white spirit for said purpose.
- **remove filters from paint guns** and use reinforced springs.



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VIII. PACKAGING AND STORAGE CONDITIONS

- **available packaging:** *cans* 0.5, 1, 2, 5, and 10 kg
spray 400 ml
- **storage conditions:** *in a cool and dry place*
at ambient temperature from 5 to 25 °C
- **storage time:** 24 months
(once a year, the closed packaging/can should be shaken mechanically)

PLEASE NOTE!

All the pieces of information provided are consistent with and refer to Regulation (EC) No. 1907/2006 of the European Parliament and of the Council, as amended and supplemented by UN Regulation No. 830/2015.



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