

Steel

# covex<sup>®</sup> T

Product information for additional coating



thyssenkrupp

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## Brief profile

covex<sup>®</sup> T is a thin, transparent, colourless or slightly iridescent additional coating for metallic coated surfaces from thyssenkrupp. It is designed to act as a temporary protective coating for sheet products until the first stage of their processing. The applied passivations are dry to the touch and are currently available in the form of Cr(III)-containing coatings.

## Production

covex<sup>®</sup> T can be applied to almost all metallic coated thyssenkrupp products according to customers' requirements. The transparent, largely inorganic film is applied in a continuous production process by a no-rinse method (ChemCoater) or using sprays/squeeze roller equipment.

The products used by thyssenkrupp are fully compliant with the following EU directives banning the use of compounds containing Cr(VI):

- Electrical industry: Directive 2011/65/EU
- Automotive industry: Directive 2000/53/EC, with a restriction for Cr(VI) as from July 1, 2007
- REACH Regulation (EG) No. 1907/2006 – amendments/additions to the REACH Regulation and the candidate list are constantly taken into account.

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## Product properties

The properties of the metallic coatings are not changed by the additional covex® T coating systems. However, the tendency to form white rust due to condensation moisture is temporarily minimized and the metallic coating of the sheet surface is provided with temporary corrosion protection.

### Composition

- Transparent, colorless or slightly iridescent coating
- Contains oxidically bound components of chromium (in the form of Cr<sup>3+</sup>) and possibly titanium, zirconium and silicon
- Coating may contain fluorides and phosphates
- The layer weights of the passivation coatings may differ depending on the basic conditions in production plants which means that a defined layer weight cannot be specified.

The specified values are reference values which can be adjusted to obtain special properties according to customer requirements.

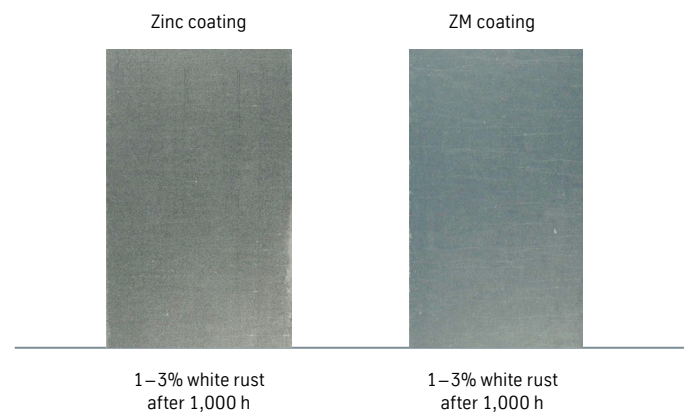
### Corrosion protection

Chemical passivation protects the surface from the effect of humidity and reduces the risk of the formation of white rust during transport and storage (according to DIN EN 10346).

The warranty against the formation of corrosion products or white rust is three months if the products are stored properly and transported correctly. You should refer to the information from leaflets MB112 and MB130 as well as from the brochure entitled Characteristic Features 095. All documents are available free of charge at the following link: <https://www.stahl-online.de/publikationen/>.

#### Constant climate test according to DIN EN ISO 6270-2

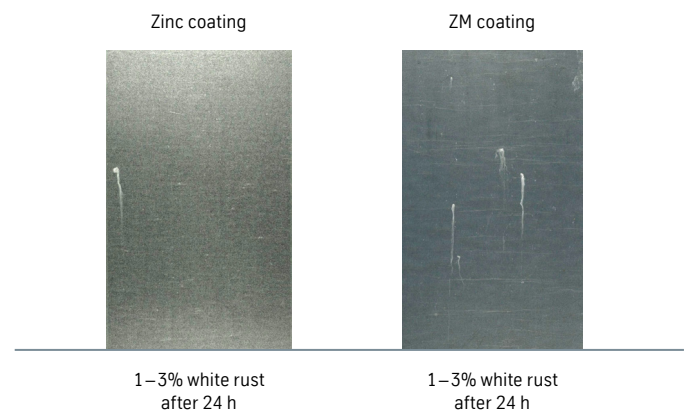
Exemplary test results after condensation water constant climate test (CH) according to DIN EN ISO 6270-2 (test time: 1,000 h) for Cr(III)-passivated hot-dip coatings with zinc coating (Z) and zinc-magnesium coating (ZM Ecoprotect®):



The specified white rust values are mean values from three samples.

#### Salt spray test according to DIN EN ISO 9227

Exemplary test results after salt spray test according to DIN EN ISO 9227 (test time: 24 h) for Cr(III)-passivated hot-dip coatings with zinc coating (Z) and zinc-magnesium coating (ZM Ecoprotect®):



The specified white rust values are mean values from three samples.

## Information on application and processing

### Forming

Surfaces with covex® T coating offer the following properties:

- Preservation of the good properties of the metallic coating
- Friction coefficient unchanged

### Degreasing

Passivated surfaces cannot be cleaned or degreased without compromising the performance of the passivation layer. If necessary, the surface should be degreased with a slightly alkaline detergent. If a permanent cleaning is envisaged, the impact of such cleaning on the surface should be examined.

### Painting

In principle, surfaces coated with covex® T can be painted. However, thyssenkrupp recommends to conduct individual tests where special requirements are concerned.

#### Cross-cut test according to DIN EN ISO 2409

Exemplary results for Cr(III)-passivated hot-dip galvanized sheet Z:

	Initial condition	Boiling test <sup>2)</sup>
<b>Coating</b>		
Powder coating Cr(III) <sup>1)</sup>	1	1

<sup>1)</sup> No degreasing

<sup>2)</sup> 1 hour, 100°C, demineralized water

Powder coating: BASF PE 56

### Joining

#### Mechanical joining

Hot dip-coated sheets with a covex® T coating can be mechanically joined. In principle, this can be done without further pretreatment of the sheets as delivered. If the sheets have to meet extreme requirements we recommend to conduct a preliminary test (if sample material is provided, thyssenkrupp will carry out a preliminary check of the joining parameters). If lubricants have to be removed in individual cases, this should be done using a mild degreasing agent (see degreasing).

#### Adhesive properties

The Cr(III) passivation Z displays relatively good adhesive properties comparable to those of Cr(VI) passivation, both with high-strength structural adhesive (e.g. Betamate 1496) and with relining adhesive (e.g. Betaguard PF250).

#### Weldability

No negative effects have been observed during resistance spot welding.

Dimensions				
	Width [mm]		Thickness [mm]	
	Strip (Coil)	Sheet	Strip (Coil)	Sheet
<b>Surface coating</b>				
Z (Hot-dip galvanized)	600 – 2,000	600 – 2,000	0.35 – 3.25	0.35 – 3.25
ZM Ecoprotect®	600 – 1,600	600 – 1,500	0.35 – 3.20	0.35 – 3.20
ZA galfan®	700 – 1,600	700 – 1,500	0.40 – 3.00	0.40 – 3.00
AS (Aluminum-silicon coating)	600 – 1,550	600 – 1,550	0.40 – 3.00	0.40 – 3.00
EG (Electrolytically galvanized)	800 – 1,550	750 – 3,000	0.40 – 3.00	0.40 – 3.00

### Nomenclature for purchase orders

Reference to “passivation” is sufficient as the order specification for the covex® T additional coating. The abbreviation “C” is used for this, e.g. DX51D+Z275 - M A - C.

DX51D	Steel grade
Z	Hot-dip galvanized surface
275	Target layer weight for the metallic coating in g/m <sup>2</sup>
M	Minimized spangle pattern
A	Normal surface
C	Surface protection – passivated

### Final note

All information is based on our in-house laboratory tests. On account of the variety of actual basic conditions, deviations may occur in practice. We recommend to conduct tests on a case-by-case basis. Please contact us if you need further information or advice.

Special mill grades are supplied subject to the special conditions of thyssenkrupp. Other delivery conditions not specified here will be based on the applicable specifications. The specifications used will be those valid on the date of issue of this product information brochure.

#### General information

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