



NBI Technical Approval

Norwegian Building Research Institute

Norwegian Member of European Organisation for Technical Approvals, EOTA
Norwegian Member of European Union of Agreement, UEAtc

Nr. 2303

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Combi-Coat® Powder Coated Steel

is approved by Norwegian Building Research Institute with properties, field of application and conditions as stated in this document.

1. Holder of the approval

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2. Factory

Ørsta Stålindustri AS, Ørsta

3. Product description

Combi-Coat® is a corrosion protection of steel products by zinc and coating powder. The steel is zinc coated by hot-dipping according to EN ISO 1461. The metal surface is Zn/Mn-phosphatized before powder coating. The top coat is primid-hardened polyester with a minimum thickness of 60 µm. The powder coating achieves full strength in the course of the production.

4. Field of application

Combi-Coat® is suitable for use in environments according to corrosion class C 5-1/M in EN ISO 12944-2:1999.

5. Properties

General

This approval cover the properties of the corrosion protection system for the steel products. Properties of fresh coating determined by type testing are shown in Table 1.

Environmental declaration

Combi-Coat® does not contain any substances on the Norwegian environmental authorities' Observation List Table 1: Material properties of Combi-Coat®

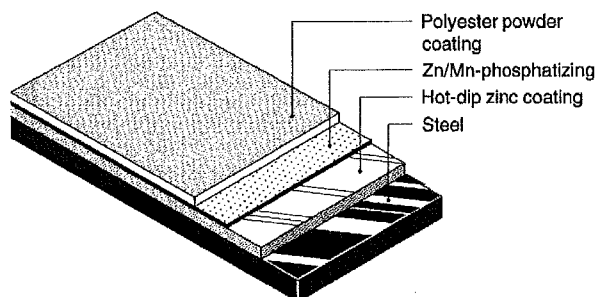


Fig. 1
Sectional drawing of Combi-Coat® surface coating

of regulated substances. No environmental declaration is issued for Combi-Coat®.

Disposal after use

After removal of *Combi-Coat®* including zinc, the steel may be reused. Cleansing of the steel is performed in special plants.

6. Special conditions for use and installation

Combi-Coat® must not be exposed to:

- Strong acids
- Strong bases
- Aromatic solvents
- Petrol
- Organic solvents such as acetone, ethyl acetate, MEK (methyl ethyl ketone) and TRI (trichloroethylene)

The product should be subjected to annual inspection for damages that may reduce the durability of the product.

Property	Method	Value	Unit
Thickness of top coat	Inductive detector ISO 2808	≥ 60	µm
Surface properties	Visual evaluation ISO 4628	0 – 1	Rating
Structure of phosphate layer	Microprobe	Approved/not approved	
Cross-cut test	ISO 2409	0 – 1	Rating
Hardening of top coat	30 double stroke with MEK*	A1	Rating (Jotun)* ¹
Boiling test (with cross cut test)* ²	Boiling 2 h in de-ionized water	1 – 2	Rating (ISO 2409)

* Jotun internal routines (Quality Control Manual):

*¹ 10.230.37.G140 "Løsemiddelbestandighet som indikator for pulverlakkens herdningsgrad"

*² 10.230.37.R080 "Motstand mot kokende vann for pulverlakter"

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Reference: Appr. O 8668 Contr. O 14088

Subject: Various

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7. Factory production control

Annual supervisory product control of Combi-Coat® is carried out by SINTEF Applied Mechanics and Corrosion in accordance with contract for NBI Technical Approval and the accompanying control description. The control is performed on test pieces after Zn/Mn phosphatizing and after both Zn/Mn phosphatizing and powder coating.

The quality management system of the manufacturer is certified by TI Sertifisering AS according to EN ISO 9001:2000, certificate no. 152, and is revised annually.

8. Basis for the approval

The corrosion protection achieved with Combi-Coat® has been verified by corrosion testing which is reported in the following reports:

- "Pulverlakk som korrosjonsbeskyttelse av stål og varmforsinket stål. Resultater fra prøving" SINTEF Report STF24 F99293 of 12. Sep. 1999.
- "Pulverlakkert varmforsinket stål i korrosive miljøer" SINTEF Report STF24 F00675 of 20. Dec. 2000.

9. Marking

All products shall be marked with Combi-Coat®, the date of production or a traceable production number. NBIs approval mark for NBI Technical Approval No. 2303 may also be applied.



Approval mark

10. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against NBI beyond the provisions of Norwegian Standard NS 8402.

11. Technical management

Project manager for the approval is Tom-Nils Nilsen. Project manager for the supervisory control is Birgit Risholt, Norwegian Building Research Institute, Dep. Materials and constructions - Trondheim.

for Norwegian Building Research Institute

Trond Ø. Ramstad
Head of Approvals