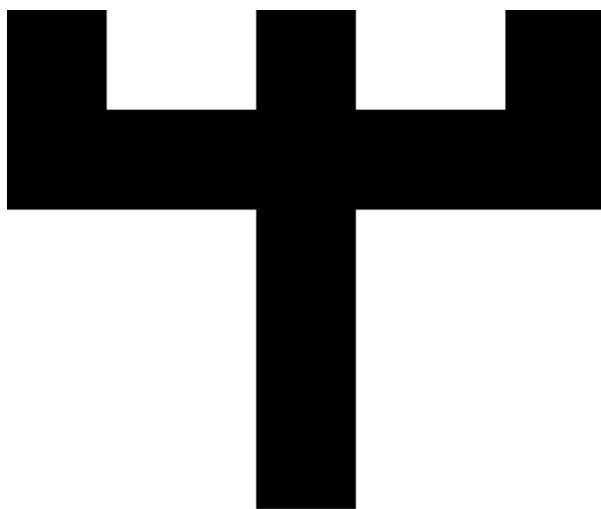


Certification of construction products

Certification rule 005

- Corrosion protection



Foreword

Certification rules describe the conditions under which construction products are certified with RISE Certification, Research Institutes of Sweden AB. They consist of product-specific rules as well as general rules (Certification rule 000 – General).

The certification rules state which characteristics are assessed, according to Boverket, National Board of Housing, Planning and Building Act (2010:900) and Boverket Mandatory provisions amending the board's mandatory provisions and general recommendations (2011:10) on the application of European design standards (Eurocodes), (EKS).

The certification rules are based on applicable standards but may be revised in future, for example in order to harmonise them with European or international standards. They may also be revised if new regulations are introduced or in light of the experience gained from application of the certification rules. The rules will be revised if they need to be refined or supplemented.

Certification rule 005 concerning corrosion protection is established by the RISE Certification unit manager.



Date & Time: 2019-03-01 14:28:24 +01:00

Dag Sjöholm

RISE Certification
Box 857
501 15 BORÅS

Tel +46 10 516 50 00
Fax +46 33 16 56 10

www.ri.se

RISE Certification
Box 553
371 23 KARLSKRONA

Tel +46 10 516 63 00
Fax +46 455 206 88

Contents

1	General	4
2	Scope	4
3	Corrosion protection requirements	4
3.1	Identification of the corrosion protection	4
3.2	Durability	5
4	Requirements concerning descriptions, instructions etc.	6
4.1	Product description	6
4.2	Associated documents	6
4.3	Marking	6
5	Information in the type approval	7
6	Production control inspections	7
6.1	Factory production control	7
6.1.1	Testing of corrosion protection	7
6.1.2	Documentation and logging	7
6.2	Supervisory inspections	8
6.2.1	Initial inspection	8
6.2.2	Annual supervisory inspections on the coating plant	8
6.2.3	Annual supervisory inspections on premises of importer or distributor	8
6.2.4	Samples and verification tests	8
6.3	Control agreement	9
	Applicable requirements	10
	Applicable requirements under the Swedish Planning and Building Act (2010:900), chapter 8, section 4	10
	Applicable requirements under Boverket Regulations	10
	Requirements in the certification rules linked to Boverket Regulations	10

1 General

This certification rule lays down conditions governing type approval, technical requirements and continuous inspection requirements for corrosion protection in indoor and outdoor applications. Certification rule CR 000 contains general information.

2 Scope

The rules cover the corrosion protection coating (inorganic surface coatings) of fixings intended for use in indoor and outdoor applications.

Corrosion protection is assessed according to the classes set out in SS-EN ISO 12944-2 assuming an estimated service life of 15 years.

The rules do not cover corrosion protection coatings on sheet metal or other steel structures.

If the intended use of the product is not as described in this certification rule, a more detailed analysis will be carried out. In that case, the product will be assessed on the basis of applicable parts of this certification rule and also laws, government orders, regulations, rules, etc.

3 Corrosion protection requirements

The purpose of type approval is to show which requirements in Swedish building rules and non-mandatory requirements have been met.

Requirements under Swedish building rules, the Swedish Planning and Building Act and the EKS rules, are set out in the appendix.

Tests should be carried out in type testing and in supervisory inspections with the frequency shown in Table 2. If there are reasons why different testing arrangements are appropriate, they must be approved by RISE Certification. The type test covers the measurement of coating thickness and durability testing.

If there are reasons for another test scheme, they should be approved by RISE Certification.

3.1 Identification of the corrosion protection

The coating thickness on 20 fixings must be measured in accordance with SS-EN ISO 1463.

The coating thickness measuring should be performed on 20 items in accordance with SS-EN ISO 1463.

These measured values obtained for the different coating layers in this part of the type test will be used as the initial values for the coating thickness. These values are compared with the measured values in the supervisory verification tests, not the values stated by the customer.

If the corrosion protection is manufactured in different colours and are of the same type and have the equivalent characteristics, the coating thickness is measured on 20 fixings as described above but divided appropriately between the different colours. If no significant variations are measured between the colours, all colours are assumed to be approved.

3.2 Durability

Cyclic corrosion test according to ISO 11997-1 Cycle B. Determination of corrosivity category with reference panels according to ISO 9226. Evaluation according to NORDTEST method NT MAT 003.

Acceptance criterias:

Corrosivity category C1-C4 is stated. Corrosivity categories according to SS-EN ISO 12944-2:2017 with reference to the corrosivity of the atmosphere and example environments are set out in Table 1.

At least category C3 is normally assumed for outdoor applications of fixings, and C2 for indoor applications.

In the case of corrosion protection in different colours assessed as described in section 3.1, we perform the above cyclic corrosion test on 20 fastenings of each colour. If no significant variations are measured between the colours, they are assumed to be approved.

Corrosivity Category	Mass loss per unit surface/thickness loss (after first year of exposure)				Examples of typical environments in a temperate climate (informative only)	
	Low-carbon steel		Zinc		Exterior	Interior
	Mass loss g/m ²	Thickness loss µm	Mass loss g/m ²	Thickness loss µm		
C1 very low	≤10	≤1,3	≤0,7	≤0,1	-	Heated buildings with clean atmospheres, e.g. offices, shops, schools, hotels.
C2 Low	>10 to 200	>1,3 to 25	>0,7 to 5	>0,1 to 0,7	Atmospheres with low level of pollution. Mostly rural areas.	Unheated buildings where condensation may occur, e.g. depots, sports halls.
C3 Medium	>200 to 400	>25 to 50	>5 to 15	>0,7 to 2,1	Urban and industrial atmospheres, moderate sulfur dioxide pollution. Coastal areas with low salinity.	Production rooms with high humidity and some air pollution, e.g. food-processing plants, laundries, breweries, dairies.
C4 High	>400 to 650	>50 to 80	>15 to 30	>2,1 to 4,2	Industrial areas and coastal areas with moderate salinity.	Chemical plants, swimming pools, coastal ship- and boatyards.
NOTE The loss values used for the corrosivity categories are identical to those given in ISO 9223.						

Table 1 Corrosivity categories according to SS-EN ISO 12944-2:2017

4 Requirements concerning descriptions, instructions etc.

4.1 Product description

The product description must at least include the name of the product, any different colours, applications, a description of the structure of the surface coating (if there are layers, each is described separately), and the coating thicknesses.

4.2 Associated documents

There are no requirements concerning associated documents.

4.3 Marking

Manufactured products meeting the requirements for type approval must bear the registered trademark of Boverket, the National Board of Housing, Building and Planning (†) and the following information.

Approval holder/Distributor	Company name
Surface treater/Factory code	Company name, City, Country/Code
Registered trademark of Boverket	†
Certification body and accreditation number	RISE Certification 1002
Product type designation/trade name	Trade name of product
Technical Approval number	SCXXXX/YY
Description/Characteristics	Typgodkänt rostskydd klass C4
Consecutive production number/date	Number/date
Inspection body	Company name

Logos are available for marking if required.

5 Information in the type approval

The information below must be stated under the following headings in the type approval.

Product description

The product description must at least include the name of the product, applications, any different colours, and a description of the structure of the surface coating.

Intended use

“Intended as corrosion protection of fixings in indoor- and outdoor applications. The corrosion protection is suitable for corrosivity class C?, according to in SS-EN ISO 12944-2 described class, based on a deemed expected lifetime of 15 years.”

Comments

"Corrosivity category C? requires an intact corrosion protection after installation."

6 Production control inspections

The following is provided to supplement or clarify the requirements specified for internal inspections and supervisory inspections under certification rule CR000.

6.1 Factory production control

The manufacturer must carry out factory production control to the extent considered necessary in order to verify that the products are compliant with the tested characteristics in section 3.

6.1.1 Testing of corrosion protection

The coating thickness of the corrosion protection is controlled on each batch according to the control agreement. The result is compared with the customers measured values provided by the customer.

6.1.2 Documentation and logging

The manufacturer must be able to provide documentation confirming that the products meet the specified requirements.

- The manufacturer must keep a record of the quantities of manufactured products (surface coated fixings) in a log.
- Documentation of inspection and testing must be sufficient to allow full traceability, i.e. fixings packed into boxes must be traceable back to the correct production batch.
- Logs must contain comments when a non-compliant result is obtained, and a description of the corrective actions.

The documents must be kept available for RISE and retained for at least 5 years.

6.2 Supervisory inspections

Supervisory inspections consist of an initial inspection, annual supervisory inspections, and test sampling and verification tests. The purpose is to verify the manufacturer's factory production control and to ensure that the product meets the requirements in this certification rule.

6.2.1 Initial inspection

An initial inspection must always be carried out on the coating plant. The initial inspection verifies compliance with the company's description of the factory production control, as reviewed by RISE Certification. In particular, it verifies that routines exist and have been implemented and that the rules are universally understood. Requirements according to CR 000 section 4 and section 6.1.

The initial inspection report must state whether the coating plant are able to meet the relevant requirements above.

6.2.2 Annual supervisory inspections on the coating plant

The supervisory inspection uses random samples to verify that the coating plant performs its factory production control as described.

The inspection report must state whether the coating plant meets the relevant requirements above. If the inspection reveals major nonconformities, additional follow-up inspections may be necessary on the coating plant, see CR 000 section 5.

6.2.3 Annual supervisory inspections on premises of importer or distributor

Supervisory inspections may take place on the premises of the importer or the distributor provided that the factory production control on the coating plant are found to meet the requirements. However, the supervisory inspection must take place on the coating plant at least once during the validity period of the certificate. The supervisory inspection uses random samples to verify that the importer or distributor performs its factory production control as described.

The inspection report must state that the importer or distributor meets the requirements for its factory production control. If the inspection reveals major nonconformities, additional follow-up inspections may be necessary on the premises of the importer, distributor or coating plant, see CR 000 section 5.

6.2.4 Samples and verification tests

Product requirements must be verified through testing of the finished products in the supervisory inspection. The scope will be specified by RISE. Supervisory inspections as described in CR 000 section 5.

Random samples of products in the relevant certificates should be taken during supervisory inspections or purchases made on the market.

Tests of the relevant characteristics are carried out at the frequency of supervisory inspections as shown in Table 2.

Test frequency						
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Initial inspection on premises of type approval holder and/or coating plant	Type testing according to: Nordtest NT MAT 003 (exposure according to ISO 11997-1, Cycle B) + Measurement of coating thickness according to SS-EN-ISO 1463					Subsequent testing according to: Nordtest NT MAT 003 (exposure according to ISO 11997-1, Cycle B) + Measurement of coating thickness according to SS-EN-ISO 1463
Supervisory inspections on premises of type approval holder, coating plant, wholesaler or importer		Measurement of coating thickness according to: SS-EN-ISO 1463	Measurement of coating thickness according to: SS-EN-ISO 1463	Measurement of coating thickness according to: SS-EN-ISO 1463	Measurement of coating thickness according to: SS-EN-ISO 1463	

Table 2 Test frequency

6.3 Control agreement

The agreement between RISE and the manufacturer must set out the manufacturer's method and equipment for measuring the coating thickness.

The measured coating thickness values described in 3.1 must be stated in the "Agreement on continuous inspection" for the customer.

The contract between the manufacturer and the inspection body must state the frequency of visits, the scope of sample-taking and the characteristics to be verified including the method used. The test frequency is also described in Table 2.

Applicable requirements

Applicable requirements under the Swedish Planning and Building Act (2010:900), chapter 8, section 4

Requirements under the Swedish Planning and Building Act, chapter 8, section 4		
1	Load-bearing capacity, stability and durability	X
2	Safety in the case of fire	
3	Protection with regards to hygiene, health and the environment	
4	Safety in use	
5	Protection against noise	
6	Energy management and heat retention	
7	Suitability for the intended purpose	
8	Accessibility and usability for individuals with reduced mobility or sense of direction	
9	Economical management of water and waste	

Applicable requirements under Boverket Regulations

PBL requirement	Section in EKS covering the requirement	
section 8 (4) (1).	A, 16§	Durability
	G, 4§	Durability

Requirements in the certification rules linked to Boverket Regulations

Requirement under EKS	Section in certification rules covering the requirement	
A, 16§	3.2	Durability
G, 4 §	3.2	Durability