

Testing of pre-coatings

On steel constructions for 1C systems (excluding HENSOTHERM® 910 KS)

HENSOTHERM® fire protection coatings for steel are basically applied as a coating system together with a corrosion protecting HENSOGRUND primer. Other primers or pre-coatings have to be tested regarding their coating- and fire-protecting-properties to assure their suitability as a primer for HENSOTHERM®. The following issues have to be tested and recorded.

The substrate has to be clean, free of dust, soot, rolling skin, rust, grease and moisture. All substances that could interfere subsequent coating layers have to be removed before the test.

Adhesion test, fire test and compatibility test have to be positive. Only then the pre-coating can be used as a primer for HENSOTHERM®.

1. Assessment of the surface

- Remove loose, flaky and cracked coatings
- Remove rust

2. Film thickness measuring

- Measuring DFT of the existing coating
- Recording of the measured data

3. Adhesion test

Cross cutting test according to EN ISO 2409





Norm	thickness (µm)	Number of cuts x distance (mm)
DIN EN ISO 2409	0–60	6 x 1
	60–120	6 x 2
	120–250	6 x 3

After the cuts brush back and forth with a soft brush along the diagonals a few times or press an adhesive tape tesaband® 4651 with a length of 10 cm on the sample and remove with a jerk.

Visual examination of the test.

Depending on the number of flaked squares and the visual appearance a specific value, the “cross-cut rating” is determined.

Cross cutting test according to DIN EN ISO 2409

Cross-cut rating (Gt)	Description	Surface
Gt 0	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	–
Gt 1	Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not greater than 5% is affected.	
Gt 2	The coating has flaked along the edges and/or at the intersections of the cuts. A cross-cut area greater than 5% but not greater than 15% is affected.	
Gt 3	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross-cut area greater than 15%, but not greater than 35% is affected.	
Gt 4	The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross-cut area greater than 35%, but not greater than 65%, is affected.	
Gt 5	Any degree of flaking that cannot even be classified by classification Gt 4.	–

**If the cross-cut rating (Gt) is ≥ 3 the adhesion is not sufficient.
The existing pre-coating has to be removed completely and replaced by the primer HENSOGRUND!**

4. Fire test

Heat up the existing surface with a Bunsen burner flame for about 5 – 10 minutes.
Blistering, detaching, sagging or drip off of the existing coating = existing coating is unsuitable.

5. Compatibility test / Test surface

- Apply the HENSOTHERM® fire protection coating on the existing coating on a test surface of at least 20x20 cm:
 - At least 450 µm wet film thickness and 3 days drying time for R 30
 - At least 700–1.000 µm wet film thickness and 5 days drying time for R 60 to R 120
 - The same kind of application which shall be used subsequently (rolling, painting, spraying) is recommended.
- Wait until a complete drying is achieved. Degree of dryness has to be tested with fingernail check.
- Heat up the test surface with a Bunsen burner flame.
 - Hp/A < 160 = 10 minutes and Hp/A > 160 = 5 minutes
 - Slip off of the coating, GT ≥ 3, blistering, cracks = existing coating is unsuitable!
The existing coating has to be removed completely and replaced by the primer HENSOGRUND!

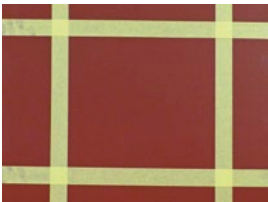
The dry film thickness (dft) min. / max. / average of primer + HENSOTHERM® fire protection coating system have to be recorded!

Pre-coating suitable

Provided that the pre-coating regarding cross cutting test, compatibility test and fire test is suitable, all damages have to be repaired before applying the fire protection coating with HENSOGRUND (see technical data sheets).

When to use „Cross Cutting Test“ and when to use „X-cut“?
Use the Cross Cutting Test for primers and pre-coatings with a dry film thickness of < 250 µm.
Use the X-cut for intumescent coatings, primers and pre-coatings with a dry film thickness of > 250 µm.

Set up a test surface



Measuring of the wet film thickness



X-cut



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