



## International Quality Regulations for the Coating of Building Components

**GSB AL 631-2**

**GSB ST 663-2**

**Material approval for pre-treatment chemicals  
Aluminium, Steel and Galvanized steel**



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- 2 Technical Requirements Aluminium
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- 4 Application form
- 5 Certificate



## Modifications compared to previous version:

Ser. No.	Section	Chapter	Page	Kind of change	Modification
	n.a.			editorial	General correction of wording for "tape tear-off" (before "adhesive tape removal")
1	1	2.3 2.4	3	technical	<b>The storage of samples on substrates made of steel and galvanized steel according to Hoek von Holland for the qualification of approval level 3 is omitted.</b>
2	1	3	4	technical	<b>The downgrading from level 4 to level 3 no longer applies.</b>
3	2	2	2	editorial	Correction of the variant when specifying the material specification for test panels
4	3	2	2	technical	<b>Implementation of new specification for test panels for technological and corrosion tests for steel and galvanized steel</b>
5	3	3	3	technical	<b>Adjustment of requirements for testing: Specification for outsourcing of Hoek van Holland no longer applies as outsourcing of steel no longer applies.</b>
6	3	3	3	technical	<b>Change of evaluation method for neutral salt spray test from determination of <math>d_{\max}</math> to calculation of <math>d</math></b>

*editorial	Stylistic adjustments without changing the factual content (including punctuation), correction or addition of references to other tables, paragraphs, chapters or documents - Informing members, the quality committees and the board
*normative	Adaptation or supplementation of existing data and established procedures by inserting or changing content that refers directly to standards - Informing members, the quality committees and the board Normative changes are shown in italics
*technical	Technical, factual or linguistic changes that change the meaning, have an impact on specifications, procedures, processes or audits and reviews, as well as changes of any kind that are not covered by the definition of editorial or normative change - Resolution by general meeting Technical changes are shown in bold

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**Section 1 – General****1 Material approval for pre-treatment chemicals****1.1 Purpose**

The content of this section covers the granting and confirmation of the material approval for pre-treatment chemicals.

GSB-CERT approves the pre-treatment chemicals in accordance with the requirements of quality regulations GSB AL 631-2 and/or GSB ST 663-2.

**1.2 Area of application**

The regulations set out in this section apply to the granting and confirmation of the material approval for pre-treatment chemicals by GSB-CERT.

**1.3 Responsibilities**

The GSB offices are responsible for providing quality regulations GSB AL 631-2 and/or GSB ST 663-2 to the inspector and the named test institute.

The inspector and the named test institute are responsible for carrying out and documenting the tests. Information is exchanged exclusively with GSB-CERT.

Documents and statements must be treated as confidential.

**1.4 Area of approval**

On application, GSB-CERT grants a material approval if the requirements are met. The material approval can be issued with the following quality seals:

**GSB AL 631****GSB ST 663**

If a pre-treatment chemical is approved, the material approval covers all production sites in which this chemical is produced.

## **2 Licence approval process**

### **2.1 Stage 1 – Application**

The application for the material approval must be made in writing to GSB-CERT. The application is checked by GSB-CERT.

The following documents must be included with the application:

- Technical information sheets
- Material and safety data sheets (MSDS)
- Regulations for determining the coating layer or coating weight

### **2.2 Stage 2 – Laboratory test**

The pre-treatment chemical is sent by the manufacturer to a test institute appointed by GSB-CERT. This test institute produces the samples for stage 2 in accordance with the details in the technical information sheets, which are tested in accordance with GSB AL 631-2 and/or GSB ST 663-2. A powder or liquid paint stipulated by GSB-CERT is used as the coating material.

Alternatively, the manufacturer can produce the samples themselves. The samples are sent by the manufacturer to a test institute appointed by GSB-CERT, where they are tested in accordance with GSB AL 631-2 and/or GSB ST 663-2.

Stage 2 can be skipped if the manufacturer has results from an accredited test institute which meet the requirements of quality regulations GSB AL 631-2 and/or GSB ST 663-2.

### **2.3 Stage 3 – Provisional license**

The samples for stage 3 are produced by a GSB-certified coating company, which is appointed by the manufacturer. If this is not possible, alternative arrangements must be made with GSB-CERT.

The samples are taken from a production batch of at least 500 m<sup>2</sup>.

The tests are carried out in a test institute named by GSB-CERT.

#### **2.3.1 Stage 3 – Provisional license (for substrate aluminium)**

Two independent conditions must be met for the material approval.

1. The samples from stage 3 are subjected to external testing in an industrial environment close to the sea (preferably Hoek van Holland).
2. The requirements of quality regulations GSB AL 631-2 are met.

If both conditions are met, GSB-CERT grants a material approval (stage 3 of 4). If the test in an industrial environment close to the sea has a negative result, the material approval is withdrawn.

#### **2.3.2 Stage 3 – Provisional license (for substrate steel / galvanized steel)**

One condition must be met for the material approval.

1. The requirements of quality regulations GSB ST 663-2 are met.

If both conditions are met, GSB-CERT grants a material approval (stage 3 of 4). If the test in an industrial environment close to the sea has a negative result, the material approval is withdrawn.

## **2.4 Stage 4 – License**

### **2.4.1 Stage 4 – License (for substrate aluminium)**

Two independent conditions must be met for the stage 4 material approval.

1. The samples from stage 3 have been subjected to external testing for 3, 5 or 10 years in an industrial environment close to the sea (preferably Hoek van Holland) and meet the requirements of quality regulations GSB AL 631-2.

2. The pre-treatment chemical approved in accordance with stage 3 is used in a GSB coating plant.

If the requirements of quality regulations GSB AL 631-2 and/or GSB ST 663-2 are met, the GSB-CERT grants a license for stage 4.

### **2.4.2 Stage 4 – License (for substrate steel / galvanized steel)**

One condition must be met for the stage 4 material approval.

1. The pre-treatment chemical approved in accordance with stage 3 is used in a GSB coating plant.

If the requirements of quality regulations GSB ST 663-2 are met, the GSB-CERT grants a license for stage 4.

## **3 Monitoring the license**

### **3.1 Extension test**

Adherence to quality regulations GSB AL 631-2 and/or GSB ST 663-2 is monitored by means of annual extension tests.

The samples for the extension tests are taken from a GSB-certified coating company by an inspector named by GSB-CERT.

The samples are taken from a production batch of at least 500 m<sup>2</sup>.

The tests are carried out in a test institute named by GSB-CERT.

If the requirements of quality guidelines GSB AL 631-2 and GSB ST 663-2 are met, the period of validity for the material approval is extended up to the end of the following year.

If an approved pre-treatment chemical is not used by a GSB certified coater, an extension test is carried out in an institute named by the GSB. The samples must be provided by the manufacturer to the institute for testing.

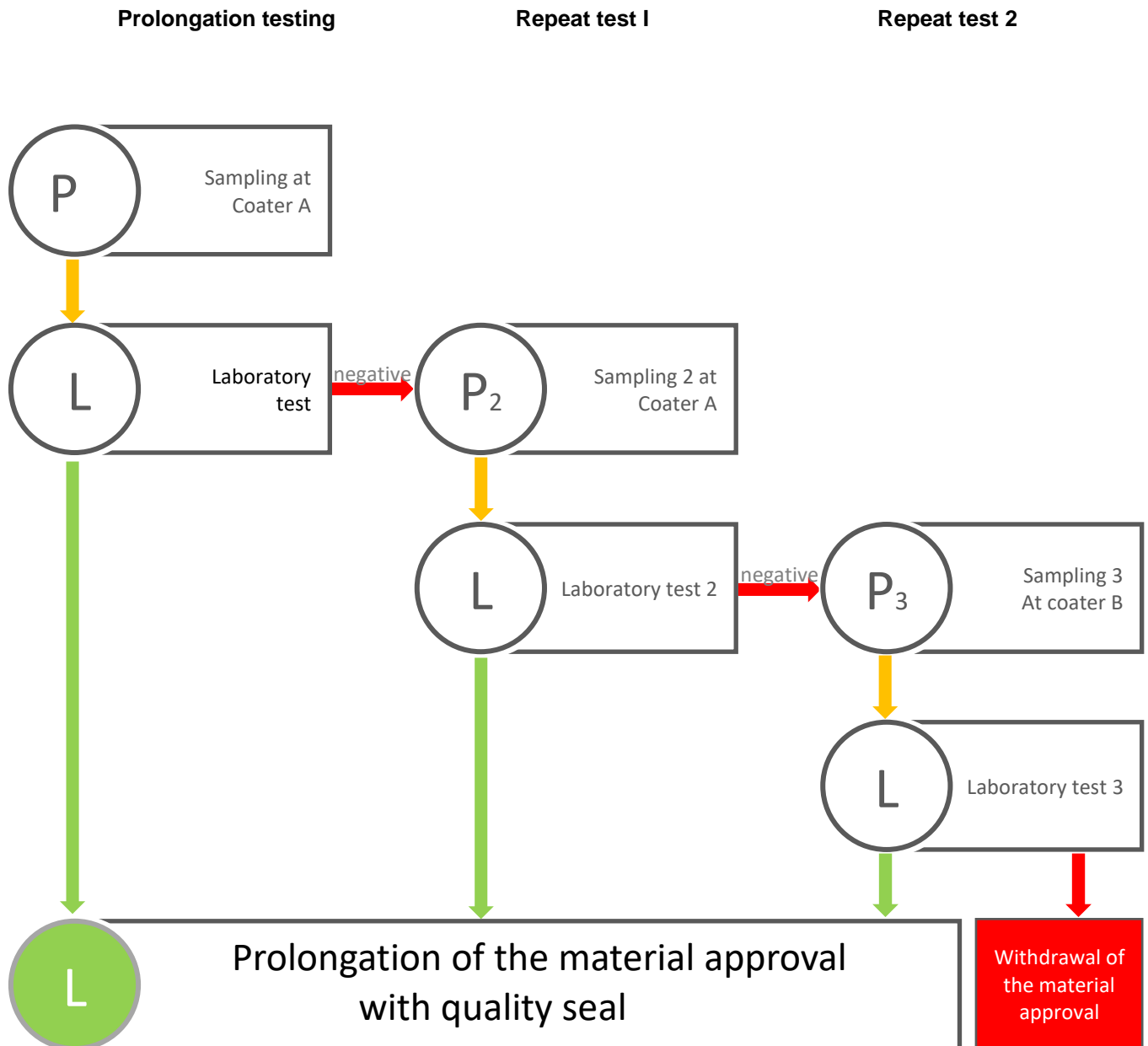
For approved pre-treatment chemicals that have not yet been used in a GSB-certified coating company, stage 3 is extended if the result is positive.

Approved pre-treatment chemicals that have already been used at least once in a GSB-certified coating company and have a level 4 approval retain this approval even if they are no longer in use in a GSB-certified coating company at the time of testing.

If the test is negative, the material is downgraded to level 2.

In the event that a Level 4 material approval was previously approved and the chemical is not in use by a GSB coater, an extension test will still take place. The pre-treatment chemical manufacturer prepares samples in his own laboratory and sends them to a test institute named by GSB-CERT. The extension test takes place there.

## 3.2 Principal workflow for extension test





### **3.3 Negative result of the prolongation test**

If part of the prolongation testing has a negative result, then the entire prolongation testing is deemed negative.

The manufacturer is informed by GSB-CERT. The manufacturer must inform GSB-certified coaters of the negative test result. This procedure must be documented.

The repeat test must be requested within 4 weeks and is carried out by the same GSB-certified coater. If this repeat test also produces a negative result, the manufacturer will have the opportunity to undergo a second repeat test with another GSB-certified coater.

If an application for a repeat test is not made or if the second repeat test has a negative result, GSB-CERT withdraws the material approval.

The manufacturer can make an appeal in writing against the decision of GSB-CERT within 4 weeks.

### **4 Distribution list**

- GSB-CERT
- GSB Office
- Members
- Inspector



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### 1. General

All tests are carried out in accordance with the GSB technical regulations for measurement and test procedures and the standards referred there.

### 2. Test sheets

- Profile sections: EN AW-6060 T 66 [AlMgSi]/EN AW-6063 T 6 or T 66 [AlMg0.7Si], sheets: EN AW-5005a H 24 [AlMg1(C)] mill finish
- The sample size is chosen in accordance with the specifications of the respective test (preferably 70 x 140 x 0.7-0.8 mm).

### 3. Requirements and tests for pre-treatment chemicals

Proof of absence from chromium VI and/or chromium must be provided when the application is submitted. The corresponding safety data sheets confirming the absence of chromium VI and/or chromium must be submitted to GSB.

All tests, except the test of the coating layer, are carried out after coating with a GSB-approved coating material.

Tests	Evaluation criterion	Material approval	Prolongation & repeat test
Determination of the coating layer	Procedure and value in accordance with the guidelines of the manufacturer	X	X
Layer thickness	In accordance with the coating used	X	X
Gloss	In accordance with the coating used	X	X
Cross cut	GT0	X	X
Mandrel bending test Cracking of coating	≤ 5 mm not permitted	X	X
Cupping test Cracking of coating	≥ 5 mm not permitted	X	X
Ball impact test (only for powder coatings) Cracking of coating	≥ 20 inch-pounds not permitted	X	X
Cross linking test for liquid paints	OK	X	X
Drilling, sawing (naked eye assessment)	No spalling of coating	X	X
Condensation constant atmosphere:  Test period Blistering Delamination at the T-cut	  1000 h 0 (S0) d <sub>max</sub> ≤ 1 mm	X	X
Condensation variable atmosphere (0.2l SO <sub>2</sub> )  Cycles Blistering Delamination at the T-cut	  30 0 (S0) d <sub>max</sub> ≤ 1 mm	X	X

Tests	Evaluation criterion	Material approval	Prolongation & repeat test
Boil test / pressure cooker test*		X	X
Degree of blistering	0 (S0)		
Cross-cut and adhesive tape tear	GT 0 / GT 1		
Resistance to salt water spray	AASS	X	X
Test period	1000 hours		
Degree of blistering	0 (S0)		
Delamination at T-cut	$d_{\max} \leq 1 \text{ mm}$		
Filiform corrosion test		X	X
Test period	1000 h		
Filament length $I_{\max}$	$\leq 2 \text{ mm}$		
Key figure $F = H^* \times I$	$\leq 0.3$		
	No extensive delamination		
Natural weathering in Hoek van Holland		X (Exclusively stage 4)	
Test period	3 years		
Delamination at T-cut	$d_{\max} \leq 1 \text{ mm}$		
Average filament length $I_{\max}$	$\leq 2 \text{ mm}$		
Key figure $F = H^* \times I$	$\leq 0.4$		
	No extensive delamination		
Natural weathering in Hoek van Holland		X (Exclusively stage 4)	
Test period	5 years		
Delamination at T-cut	$d_{\max} \leq 2 \text{ mm}$		
Average filament length $I_{\max}$	-		
Key figure $F = H^* \times I$	-		
	No extensive delamination		
Natural weathering in Hoek van Holland		X (Exclusively stage 4)	
Test period	10 years		
Delamination at T-cut	$d_{\max} \leq 3 \text{ mm}$		
Average filament length $I_{\max}$	-		
Key figure $F = H^* \times I$	-		
	No extensive delamination		

\*The filament frequency H must be specified as a numerical value in the evaluation. It is used for the comprehensible calculation of F.

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## **1. General**

All tests are carried out in accordance with the GSB technical regulations for measurement and test procedures.

## **2. Test sheets**

The following sample sheets are to be used preferably for the corrosion and technological tests:

- Technological and corrosion protection properties of steel:
  - Steel sheets,
  - approx. 100x200, material thickness 0.8 mm,
  - untreated with rolling mill grease,
  - material designation according to DIN EN 10130/10131: 1.0312 - HC220LC
  - suitable for spray application
- technological and anti-corrosion properties of galvanized steel:
  - steel sheets,
  - approx. 100x200 mm, material thickness 0.8 mm,
  - galvanized (coating at least 140 g/m<sup>2</sup> per side, corresponding to approx. 20 µm)
  - untreated with rolling mill grease,
  - material designation according to DIN EN 10346: DX54D + Z275 MC
  - suitable for spray application

It is recommended that only sheets within the shelf life specified by the manufacturer be used. All sheets should be stored separately and vacuum-sealed or protected against air circulation with dry beads.

### 3. Requirements and tests for pre-treatment chemicals

All tests are carried out after coating with a GSB-approved coating material.

Tests	Re-licensing and monitoring test Galvanised steel	Re-licensing and monitoring test Steel	Material approval	Prolongation & repeat test
Layer thickness (single-layer system)	In accordance with the coating used	In accordance with the coating used	X	X
Gloss	In accordance with the coating used	In accordance with the coating used	X	X
Cross cut	GT0	GT0	X	X
Mandrel bending test	≤ 5 mm	≤ 5 mm	X	X
Cracking of coating	Not permitted	Not permitted		
Cupping test	≥ 5 mm	≥ 5 mm	X	X
Cracking of coating	Not permitted	Not permitted		
Ball impact test (only for powder coatings)	≥ 20 inch-pounds	≥ 20 inch-pounds	X	X
Cracking of coating	Not permitted	Not permitted		
Cross linking test for liquid paints	OK	OK	X	X
Condensation variable atmosphere (0.2l SO <sub>2</sub> )			X	X
Cycles	30	30		
Blistering	0 (S0)	0 (S0)		
Delamination at T-cut	d <sub>max</sub> ≤ 1 mm	d <sub>max</sub> still to be determined		
Boil test / pressure cooker test			X	X
Degree of blistering	0 (S0)	0 (S0)		
Cross-cut and adhesive tape tear	GT 0 / GT 1	GT 0 / GT 1		
Resistance to salt water spray	NSS	NSS	X	X
Test period	480 hours	480 hours		
Degree of blistering	0 (S0)	0 (S0)		
Delamination at T-cut	d ≤ 5 mm	d ≤ 3 mm		

## Application for material approval

The manufacturer \_\_\_\_\_ hereby applies for a GSB-CERT material approval for pre-treatment chemicals \_\_\_\_\_ (standard market name).

The chemical is used for chemical pre-treatment of the substrate:\*

<input type="checkbox"/>	Aluminium
<input type="checkbox"/>	Steel
<input type="checkbox"/>	Galvanised steel

The following material will be used for the coating:\*

<input type="checkbox"/>	Coating powder
<input type="checkbox"/>	Liquid paint

\*Please tick as appropriate. Only select one option in each case. Separate applications must be submitted for multiple selections.

Name, first name \_\_\_\_\_

Phone \_\_\_\_\_

Mobile \_\_\_\_\_

Email \_\_\_\_\_

Contact person and contact details

\_\_\_\_\_  
Place, date

\_\_\_\_\_  
Signature and company stamp

By registering as a contact person, I acknowledge that personal data is stored and used internally by GSB in connection with all matters relating to GSB Quality Regulations. The data will be subject to the provisions of the General Data Protection Regulation (Datenschutz-Grundverordnung VO (EU) 2016/679).



**Material approval for  
pre-treatment chemical**

**ADD SEAL**



Material approval number: 123g  
Stage: 3 of 4  
Natural weathering in Hook of Holland for X years

Product: Chemical XYZ  
Type: Cr-free  
Substrate: Aluminium  
Coating material: Powder paint

Manufacturer: Sample company  
Sample road  
Sample city

Confirmation: This licence certifies that  
the requirements of quality guideline  
GSB XX XXX-2 for pre-treatment chemicals  
have been met.

Validity start date: xxx  
(Date of first issue)

Monitoring: Annual

Valid until: xxx

Issued on: 12/4/2015 Version: 0.0

**GSB International**  
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GSB-CERT