



**International Quality Regulations
for the Coating of Building Components**

GSB ST 663-3

Hot Dip Galvanizer



Approved
Coated
Zinc & Steel

Hot Dip Galvanizer

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1 Being granted and holding the quality label — galvanising businesses

1.1 General

GSB International will grant the quality label to galvanising businesses who apply for it if the requirements in the quality guidelines are met.



1.2 Labelling of components

Quality labels attached directly onto coated components also have to include the company number shown here:



1.3 Application

The application has to be made in writing to GSB International

The application will be checked by the quality committee. The committee is permitted to inspect the business of the applicant, take samples and request and look at the documents required.

2 Granting the quality label and the additional label

2.1 General

The galvanising business must meet the requirements of the quality label (see section □).

2.2 Qualifying test

Two independent tests (qualifying test part 1 and part 2) are carried out.

At least three months must pass between qualifying test part 1 and part 2.

Part 1 is by appointment. All additional tests are without appointment.

If the initial test is positive, the board will grant the applicant the desired quality label on the quality committee's recommendation. A certificate is issued.

2.3 Failed initial test

If even part of the initial test is negative, the quality committee will reject the application giving reasons in writing. However, the applicant can apply for a re-test.

If the re-test is also unsuccessful, then the applicant has to wait three months before re-applying.

3 Monitoring the quality label

3.1 General

The monitoring test in section 0 is performed at least twice a year for each coating business without appointment.

If the business passes the monitoring test, then it continues to have the right to hold the quality label and the additional label. Special notification will not be given.

3.2 Negative monitoring test

If the quality committee finds problems with quality assurance, it will suggest punitive action to the board of GSB International.

The action to be taken depends on the severity of the violation:

- 1) Additional requirements within the scope of factory production control
- 2) Increased fee-based monitoring
- 3) Repeat check
- 4) Temporary or permanent withdrawal of the quality label or material licence

The first four punitive measures can be combined.

If the result of a re-test is negative, the holder will have their quality label withdrawn immediately.

If a holder of the quality label repeatedly or seriously breaches the quality guidelines, they will have their quality label withdrawn temporarily or permanently. The same applies to holders of quality labels who delay tests or prevent them.

The quality guidelines also apply to deliveries already made if they clearly exhibit a poor coating quality and the origin of the deficient delivery is clear.

If up to 10 % of the tested parts have a fault, additional factory production control regulations will be considered.

If more than 10 % of the tested parts have a fault, there could be a fine, fee-based third-party monitoring or a temporary or permanent withdrawal of the quality label.

The holder of the quality label must hear the transgressions before 4) is effected and has the option of having the delivery checked by the test institute that works for GSB International. If the test institute finds the complaint to be justified, then the costs for this test will be borne by the holder of the quality label. If the complaint was unjustified, the complainant must bear the costs of the test.

The punitive action in this section becomes effective when it comes into legal force.

In urgent cases the chairman of GSB International can withdraw the quality label with immediate effect upon consultation with the chairman of the quality committee. This has to be confirmed by the board and quality committee within fourteen days.

3.3 Re-award

If the right to use the quality label has been withdrawn, it can be re-applied for no earlier than three months hence. The board of GSB International could, however, impose additional conditions.

4 Implementation of qualifying and monitoring tests

4.1 General

The galvanising business and finished products are tested.

The inspector produces a test log and the coater and offices of GSB International each receive a copy. Complaints must be supported with pictures or be confirmed by the coating business in writing.

The inspector can request or take samples from the coating business at any time. Such samples can also be taken in trading environments or from the recipient. Samples requested must be handed over without delay. The inspector can have a test performed on any operational system of the coating business at any time.

4.2 Test of the coating business

To be tested:

- Production facility
- Test equipment
- Factory production control

4.3 Test of finished products

Only the parts which the galvanizer has already checked and released are tested. Sufficient material must be made available for the test.

The Galvanizer must allow the inspector access to any coated components that are stored, ready for dispatch or being prepared for dispatch at the time of the test.

5 Distribution list

- GSB-CERT
- GSB Office
- Members
- Inspector



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1 Requirements of the galvanisation business

1.1 General

These technical guidelines apply to the approval and confirmation of hot dip galvanised steel materials that are subsequently industrially coated.

1.2 Requirements of the galvanisation process

ISO 1461 governs tests of zinc coatings and is binding. High-temperature galvanisation is an exception and, due to the procedure, gives different layer thicknesses. This has to be approved when the order is taken.

Upon conclusion of the contract, the galvanising business has to be informed about subsequent coating of the workpieces.

EN 15773 and ISO 1944 have to be complied with in respect of additional specialist requirements.

2 Requirements of the workpiece

2.1 Construction of the workpiece

Design principles on preventing corrosion are defined in ISO 14713 "Protection against corrosion of iron and steel in structures -- Zinc and aluminium coatings -- Guideline". The information and examples listed there have to be observed.

The maximum component size and the maximum weight have to be decided upon jointly by the galvanizer and the coater.

2.2 Base metal

Steels should be used whose Si and P contents are within the range suited to an iron-zinc reaction. The following table shows the different material compositions.

After hot dip galvanisation, the appearance of reactive steels (silicon and phosphorous are the most important factors) could be diminished upon subsequent coating and thermal hardening (recesses and bubbles). This is due in part to gas becoming trapped in the rough surface. If this is the case, the coater must indicate this. The steels described under 1 and 3 in the following table, in particular, should therefore be preferred by the metal fabricator.

| No. | Silicon + phosphorus content in % | Zinc coating |
|-----|-----------------------------------|---|
| 1 | Si + P < 0.03 % | Normal iron-zinc reaction, silvery, shiny coating, normal layer thickness |
| 2 | Si + P ≥ 0.03 - ≤ 0.13 % | Sandelin range, accelerated iron-zinc reaction, grey layer of zinc, thick layer |
| 3 | Si + P > 0.13% ≤ 0.28% | Sebisty range, normal iron-zinc reaction, silvery matt appearance, average layer thickness |
| 4 | Si + P > 0.28 % | Accelerated iron-zinc reaction, matt, grey, thick layer with increasing Si content, grey appearance |

3 Requirements of the zinc coating

3.1 General

The zinc has to be a single connected coating and its visible surfaces must be free of errors; zinc ash residue is not permitted.

When ordering, the requirements to hot dip galvanisation have to be agreed in accordance with ISO 1461.

Provided nothing to the contrary has been arranged, at least one visual check for completeness and lack of errors has to be carried out. A test of the thickness of the zinc cover is carried out non-destructively. The type, quantity and scope of the tests are stipulated in ISO 1461.

3.2 Appearance and surface composition

The surface of the zinc cover must be suitable for bearing a subsequent coating. The coater must make sure of this before beginning coating work by looking at the logs and records provided by the galvanizer, which should contain information on application, layer thickness and type of zinc.

Suitable action must be taken to remove residue that could disrupt the application or adherence of a subsequent coating (e.g. dust, white rust, zinc ash). If the coating substrate – the zinc cover – has faults such as thicker points/bubbles, rough spots, dangerous zinc spikes or imperfections, then no further work should be carried out (e.g. coating or installation) until the matter has been resolved.

It is normally necessary to carry out additional work (e.g. smoothing) on the zinc cover to make it a better coating substrate.

This work exceeds the requirements of ISO 1461. Therefore, agreements on the type of implementation and who bears the costs must be made by those involved (customer, galvanizer and coater).

After treatment and corrections carried out by the galvanizers have to be agreed with the coater.

The structure of the zinc cover normally remains visible after coating.

3.3 Function

White rust must not be allowed to form. Avoid storage outdoors. If unavoidable, then remove such a layer immediately before coating. Store in a dry, well-ventilated and sheltered area. The same conditions apply to transport.

Imperfections in the zinc cover must be corrected in accordance with ISO 1461, section 6.3. Different arrangements can be made for coatings with thermal hardening. The galvanizer and coater should agree on corrections using zinc dust paint.

3.4 Layer thickness

ISO 1461, section 6.2 stipulates the measuring procedures permitted, the number of test samples, the quantity of measurements to be carried out and the minimum layer thicknesses.

High temperature galvanisation, which results in different layer thicknesses, is an exception.

This procedure has to be arranged separately upon conclusion of the contract.

If the client desires layer thicknesses that differ from applicable standards, then this has to be arranged separately upon conclusion of the contract.

3.5 Adhesion

Given the procedure used, the zinc cover will adhere to the base metal sufficiently, meaning that adhesion does not have to be checked.

If the adhesion does have to be checked, e.g. for workpieces that are subject to a larger mechanical load, then a test has to be carried out in accordance with ISO 16276-2. However, this has to be arranged separately.

4 Test equipment

4.1 General

Devices in every production site have to be functional.

Device failures and the failure dates have to be documented.

Repair and maintenance jobs should be presented to the inspector on request.

4.2 Standard equipment

- Layer thickness gauge that works in accordance with the magnetic process pursuant to ISO 2178 or according to the magneto-inductive process and eddy current process pursuant to ISO 2808.

5 Factory production control (FPC)

The galvanisation company has to carry out its own product tests in accordance with these quality guidelines, record the results and store the protocols. These documents should be kept available to be viewed by the inspector. The correct delivery state of the hot dip galvanised products has to be confirmed by a fabrication certificate in accordance with [ISO 1461](#), section 7.

Application for certification

The Galvanizer _____ hereby applies for GSB-CERT certification for GSB Galvanizer.

Name, Firstname _____

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 guidelines. The data will be subject to the provisions of the General Data Protection Regulation (Datenschutz-Grundverordnung VO (EU) 2016/679).

**Certificate
GSB Galvanizer**



Certification number: 123g

Company: Sample company
Sample Street
Sample Town

Coating Plant:

Confirmation: This certificate confirms that the requirements of GSB ST 663-3 for galvanizing companies have been met.

Validity start date: xxx
(Date of first issue)

Monitoring: 2 x yearly

Valid until: xxx

Date of issue: 12/4/2015 Rev: 0.0

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GSB-CERT