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#### INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

# ISO RECOMMENDATION R 1461

## **REQUIREMENTS FOR HOT DIP GALVANIZED COATINGS**

## **ON FABRICATED FERROUS PRODUCTS**

1st EDITION April 1970

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## **BRIEF HISTORY**

The ISO Recommendation R 1461, Requirements for hot dip galvanized coatings on fabricated ferrous products, was drawn up by Technical Committee ISO/TC 107, Metallic and other non-organic coatings, the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1461 which was circulated to all the ISO Member Bodies for enquiry in May 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia Belgium Chile Czechoslovakia Finland France Germany Hungary India Iran Israel Italy Norway Poland Portugal South Africa, Rep. of Spain Sweden Switzerland Thailand Turkey U.A.R. United Kingdom

The following Member Bodies opposed the approval of the Draft :

Netherlands New Zealand

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in April 1970, to accept it as an ISO RECOMMENDATION.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/R 1461:1970

https://standards.iteh.ai/catalog/standards/sist/92a1b72c-f5ae-43a8-a9bc-c4dd4330471c/iso-r-1461-1970

#### ISO Recommendation

R 1461

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## **REQUIREMENTS FOR HOT DIP GALVANIZED COATINGS**

## **ON FABRICATED FERROUS PRODUCTS**

#### 1. SCOPE

This ISO Recommendation relates to hot dip galvanized coatings on structural steel, steel structures, steel sheet fabrications, assemblies of tubes, large tubes already bent or welded before galvanizing, containers, wire-work fabricated from uncoated steel wire, small articles processed in bulk, steel castings, steel forgings, steel stampings, iron castings and similar products.

This ISO Recommendation is valid only for general hot dip galvanizing and does not apply to semi-finished products such as wire, tube or sheet.

#### 2. GENERAL REMARKS

Castings should be as free as possible from surface porosity and shrinkage holes and, unless already clean, should be cleaned by shot blasting, electrolytic pickling or other methods specially suitable for castings.

The hot dip galvanizer should not be responsible for changes in mechanical properties of the basis material as a result of hot dip galvanizing.

When it is necessary to bore vent holes in products to prevent explosions during hot dip galvanizing, this should be done by the purchaser or, after the written consent of the purchaser, by the hot dip galvanizer. The purchaser is strongly recommended to seek the advice of the hot dip galvanizer before designing or making a product which is subsequently to be hot dip galvanized.

After solidification, remelting of parts of the coating by gas torches or other means should be allowed. With small articles processed in bulk, the number of articles sticking together after cooling should not exceed 2% of the total. Threads may only be required to fit after hot dip galvanizing if a suitable allowance has been made for the coating in making the thread.

Oversize tapping or retapping of nuts and tapped holes is required when the bolt or male thread is hot dip galvanized. Although tapping or retapping after hot dip galvanizing results in an uncoated female thread, the coating on the engaged male thread will retard corrosion of both components. Male threads should not be rethreaded after hot dip galvanizing.

#### 3. SAMPLING

The method of sampling should be agreed between the contracting parties.

#### 4. ADHESION OF THE COATING

The coating should be sufficiently adherent to withstand handling consistent with the normal use of the article without peeling or flaking.

#### 5. WEIGHT OF COATING

The weight of the coating per square metre of the surface (one side only) should comply with both the minimum average and the minimum individual sample coating requirements in the following Table unless a greater or a smaller weight of coating has been agreed beforehand between the purchaser and hot dip galvanizer. Products not mentioned in the Table should be the subject of agreement between the purchaser and hot dip galvanizer.

Product	Minimum average coating weight on the agreed number of samples	Minimum coating weight on any individual sample
	g/m²	g/m²
Steel over 5 mm thick	500	450
Steel between 1 mm and 5 mm thick	To be agreed between the hot dip galvanizer and the purchaser. The coating weight obtained will in general increase with the thickness of the steel.	
Steel less than 1 mm thick	350	300
Nuts and bolts with screw threads over 9 mm diameter	375	300
Castings (iron and steel)	500	450

TABLE - Weight of the coating

#### Examples

(1) Samples : five bolts over 9 mm diameter. The individual coating weights are

 $410 \text{ g/m}^2, 390 \text{ g/m}^2, 290 \text{ g/m}^2, 400 \text{ g/m}^2, 410 \text{ g/m}^2$ 

Average coating weight =  $380 \text{ g/m}^2$ 

The average coating weight is in accordance with the above Table.

The requirements are not fulfilled, however, as the coating weight of one sample (underlined) is below the minimum coating weight.

(2) Samples : five test samples of a steel product over 5 mm thick. The individual coating weights are

 $500 \text{ g/m}^2$ ,  $490 \text{ g/m}^2$ ,  $470 \text{ g/m}^2$ ,  $480 \text{ g/m}^2$ ,  $470 \text{ g/m}^2$ 

Average coating weight =  $482 \text{ g/m}^2$ 

The coating weight of all test samples is higher than the minimum coating weight. The average coating weight, however, is lower than the specified average coating weight and therefore the requirements are not fulfilled.

## 6. DETERMINATION OF THE WEIGHT OF COATING

For the determination of the weight of coating, one or more of the following tests should be used :

- (a) the stripping test, in accordance with ISO Recommendation R 1460, Determination of the weight per unit area of hot dip galvanized coatings on ferrous materials by chemical dissolution of the coating Gravimetric method;
- (b) weighing the sample after pickling and drying, and again weighing after hot dip galvanizing \*.

In cases where tests (a) and (b) are not applicable, other tests may be used subject to agreement between the purchaser and the hot dip galvanizer.

NOTE. – Test (a) gives a result a few per cent higher than test (b) because of the iron in the zinc-iron alloy layers which is also stripped off.

#### 7. WARPING AND CRACKING OF MATERIALS

The hot dip galvanizer should not be responsible for distortion of articles resulting from the effect of heating during galvanizing, nor for the cracking of basis materials caused by thermal expansion and contraction during the process.

## 8. INSPECTION

If the purchaser requires inspection of the hot dip galvanized material, the inspection should normally be undertaken at the hot dip galvanizer's plant.

Visual inspection of hot dip galvanized materials should be used to determine conformity with the requirements of ISO Recommendation R 1459, Guiding principles for protection against corrosion by hot dip galvanizing.

Unless otherwise agreed between the purchaser and the hot dip galvanizer, wet storage stain alone should not be considered a cause for rejection.

For acceptance, all the test samples should be in conformity with the requirements of section 5, when tested by the stripping test referred to in section 6, item (a). By agreement between the purchaser and the hot dip galvanizer, the batches may be accepted in conformity with the requirements of section 5 when tested by the weighing test referred to in section 6, item (b), carried out in the course of galvanizing.

If any set of test samples fails to conform to the requirements of this ISO Recommendation, two further sets should be tested, both of which should conform to the requirements; otherwise the batch of work represented by the test samples should be rejected.

Under study.