



**PRODUCT MANUAL FOR  
HOT-DIP ZINC COATING ON  
STRUCTURAL STEEL AND  
OTHER ALLIED PRODUCTS  
According to IS 4759:1996**

1.	<b>Product</b>	:	IS 4759:1996
	<b>Title</b>	:	Hot-Dip Zinc Coating on Structural Steel and Other Allied Products
	<b>No. of amendments</b>	:	1
2.	<b>Sampling Guidelines</b>		
a)	<b>Raw material</b>	:	Any of the grades specified in IS 209:1992 'Zinc Ingot' or IS 13229:1991 'Zinc for Galvanizing'.
b)	<b>Grouping Guidelines</b>	:	Please refer Annex - A
c)	<b>Sample Size</b>	:	3 No.s of 200 X 200 mm (flat products) or 1 mtr in length (long products)
3.	<b>List of Test Equipment</b>	:	Please refer Annex - B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer Annex - C
5.	<b>Possible tests in a day</b>	:	All tests can be performed in a day, if Copper Sulphate Solution is prepared in advance for performing test as per clause 9.3 of the IS 4759:1996
6.	<b>Scope of the Licence :</b>		
	License is granted to use Standard Mark as per IS 4759:1996 with the following scope:		
	<b>Name of the product</b>	Hot-Dip Zinc Coating on Structural Steel and Other Allied Products	
	<b>Articles Coated</b>	<b>Grey Iron Castings</b>	
		<b>Malleable Iron</b>	
		<b>Fabricated Steel Articles</b> of thickness ...mm to ..mm	
		<b>Threaded work other than tubes and tube fittings</b> of diameter ...mm to ..mm	
		<b>With or Without Phosphating, Chromating</b>	

ANNEXURE A  
TO PRODUCT MANUAL FOR  
**Hot-Dip Zinc Coating on Structural  
Steel and Other Allied Products**  
IS 4759:1996  
**GROUPING GUIDELINES**

Grouping of different steel designations has been done on the basis of type of product being subjected to hot-dip galvanizing. Guidelines for drawing of samples from each group are as under:

<b>Group</b>	<b>Description</b>	<b>Remarks</b>
<b>1</b>	Castings - Grey Iron, Malleable Iron	Any size of galvanized casting iron may be tested for covering all types of castings.
<b>2</b>	Fabricated Steel Articles	One Sample from each of the following thickness sub-group may be tested to cover the complete range of thickness in that group:- a) 5mm thick and over; b) Under 5mm, but not less than 2mm; and c) Under 2mm, but not less than 1.2mm
<b>3</b>	Threaded Work other than tubes and tube fittings	One Sample from each of the following diameter sub-group may be tested to cover the complete range of diameters in that group:- a) 10mm dia and over; and b) Under 10mm dia

1. If the above sample passes, then licence may be granted/inclusion be done for the Steel designations, for all sizes and products of the Group.
2. However, it shall be ensured that the firm is having all the necessary manufacturing and testing facilities for galvanizing and testing of the sizes/articles of iron and steel to be included in the licence scope.
3. During the operation of licence, BO shall ensure that all the sizes/ product types varieties covered in the license are drawn for independent testing on rotation over a period of time.

ANNEXURE B  
TO PRODUCT MANUAL FOR  
**Hot-Dip Zinc Coating on Structural  
Steel and Other Allied Products**  
According to IS 4759:1996  
**LIST OF TESTING EQUIPMENT**

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Major test equipment essentially required to test as per requirements of Indian Standard.

<b>Sr. No</b>	Test Equipment/Chemicals	Tests Used in with Clause Reference
1.	Antimony trioxide / Antimony tri chloride, HCl , Volatile organic solvent such as ether, trichloroethylene, carbon tetrachloride, etc. (Con. & Dil.) and other chemicals and reagents applicable, Weighing balance, Clean soft cotton cloth, 100 ml glass burette with stopcock, rubber tube, reservoir (for Volumetric method) and other glassware as applicable .	6.1 , 9.2 (Mass of zinc coating)
2.	Vision-Based Inspection System	6.2 (Freedom from Defects)
3.	Copper carbonate (laboratory grade) or Copper hydroxide ( laboratory grade ), Copper Sulphate Crystals – Technical grade, Ammonium Hydroxide, Alcohol, Distilled water, Volatile organic solvent such as ether, trichloroethylene, carbon tetrachloride, etc. and other chemicals and reagents applicable, brush, hydrometer, Room Air conditioner with temperature control facility, Thermometer.	9.3 (Uniformity of zinc coating)
4.	Pivoted riveting hammer test set up, stout knife	9.4 (Adhesion of Galvanized Coating)

Note: The above is an indicative list for the purpose of guidance only

**ANNEXURE C**  
**To PRODUCT MANUAL FOR**  
**Hot-Dip Zinc Coating on Structural**  
**Steel and Other Allied Products**  
**According to IS 4759:1996**

**SCHEME OF INSPECTION AND TESTING**

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**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING & MARKING** – The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated, labelling and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conforms to all the requirement of the specification.

**4. CONTROL UNIT** – For the purpose of this scheme, material of same type with Hot-Dip Zinc Coating, having same Average Mass of Zinc Coating and coated with the same batch of Zinc Ingots, during a day shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**5.2** General requirements relating to the supply of material shall conform to IS 1387. Records of Information supplied by the Purchaser to the Hot-Dip Galvanizer are to be maintained. In case post treatment is carried out, wherever required by the purchaser, records of such orders shall also be maintained. Evidence ensuring compliance to CL 6.3 of IS 4759:1996 has to be obtained from the fabricator.

**6. TEST CERTIFICATE**- For each consignment of BIS Certified material conforming to IS 4759:1996 there shall be a test certificate which shall contain the Standard Mark, the cast/Control Unit number and the corresponding test results (as given in Annexure-I, enclosed)

**7. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016. Any rejected material which is potentially re-salable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose except re-melting. A separate record shall be maintained giving information on quantity and cast number/coil number/control unit number, as applicable, relating to all such rejections/defective/sub-standard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

**TABLE 1 LEVELS OF CONTROL  
(PARA 5 OF THE SCHEME OF INSPECTION AND TESTING)**

(1)			(2)	(3)			
Test Details			Test equipment requirement R: required (or)S: Sub-contracting permitted	Levels of Control			
Cl.	Requirement	Test Methods		No. of Sample	Frequency	Remarks	
		Clause	Reference				
4	Quality of Zinc	4.1	IS 4759:1996 IS 209 IS 13229	S	01	Each consignment	In case material is not ISI marked or there exists no third party laboratory for testing of product each consignment is to be accompanied by raw material manufacturer's test certificate.
6	Coating Requirements	6.1 Table 1	IS 4759: 1996 IS 6745	R	05	50 tonnes or part thereof of the Control unit	
	i) Mass of Zinc Coating	9.2 9.2.1 9.2.2	IS 3203 IS 6012				
	ii) Freedom from Defects	6.2 8.4	IS 4759: 1996	R	Each Item	Each Item	
9.3	Uniformity of galvanizing coating	9.3	IS 4759: 1996 IS 2633	R	05	50 tonnes or part thereof of the Control unit	
9.4	Adhesion of Galvanizing coating	9.4	IS 4759: 1996 IS 2629	R	05	50 tonnes or part thereof of the Control unit	

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/ batch/ lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

**Annexure-I  
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(Para 6 of the Scheme of Inspection and Testing)

XYZ IRON AND STEEL COMPANY

(Registered office Address and works address)

TEST CERTIFICATE FOR SPECIFICATION FOR

**Hot-Dip Zinc Coating on Structural Steel and Other Allied Products**

BIS  
STANDARD  
MARK

(For Zinc  
Coating only)

TEST CERTIFICATE No. \_\_\_\_\_

DATE \_\_\_\_\_

To M/s \_\_\_\_\_

We certified that the material described below fully conforms to IS 4759:1996. The product conforms for requirements of zinc coating applied by hot-dip galvanizing, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No.CM/L\_\_\_\_\_ and are as indicated below against each order No.

(PLEASE REFER TO IS 4759:1996 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No.& Date	Lot No/ Control Unit No	Average mass of Coating	Quantity	Mass of Zinc Coating	Freedom from Defects	Uniformity of Coating	Adhesion of Galvanized coating	#Post Treatment

# as required by purchaser

REMARKS

WAGON NO.

TRUCK NO.

(It is suggested that size A4 paper be used for this test certificate)

FOR XYZ IRON AND STEEL COMPANY

Note: IS 4759:1996 makes no reference to the physical properties or chemical composition of iron/steel itself, except the quality, uniformity and mass of Zinc coating applied over iron/steel products.