

**PRODUCT MANUAL FOR
Aluminium for Use in Iron and Steel Manufacture
According to IS 1253:1992**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 1253:1992
	Title	:	Aluminium for Use in Iron and Steel Manufacture
	No. of amendments	:	NIL
2.	Sampling Guidelines		
a)	Raw material	:	No specific requirement
b)	Grouping Guidelines	:	Sample of each grade is to be drawn for considering GoL/Inclusion. However, sample so drawn may be of any shape, size.
c)	Sample Size	:	100 gms or 5nos pieces for chemical testing
3.	List of Test Equipment	:	Please refer Annex - A
4.	Scheme of Inspection and Testing	:	Please refer Annex – B
5.	Possible tests in a day	:	All tests
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 1253:1992 with the following scope:		
	Name of the product	Aluminium for Use in Iron and Steel Manufacture	
	Grade	1,2	
	Shape (Size)	Shot(..mm to ...mm) Notched Bar Other Shape(dimensions..mm)	

ANNEXURE A
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LIST OF TEST EQUIPMENT

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

Sr. No.	Test Equipment	Tests used in with Clause Reference
1.	Vernier Caliper (0-300mm/ LC-0.01mm), Measuring tape (0-5 mtr)	Dimensions and Tolerances (Clause 7)
2.	Spectrometer	Chemical Composition, Clause 6 and Table 1
3.	Analytical Balance(0-200gm, LC- 0.1mg)	
4.	Hot Plate	
5.	Hot Air Oven	
6.	Photometer (Absorption Cell)	
7.	Porcelain/ Silica crucible	
8.	Platinum Crucible	
9.	Thermometer	
10.	Filter Paper including ashless filter paper pad	
11.	Stainless steel/nickel beaker, Plastic/polyethene/SS Beaker	
12.	Pyrex beakers and other glassware	Copper (Below 0.1%)
13.	Reagents-Mixed Acid(Conc.HCL, Conc. Sulphuric Acid, Conc. Nitric Acid), Dilute Sulphuric Acid, Hydrofluoric Acid, Hydrogen Sulphide(gas), Hydrogen Sulphide Wash Solution, Dilute Nitric Acid, Concentrated Ammonium Hydroxide, Dilute Ammonium Hydroxide Wash Solution, Citric Acid Solution, Sodium-Diethyl-Dithiocarbonate solution, Carbon Tetrachloride, Sodium Sulphate, Standard Copper Solution, silica basin.	
14.	Reagents – Concentrated Sulphuric Acid, Concentrated Nitric Acid, Concentrated Hydrochloric Acid, Mixed Acids(Conc.HCL, Conc. Sulphuric Acid, Conc. Nitric Acid), Hydrofluoric Acid, Dilute Sulphuric Acid,Ammonium Fluoride, Concentrated Ammonium Hydroxide, Acetic Acid, Urea Solution, Potassium Iodide Solution, Standard Sodium Thiosulphate Solution, Starch solution, ammonium thiocyanate, Sodium Hydroxide Solution, Sodium Sulphate Solution, Sodium Hydroxide-Sodium Sulphate Wash Solution, Dilute Nitric Acid, Sulphurous Acid, Hydrogen Sulphide(gas), Hydrogen Sulphide Wash Solution	Copper (Above 0.1%)

15.	Reagents – Sodium Hydroxide, Hydrogen Peroxide, Sodium Carbonate, Methyl Red Indicator Solution, Conc. Ammonium Hydroxide, Ammonium Chloride Wash Solution, Ammonium Chloride, Conc. Hydrochloric Acid, Ammonium Sulphide Solution, Ammonium Persulphate, Ammonium Sulphide Wash Solution, Bromine Water, 8-Hydroxyquinoline Solution, Dilute Ammonium Hydroxide, Methyl Orange Indicator Solution, Potassium Bromate-Potassium Bromide Solution, Potassium Iodide Solution, Starch Solution, Standard Potassium Iodate Solution, Standard Sodium Thiosulphate Solution	Magnesium (0.01 to 12 %)
16.	Reagents- Sodium Hydroxide Solution, Dilute Nitric Acid, Ammonium Molybdate Solution, Standard Silicon Solution.	Silicon (0.02 to 0.3%)
17.	Reagents – Sodium Hydroxide Solution, Hydrogen Peroxide, Conc. Sulphuric Acid, Sulphuric Acid-Perchloric Acid Mixture, Perchloric Acid Solution, Conc. Nitric Acid, Sulphurous Acid, Dilute Sulphuric Acid, Conc. Hydrochloric Acid, Ammonium Acetate Solution, Dilute Hydrochloric Acid, Hydrofluoric Acid	Silicon (Above 0.3%)
18.	Reagents-Sodium Hydroxide Solution, Finely granulated lead containing under 0.001% iron, Acetate Buffer Solution, Hydroxylamine Hydrochloride Solution, O-phenanthrolinesolution,Standard Iron Solution. Equipment – Magnet, Nickel Beaker.	Iron (0.03 to 0.10%)
19.	Reagents -Concentrated Sulphuric Acid, Concentrated Nitric Acid, Concentrated Hydrochloric Acid, Mixed Acids(Conc.HCL, Conc. Sulphuric Acid, Conc. Nitric Acid), Dilute Sulphuric Acid, Hydrofluoric Acid, Potassium Bisulphate, Hydrogen Sulphide, Hydrogen Sulphide Wash Solution, Potassium Permanganate Solution, Potassium Thiocyanate Solution, Standard Titanous Chloride Solution. Equipment – Apparatus for Storing Titanous Chloride Solution, Solid Glass Beads.	Iron (0.01 to 2.0%)
20.	Reagents – Dilute Hydrochloric Acid, Potassium Chlorate, Carbon Tetrachloride, Complex Forming Solution (Conc. Ammonium Hydroxide, Ammonium Oxalate, HCl acid, sodium acetate, sodium thiosulphate solution and sodium sulphide solution), Dithizone Solution, Sodium Sulphide Wash Solution, Standard Zinc Solution.	Zinc (Photometric Method for Zn content below 0.1%)

21.	Reagents – Mixed Acid(Conc. Sulphuric Acid, Conc. HCl and Conc. Nitric Acid), Dilute Sulphuric Acid, Hydrogen Sulphide(gas), Hydrogen Sulphide Wash Solution, Tartaric Acid Solution, Conc. Ammonium Hydroxide, Methyl Red Indicator Solution, Formic Acid Mixture, Formic Acid Wash Solution, Dilute Hydrochloric Acid, Ammonium Nitrate, Methylated Spirit, Mercuric Potassium Thiocyanate Solution, Chloroform, Standard Zinc Solution, Standard Potassium Iodate Solution.	Zinc (By Mercuric Thiocyanate Method)
22.	spark-atomic emission spectrometry (Spark-AES), ICP-AES	Arsenic Bismuth

This is an indicative list for the purpose of guidance only and may not be taken as exhaustive

ANNEXURE B
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SCHEME OF INSPECTION AND TESTING

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 AND MARKING**–The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L.....) shall be marked on each bar/any other shape or container in case of shots, and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked and packed conforms to all the requirement of the specification. In addition each container the information *For details of BIS certification please visit www.bis.gov.in* shall be marked.
 - 3.1 **TEST CERTIFICATE** - For each consignment of BIS Certified material conforming to the specification there shall be a test certificate which shall contain the Standard Mark, the lot/cast number and the corresponding test results (as given in Annexure- I enclosed).
4. **CONTROL UNIT** – For the purpose of this scheme, material of one cast/ heat of same shape and size shall constitute one 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 **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.

TABLE 1 LEVELS OF CONTROL
(Clause 5 of the Scheme of Inspection and Testing)

TEST DETAILS				Test equipment requirement R: required (or)S: Sub-contracting permitted	LEVELS OF CONTROL		Remarks
Clause	Requirements	Test Method			No. of Samples	Frequency	
		Clause	Reference				
5	Freedom from defects	5	IS 1253:1992	R	1	Each Control Unit	
6	Chemical Composition						
	i) Aluminium	6.1 6.2	IS 1253:1992 IS 504 or any other established instrumental/chemical method.	R	2	Each Control Unit	
	ii) Copper			R	-do-	-do-	
	iii) Magnesium			R	-do-	-do-	
	iv) Zinc			R	-do-	-do-	
	v) Tin			R	-do-	-do-	
	vi) Iron			R	-do-	-do-	
	vii) Silicon			R	-do-	-do-	
	viii) Arsenic			S	1	Once in 3 months	
	ix) Bismuth			S	-do-	-do-	
	x) Total of Al,Mg,Cu,Zn,Si,Fe, As,Bi,Sn			S	-do-	-do-	
7	Sizes and Shapes	7.1 7.2	IS 1253:1992 IS 1820	R	5	Each Control Unit	For shapes other than shots and notched bars records of agreed values is to be maintained.

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
TEST CERTIFICATE FORMAT
XYZ ALUMINIUM COMPANY
TEST CERTIFICATE FOR Aluminium for Use in Iron and Steel Manufacture According to IS 1253:1992

TEST CERTIFICATE NO. _____ DATED _____
 To M/s _____

It is certified that the material described below fully conforms to IS 1253:1992. Chemical and physical properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No. CM/L _____ are as indicated below against each order no. etc.

(PLEASE REFER TO IS 1253:1992 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order no and date	Shape	Grade	Cast No./ Lot No.	Quantity (in tonnes)	Chemical Analysis (in %)										Size	Remarks	
					Al	Cu	Mg	Si	Fe	Zn	Sn	As*	Bi*	Total of Cu, Zn, Fe, Si, Sn, Ar & Bi			

*As and when tested
 The material supplied conforms to specified tolerances

REMARKS
 SHIPPING ADVICE NO. WAGON No.s

FOR XYZ ALUMINIUM COMPANY

“For details of BIS certification please visit www.bis.gov.in”