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उत्पाद मैनुअल

आई एस 2047 : 1992 के अनुसार

एल्यूमीनियम मिश्रधातु हार्डनर्स (मास्टर मिश्र धातु) के लिए

PRODUCT MANUAL FOR ALUMINIUM ALLOY HARDENERS (MASTER ALLOY) ACCORDING TO IS 2047:1992

भारतीय मानक ब्यूरो *(* अनुरूपता मूल्यांकन*)* विनिमय ***2018*** की स्कीम **-**I के तहत यह उत्पाद मैनुअल प्रमाणीकरण की संचालन रीति में सुसंगत और पारदर्शिता सुनिच्छित करने के लिए सभी क्षेत्रीय /शाखा कार्यालयों एवं लाइसेंस धारियों द्वारा संदर्भ सामग्री के रूप मे उपयोग किया जाएगा। बीआईएस लाइसेंस/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज का उपयोग किया जा सकता हाँ।

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.	**उत्पाद** **Product**	:	IS 2047:1992
	शीर्षक **Title**	:	ALUMINIUM ALLOYS HARDENERS (MASTER ALLOY) SPECIFICATION-
	संशोधनों की संख्या **No. of Amendments**	:	2
2.	**नमूनकरण दिशा निर्देश** **Sampling Guidelines:**		
a)	**कच्चा माल** **Raw material**	:	No specific raw material requirement *Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be establishedduring Grant of Licence/Change in Scope of Licence /Factory Surveillance*
b)	**समूहिकरण दिशा निर्देश** **Grouping guidelines**	:	Please refer Annex-A

c)	**नमूने का परिमाण** **Sample Size**	:	For Chemical test only: 5 pcs of 50 mm X 50 mm The requirement of Freedom from Defects as per cl.6. shall be tested on the shots, bars or ingots of Aluminum Alloy Hardeners (Master Alloys) offered during inspection during Factory Testing itself and no sample shall be drawn for Independent Testing for this requirement. *Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)*
3.	**परीक्षण उपकरणों की सूची** **List of Test Equipment**	:	Please refer ANNEX –B
4.	**निरीक्षण व परीक्षण स्कीम** **Scheme of Inspection and Testing**	:	Please refer ANNEX – C
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**	:	All tests *Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide readyreference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.*
6.	**लाइसेंस का कार्यक्षेत्र /Scope of the Licence :** **IS 2047:1992** के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है **Licence is granted to use Standard Mark as per IS 2047:1992 with the following scope:**		

Name of the product	Aluminium Alloy Hardeners (Master Alloys)
Alloy (Grade of Material)	I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV and XV

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002

ANNEX A

Grouping Guidelines

1) Aluminum Alloy Hardeners (Master Alloys) as per IS 2047:1992 shall be supplied in the form of Shots, Bars or Ingots, as specified by the purchaser. These Aluminum Alloy Hardeners (Master Alloys) have been classified into designations (coded as per IS 6051) as per Table 1.

2) Aluminium Alloy Hardeners (Master Alloys) have been categorized into 8 groups depending on hardener used in manufacturing of that alloy. Considering these groups, the following grouping guidelines for GoL/CSoL have been developed:

Group	Alloy	Grouping
1	Alloy I ,10 percent copper hardener Alloy II ,20 percent copper hardener	Sample of alloy having higher hardener alloying element percentage shall be tested to cover alloys having lower hardener alloying element percentage. For example: If sample of alloy II is tested, both alloy I & II can be covered in the scope of the licence.
2	Alloy III, 5 percent manganese hardener Alloy IV, 10 percent manganese hardener	Sample of alloy having higher hardener alloying element percentage shall be tested to cover alloys having lower hardener alloying element percentage. For example: If sample of alloy IV is tested, both alloy III & IV can be covered in the scope of the licence.
3	Alloy V, 10 percent silicon hardener Alloy VI, 13 percent silicon hardener Alloy VII, 20 percent silicon hardener	Sample of alloy having higher hardener alloying element percentage shall be tested to cover alloys having lower hardener alloying element percentage. For example: If sample of alloy VII is tested, alloys V and VI can be also covered in the scope of the licence along with alloy VII.
4	Alloy VIII, 10 percent nickel hardener Alloy IX, 20 percent nickel hardener	Sample of alloy having higher hardener alloying element percentage shall be tested to cover alloys having lower hardener alloying element percentage. For example: If sample of alloy IX is tested, both alloys VIII and IX can be covered in the scope of the licence.
5	Alloy X,0.75 percent titanium hardener	Sample of alloy having higher

	Alloy XI, 1 percent titanium hardener	hardener alloying element percentage shall be tested to cover alloys having lower hardener alloying element percentage. For example: If sample of alloy XI is tested, both alloys XI and X can be covered in the scope of the licence.
6	Alloy XII, 2 percent chromium hardener Alloy XIII, 5 percent chromium hardener	Sample of alloy having higher hardener alloying element percentage shall be tested to cover alloys having lower hardener alloying element percentage. For example: If sample of alloy XIII is tested, both alloys XIII and XII can be covered in the scope of the licence.
7	Alloy XIV, 4 percent zirconium hardener	Sample of alloy XIV to be tested
8	Alloy XV, 5 percent iron hardener	Sample of alloy XV to be tested

3) Scope of the licence shall be restricted based upon the manufacturing and testing facilities available.

4) During the operation of licence,samples of each alloy covered in the scope of the licence shall be tested in rotation, to the extent possible.

ANNEX B

List of Test Equipment
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl No.	Test Equipment	Test Used in with Clause Reference
1	Optical Emission Spectrometer	Chemical Composition, Cl 5, 1 Table 1
2	Copper	• 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-Dithiocarbamate Solution • Carbon Tetrachloride • Sodium Sulphate • Standard Copper Solution • Silica Basin • Analytical Balance • Ashless Paper Pulp • Filter Papers • Platinum Crucible • Heating Apparatus/Burner • Photometer
3	Silicon	• Sodium Hydroxide Solution • Hydrogen Peroxide • Concentrated Sulphuric Acid • Sulphuric Acid-Perchloric Acid Mixture • Perchloric Acid Solution • Concentrated Nitric Acid • Sulphurous Acid • Dilute Sulphuric Acid • Concentrated Hydrochloric Acid • Ammonium Acetate Solution • Dilute Hydrochloric Acid- • Hydrofluoric Acid • Analytical Balance • Ashless Paper Pulp • Filter Papers

4	Iron	• Concentrated Sulphuric Acid • Concentrated Hydrochloric Acid • Concentrated Nitric Acid • Dilute Sulphuric Acid • Hydrofluoric Acid • Potassium Bisulphate • Hydrogen Sulphide Gas • Hydrogen Sulphide Wash Solution • Potassium Permanganate Solution • Potassium Thiocyanate Solution • Standard Titanous Chloride Solution • Analytical Balance • Platinum Crucible • Heating Apparatus/Burner • Magnet • Ashless Paper Pulp • Filter Papers
5	Manganese	• Concentrated Nitric Acid • Sodium Bismuthate • Sulphurous Acid • Dilute Nitric Acid • Phosphoric Acid • Standard Ferrous Ammonium Sulphate Solution • Standard Sodium Oxalate Solution • Standard Potassium Permanganate Solution • Analytical Balance • Asbestos Gooch Crucible • Heating Apparatus/Burner
6	Titanium	• Sodium Hydroxide Solution • Nitric Acid-Sulphuric Acid Mixture • Dilute Sulphuric Acid • Hydrogen Peroxide • Standard Titanium Solution • Filter Papers • Weighing Balance • Heating Apparatus/Burner

7	Magnesium	• Sodium Hydroxide Solid • Hydrogen Peroxide • Sodium Carbonate- Solid • Methyl Red • Ammonium Hydroxide • Ammonium Chloride • Hydrochloric Acid • Hydrogen Sulphide- Gas • Ammonium Persulphate • Ammonium Sulphide • Bromine Water • Hydroxyquinoline • Glacial Acetic Acid • Dilute Ammonium Hydroxide • Methyl Orange • Alcohol • Potassium Hydroxide • Potassium Bromide • Potassium Bromate • Potassium Iodide Solution • Soluble Starch • Potassium Iodate • Sodium Thiosulphate • Erlynmeyer Flask • Titration Assembly • Analytical Balance • General Glasswares • Hot Plate • Filter Papers • Sintered Glass Funnel • Burner • Ammoniacal Water
8	Chromium	• Sulphuric Acid • Nitric Acid • Silver Nitrate Solution' • Hydrofluoric Acid • Ammonium Persulphate • Dilute Hydrochloric Acid • Ferrous Ammonium Sulphate • Recrystallized Potassium Dichromate Solution' • Potassium Permanganate • Dark Coloured Stoppered Glass Bottle • Pure Re-crystallized Sodium Oxalate or Oxalic Acid • Analytical Balance • Burner • General Glasswares • Titration Assembly

9	Nickel	• Sodium Hydroxide • Dilute Hydrochloric Acid • Nitric Acid • Dilute Sulphuric Acid • Hydrogen Sulphide-Gas • Sulphuric Acid • Tartaric Acid • Ammonium Chloride-Solid • Ammonium Hydroxide • Dimethylglyoxime • Burner • Filter Paper • Dessicator • General Glasswares
10	Zirconium	As agreed between manufacturer and Purchaser

ANNEXURE C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 **RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT**:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : **All Aluminum Alloy Hardeners (Master Alloys) shots/ingots/bars representing same cast, grade of material (Alloy)and manufactured under uniform conditions of production in the same place shall constitute a control unit**.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1)**, where different tests given in the specification shall be carried out in accordance with the method given in the specification**.** They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 **TEST RECORDS**- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on ingots/bars or boxes/crates in case of shots , and on the Test Certificate, provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

4. TEST CERTIFICATE - For each consignment of BIS Certified Material conforming to IS 2047:1992,the manufacturer shall issues a Test Certificate as per the format enclosed as Annexure-I.

5. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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
(ONLY FOR GUIDANCE PURPOSE)

(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				
5	Chemical Composition	5.1, 5.2,5.3, Table 1	IS 2047 IS 504 (Part 1 to 12) IS 504 (Part 13 to 16) IS 7658 IS 11035	R	One	Each heat/cast	The chemical analysis may also be carried out by any other established instrumental/ chemical method
6	Freedom from Defects	6	IS 2047	R	One	Firm shall ensure adequate in process controls to ensure that each ingot/shot/bar is free from harmful defects.	

ANNEXURE I

XYZ Company
(Registered office Address and works address)
TEST
CERTIFICATE FOR
ALUMINIUM ALLOYS HARDENERS (MASTER ALLOY)

BIS STANDAD MARK

TEST CERTIFICATE No._____ DATE_____

To M/s_____
We certified that the material described below fully conforms to IS 2047:1992 as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No.CM/L_____ areas indicated below against each order No.

(PLEASE REFER TO IS 2047:1992 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TESTRESULTS

Order No. & Date	Designation	Cast No.	Condition	Chemical Analysis									Freedom from defects	Remarks
				Cu %	Si %	Mg %	Fe %	Ni %	Zr %	Cr %	Mn%	Ti%		

REMARKS
WAGON NO.
TRUCKNO.

FOR XYZ COMPANY

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