



सीसे की चद्वरें एवं पतियाँ -विशिष्ट भाग १ रासायनिक प्रयोजनों के लिए
IS 405 (Part 1): 1992 के अनुसार

**PRODUCT MANUAL FOR LEAD SHEETS AND STRIPS,
PART 1 - FOR CHEMICAL PURPOSES
ACCORDING TO IS 405 (Part 1): 1992**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

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.	मानक संख्या IS No.	:	IS 405 (Part-1): 1992
	शीर्षक Title	:	Lead sheets and strips Part 1 For Chemical Purposes
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूना दिशानिर्देश Sampling Guidelines		
	कच्चा माल Raw material		No specific requirement Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance
	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer Annex-A 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 (incase of market surveillance, effort may be made to procure therequired quantity of product sample, as far as possible since raw material sample may not be available in market).
	नमूने का परिमाण Sample Quantity	: 2 sheets of 500 mm x 500 mm
	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	1) Grade (Chemical Composition) 2) Nominal Thickness of Sheet/Strip Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer Annex-B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer Annex-C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	: All tests (by instrumental method) 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 ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.
6.	लाइसेंस का दायरा /Scope of the Licence: Licence is granted to use Standard Mark as per IS 405 (Part-1): 1992 with the following scope:	
	Name of the product	Lead sheets and strips - For Chemical Purposes
	Chemical Composition (Grade)	Lead Alloy/ Pure Lead
	Thickness	0.5 mm, 0.8 mm,,16.0 mm

ANNEX – A**GROUPING GUIDELINES****1. Grouping based upon Grade (Chemical Composition):**

Grade (Chemical Composition)	Remarks
Pure Lead	One sample of the Grade shall be drawn and tested
Lead Alloy	One sample of the Grade shall be drawn and tested

2. Grouping based upon Thickness of Sheets/Strips:

Thickness	Remarks
0.5 mm, 0.8 mm, 1.0 mm, 1.6 mm, 2.0 mm, 2.5 mm, 3.2 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 7.0 mm, 8.0 mm, 9.0 mm, 10.0 mm, 12.0 mm, 14.0 mm, 16.0 mm	To cover a range of thicknesses of Lead Sheets/Strips, samples of lowest and highest thickness shall be drawn and tested

3. Scope of licence shall be restricted based on the manufacturing and testing facilities available.
4. During operation of licence, samples of each variety covered in the scope of licence, shall be tested rotation, to the extent possible.

ANNEX-B

LIST OF TEST EQUIPMENT
(Indicative List, for guidance only)

Tests used in with Clause Reference	Test Equipment
Chemical Composition (Instrumental Method) CI 4	Equipment analyzing composition by any established method. (Optical Emission Spectrometry, Atomic Absorption Spectrometry, any other)
	Certified Reference Materials/Standard Reference Materials
Chemical Composition (Alternative to Instrumental Method) CI 4	Determination of Tellurium Photometer, filter paper Reagents: Acid Mixture-mixture of acetic acid and hydrogen peroxide (30 percent), Sodium Chloride Solution – saturated, Concentrated Hydrochloric Acid, Stannous Chloride Solution - 25 percent (w/v), Dilute Hydrochloric Acid- 1:1 and 1:13 (v/v), Concentrated Nitric Acid, Dilute Nitric Acid- 5:95 (v/v), Dilute Ammonium Hydroxide- 1:1 (v/v), Potassium Iodide- 2N approximately, Standard Tellurium Solution (1 ml = 0.01 mg of Te)
	Determination of Copper & Zinc: Photometer, Filter Paper, Reagents/ Chemicals: Nitric Acid, Sulphuric Acid, Lead Acid solution, Crezol red indicator, Ammonium Hydroxide, Anhydrous Sodium Phosphate, Citric Acid, Dithiazone solution, Sodium Acetate, Acetic Acid, Potassium Iodide, Carbon Tetrachloride, Standard Copper solution, Ethanol, Methanol, Sodium Thiosulphate, Standard Zinc Solution
	Determination Antimony and Arsenic Reagents/ Chemicals: Nitric Acid, Pottasium Permanganate, Manganese Nitrate, Sulphuric Acid, Ammonium Sulphate, Ammonium Hydroxide, Ammonium Persulphate, Pottasium Bisulphate, Hydrazene Sulphate, Carbon Dioxide, Hydrochloric Acid, Sodium Chloride, Sodium Sulphite, Silicon Carbide, Standard Pottasium Bromate Solution, Methyl Orange Indicator, Antimony Trichlotride Solution, Alluminium Pure, Starch Solution, Pottasium Iodide Solution, Standard Iodine solution, Standard Tin solution
	Determination of Bismuth Photometer, Reagents/ Chemicals: Nitric Acid, Hydrochloric Acid, Ferric Salt Solution, Ammonium Acetate solution, Sodium Hydroxide Solution, Sulphuric Acid, Tartaric Acid, Sodium Hypophosphite, Pottasium Iodide, Standard Bismuth Solution

	Determination of Iron: Photometer, Reagents/ Chemicals: Nitric Acid, Hydrochloric acid, Ammonium Hydroxide, Hydrogen Sulphide - Gas, Hydrogen Sulphide Wash Solution, Sodium Acetate - Acetic Acid Buffer Solution, Hydroxyle Amine Hydrochloride Solution, O-Phenanthroline Solution, Standard Iron Solution
	Determination of Silver Muffle Furnace 1000 Celsius, Scorifier, Cupel, Assay balance, Iron Mould Reagents/ Chemicals: Silica Borax Glass
	Weighing Balance
Size and thickness, CI 6	Micrometer, Steel Scale, Steel Tape, Weighing balance

ANNEX B

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 the entire quantity of Lead sheets and strips of the same chemical composition and same size manufactured on the same line in one go.**

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/empaneled 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/empaneled 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 each package of sheets/strips and/or the test certificate accompanying a consignment, 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 provisions of the Indian Standard.

4. TEST CERTIFICATE: For each consignment of BIS Certified material conforming to this standard 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).

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.

TABLE 1
LEVELS OF CONTROL

(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 Clause Reference			No. of Sample	Frequency	Remarks
4	Chemical Composition	4.1,4.2 Table-1	IS 403 or any other established instrumental/c hemical method	R	One	Each control unit	----
5	Freedom from Defects	5	IS 405 (Part 1)	R	Firm shall exercise adequate in-process controls to ensure that the material remains free from harmful defects.		
6,7	Size & Tests for Thickness	6,7, Table 2	IS 405 (Part 1)	R	Firm shall exercise adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. Wherever required, appropriate records shall be maintained by the manufacturer for evidence of conformity.		

**ANNEXURE I
TEST CERTIFICATE FORMAT
XYZ LEAD COMPANY**

ISI Mark
With IS no.
and CM/L
no.

TEST CERTIFICATE FOR Lead sheets and strips Part 1 For Chemical Purposes

TEST CERTIFICATE NO.____DATED

TO M/s_____

It is certified that the material described below fully conforms to IS 405 (Part 1). Chemical composition 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 405 (Part 1) FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order no and date	Grade	Cast No./Lot No.	Quantity (in tonnes)	Chemical Analysis (in %)										Size and Thickness	Freedom from Defects	Remarks
				T	C	Sb	B	F	A	Z	A	Total Impurities	Lead			
				e	u		i	e	g	n	s					

The material supplied conforms to specified tolerances
REMARKS
SHIPPING ADVICE NO.

WAGON NOS

FOR XYZ LEAD COMPANY

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