



उत्पाद मैनुअल
परिष्कृत निकल— विशिष्टि
IS 2782: 2023 के अनुसार

**Product Manual for
Refined Nickel- Specification
According to IS 2782: 2023**

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। दस्तावेज़ 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 uniformity 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.

1.	भारतीय मानक संख्या IS No.	:	IS 2782:2023
	शीर्षक Title	:	Refined Nickel- Specification
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement for raw material. 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
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Sample of each grade of Refined Nickel of any form and size shall be tested. However, recommendation of scope of licence with regards to form and sizes shall be restricted based upon

		manufacturing/refining process capabilities and testing facilities. During operation of licence, samples of each grade covered in the scope of licence, shall be tested in rotation, to the extent possible.
c)	नमूने का परिमाण Sample Quantity	250 gms 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)
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	Grade, Form and Size 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 to Annex- A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	Please refer to Annex- B
5.	एक दिन में संभावित परीक्षण Possible tests in a day All Tests can be carried out in a day 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: IS 2782:2023 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है □Licence is granted to use Standard Mark as per IS 2782:2023 with the following scope:	
7.	उत्पाद का नाम Name of the product	Refined Nickel
	Grade Designation	(i) NR9995 (ii) NR9990

		(iii) NR9982 (iv) NR9980 (v) NR9960 (vi) NR9900
	Form	Electrolytic Cathode/Briquette/ Shot

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN,9, BAHADUR SHAH ZAFAR MARG,
NEW DELHI-110002

ANNEX – A

LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Test Equipment	Tests used in with Clause Reference
1	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer Standard Reference Material with certificate	Clause 7 Ni, Co, Ag, Al, As, Bi, C, Cd, Co, Cu, Fe, Mn, N, P, Pb, S, Sb, Se, Si, Sn, Te, Ti, Zn, Mg
2	<u>Gravimetric Method</u> Dilute Nitric Acid - 1 : 1 (v/v), Concentrated Sulphuric Acid - sp gr 1.84 (conforming to IS : 266), Dilute Hydrochloric Acid - 5 : 95 (v/v), Citric (Tartaric) Acid - 250 g/l. Concentrated Ammonium Hydroxide - 20 percent. Dimethylglyoxime Solution - 1 percent (w/v) in rectified spirit. Beaker 600ml Heating arrangement and temperature control Sintered crucible	Clause 7 Nickel - chemical method, alternative to instrumental method
3	NITROSO-R-SALT (PHOTOMETRIC) METHOD • Aqua Regia - Mix concentrated hydrochloric acid (sp gr 1.16) and concentrated nitric acid (sp gr 1.42) in the ratio of 3 : 1 (V/V). • Dilute Sulphuric Acid - 1 : 1 (V/V). • Hydrogen Sulphide – gas • Dilute Hydrochloric Acid - 1 : 1 (v/v). • Nitroso-R-Salt Solution - 1 percent (w/v), • Sodium Acetate – solid • Concentrated Hydrochloric Acid - sp gr 1.16 (conforming to IS : 265) • Standard Cobalt Solution (1 ml = 0.1 mg of Co) - Dissolve 0.67 g of pure cobalt ammonium sulphate (AR) [CoSO₄(NH₄)₂SO₄.6H₂O] in water and dilute to 1 litre. • 150ml beaker • Paper Pulp • Heating arrangement • Volumetric flask • nitroso-R-salt solution • pH meter	Clause 7 Cobalt - chemical method, alternative to instrumental method

	Instrument for Photometric measurement at approximately 520 millimicrons	
4	- Oxygen - 99.5 percent purity, free from carbonaceous matter. - Anhydrous Magnesium Perchlorate - $\text{Mg}(\text{ClO}_4)_2$ - FLUX - lead dioxide, analytical reagent grade. - Manganese Dioxide - Soda Asbestos - asbestos impregnated with sodium hydroxide, in granules of about 2 mm diameter. - Combustion Apparatus as per Fig 1 of IS 2766 Part 1 with source of oxygen and the unit for purifying it, the furnace with the combustion tube, the purification train and the carbon dioxide absorption system. - Weighing scale	Clause 7 Carbon - chemical method, alternative to instrumental method
5	- Concentrated Nitric Acid - sp gr 1.42 (conforming to IS : 264) - Concentrated Ammonium Hydroxide - 20 percent. - Dilute Ammonium Hydroxide - 5 : 95 (v/v). - Dilute Hydrochloric Acid - I : I, 1 : 3 and 5 : 95 (v/v). - Stannous Chloride Solution - Mercuric Chloride Solution - Sulphuric-Phosphoric Acid Mixture (Prepared with concentrated sulphuric acid (sp gr 1.84), Water, phosphoric acid (85 percent), potassium permanganate solution (0.1 N) - Sodium Diphenylamine Sulphonate Indicator Solution (prepared with barium diphenylamine sulphonate, hot water, sodium sulphate) - Standard Potassium Dichromate Solution - 0.02 N - Weighing balance - Beaker 600ml - Heating arrangement - Filter paper no 41	Clause 7 Iron - chemical method, alternative to instrumental method
6	- Sodium Chlorate - solid. - Concentrated Nitric Acid - sp gr 1.42 (conforming to IS : 264) - Concentrated Hydrochloric Acid - See 6.2.7. - Hydroxylamine Hydrochloride - solid. - Barium Chloride Solution - 20 percent (w/v). - Barium Chloride Wash Solution - 0.2 percent (w/v). - Weighing balance - Beaker- 80ml - Heating arrangement with temperature control (up to 600 to 700 deg C) Filter paper	Clause 7 Sulphur - chemical method, alternative to instrumental method

	• Platinum or porcelain crucible	
7	• Electrodes- recommended as per Fig 3 of IS 2766 Part 1 • Cathode - It may be formed either from plain or from perforated sheet or from wire gauze • Anode • Concentrated Nitric Acid - sp gr 1.42 (conforming to IS : 264) • Dilute Sulphuric Acid - 1 : 1 (v/v). • Dilute Hydrochloric Acid - 1 : 99 (v/v) . • Dilute Nitric Acid - 1 : 3 (v/v). • Concentrated Ammonium Hydroxide - 20 percent. • Citric Acid Solution - 20 percent (w/v). • Sodium Diethyl-Dithiocarbamate Solution – 0.1 percent (w/v). • Carbon Tetrachloride • Sodium Sulphate - solid. • Standard Copper Solution-Dissolve 0.2 g of electrolytic copper in a minimum volume of dilute nitric acid (1 : 1). Dilute, neutralize with ammonia, reacidify with concentrated sulphuric acid and dilute to 1 litre. • Weighing Balance	Clause 7 Copper - chemical method, alternative to instrumental method
8	Rough Polishing Machine, Cutting Machine, Micro Polisher, Grinder Machine, Automatic Mount Press, Surface grinder to remove burr, Required Filter papers, Glasswares- Beaker, Flasks	Sample preparation

The above list is indicative only and may not be treated as exhaustive.

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: For the purpose of this scheme, a control unit is defined as material of same Grade and of same form manufactured 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/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/empanelled 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 license and Licence Number (i.e. CM/L...) shall be suitably incorporated on each item/package of the product and/or on the test certificate accompanying with each consignment of product, provided always that the material so marked and packed conforms to all the requirement of the specification.

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

3.2 **Additional Marking requirements:** The material shall also be marked with the following additional requirement on each item/package of the product:

- a) “For BIS certification details please visit www.bis.gov.in”
- b) Any other requirement not specified in the Indian Standard

4. TEST CERTIFICATE – For each consignment of BIS Certified material conforming to IS 2782:2023 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

TABLE 1
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		(4)
TEST DETAILS					LEVELS OF CONTROL		
Clause	Requirements	Test Method		Test equipment requirement R: required (or) S:Sub-contracting permitted	No. of Samples	Frequency	Remarks
		Clause	Reference				
6	Form and Size	6	IS 2782	R	The form of material and sizes shall be mutually agreed to between the purchaser and the manufacturer		
7, Table 1	Chemical Composition	7, Table 1	IS 2782	R	One	Each Cast/Batch	—

Annexure-I

(Para 4 of the Scheme of Inspection and Testing)
XYZ COMPANY
(Registered office Address and works address)

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

Test Certificate for Tin Ingots as per IS 2782:2023
TEST CERTIFICATE NO. _____

To M/s _____

Dated _____

We certified that the material described below fully conforms to IS 2782:2023 Chemical composition 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.

(PLEASE REFER TO IS 2782:2023 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No and Date	Form and size											Grade							Heat/ Batch				Quantity		Chemical Composition					
						Ni	Co	Ag	Al	As	Bi	C	Cd	Co	Cu	Fe	Mn	N	P	Pb	S	Sb	Se	Si	Sn	Te	Ti	Zn		Mg

Remarks

Wagon No.

Truck No.

FOR XYZ Company

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