



उत्पाद मैनुअल
गंधक का अम्ल— विशिष्टि
IS 266 : 2025 के अनुसार
PRODUCT MANUAL
SULPHURIC ACID — SPECIFICATION
ACCORDING TO IS 266 : 2025

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.	मानक संख्या IS No.	:	IS 266 : 2025
	शीर्षक Title	:	SULPHURIC ACID — SPECIFICATION
	संशोधनों की संख्या No. of amendments	:	NIL
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	NA 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	:	Please refer ANNEX –A
c)	नमूने का परिमाण Sample Quantity	:	2×500ml 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	:	1. Grade 2. Concentrated/Dilute designation for battery grade 3. With/without Optional requirement for battery grade 4. Total acidity (for Technical grade/Battery grade) in case

	in Test Request		it is different from table 1 Note: This section indicates declared values to be specified against a parameter (in Test Requests) to enable testing of sample against the requirement and determine its conformity. 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		a) Total acidity b) Residue on ignition c) Oxidizable impurities d) Organic matter e) Nitrates f) Chlorides g) Manganese h) Ammonia 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 266 : 2025 के अनुसार मानक मुहर का उपयोग करनेके लिए लाइसेंस नमनलिखित कार्य क्षेत्र के लिए प्रदान ककया जाता है“Licence is granted to use Standard Mark as per IS 266 : 2025 with the following scope:		
	Name of the product	:	Sulphuric Acid
	Grades and total acidity		a) Technical, Total acidity min b) Battery i Concentrated, Total acidity Min; with/without Additional (optional) requirement on limit for Antimony and platinum ii Dilute, Total acidity Min; with/without Additional (optional) requirement on limit for Antimony and platinum c) Chemically Pure, Total acidity min d) Analytical reagent, Total acidity min

ANNEX A
GROUPING GUIDELINES
SULPHURIC ACID

Grouping Guidelines for grant of licence and inclusion of new varieties of Sulphuric Acid as per IS 266: 2025 is as given below

1. IS 266: 2025 prescribes the following four grades namely:
 - a) Technical (Tech);
 - b) Battery;
 - c) Chemically pure (CP); and
 - d) Analytical reagent (AR).
2. The battery grade acid is further classified into following two subgrades,
 - a) concentrated and
 - b) dilute.

Sample of each Grade (and sub grade in case of battery grade) shall be tested to be covered in the Scope of licence.

If battery Grade with additional (optional) requirement is tested, battery grade without optional requirement may also be covered for that sub grade.

In case of Acids of Technical grade/Battery grade having total acidity limit different from that prescribed in table 1 of the IS and is as per the agreement between purchaser and supplier, such acids with the specific Total acidity limit shall be tested to be covered in the scope. Also in such case manufacturer shall present agreement between the purchaser and the supplier for supply of sulphuric acid with that total acidity.

It shall however be ensured and recorded that the applicant/licensee has got complete manufacturing as well as testing arrangement for the varieties to be covered as per the Grouping guidelines.

During the operation of licence, BOs shall also ensure that all varieties covered in the licence are drawn for independent testing on rotation over a period of time.

ANNEX B

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Total Acidity, Clause 4.2 & B-2	– Lung-Rey Pipette – Burette – Stand – Volumetric flask – Standard Sodium Hydroxide – Methyl red indicator – Distilled water – Ethanol – Weighing balance – Conical flask-500ml
2.	Residue on ignition, Clause 4.2 & B-3	– Weighing balance – Platinum/Silica dish of 10ml – Sand bath – Desiccator – Electric furnace – Temperature – Stopwatch
3.	Iron, Clause 4.2 & B-4,	METHOD 1(Bipyridyl method) – Spectrophotometer / Photoelectric Colorimeter – Dil.Hydrochloric acid – Sand bath – Distilled water – 2'2'-Bipyridyl solution – Beaker -100ml – 2'2'-bipyridyl – Standard Iron Solution A – Ferrous Ammonium Sulphate – Conc.Sulphuric acid – Volumetric Flask-1000ml – Standard Iron solution B – Ammonium Acetate – Hydroxyl Ammonium Chloride – Volumetric Flask-100ml METHOD 2 (Thiocyanate Method) – Hydrochloric acid – Nessler Cylinders – Potassium Permanganate – Ammonium Thiocyanate – Mixture of Amyl Alcohol & amyl Acetate(1:1)v/v – Standard Iron Solution B – Standard Fe Solution A-100ml – Volumetric Flask-1000ml For Battery and Chemically Pure Grade

		– Nessler cylinder – Potassium permanganate – Ammonium thiocyanate – Amyl alcohol and acetate mixture – Measuring jar – Distilled water For Technical Grade – Standard Fe Solution B – Measuring jar – Weighing balance – Nessler cylinder – Potassium permanganate – Ammonium thiocyanate – Mixture of Amyl alcohol l& Acetate – Distilled water For Analytical Reagent Grade – Platinum dish/silica dish-100ml – Weighing balance – Sand bath – Hydrochloric acid – Distilled water – Potassium permanganate – Ammonium thiocyanate – Mixture of Amyl alcohol & Acetate Instrumental test method as prescribed at B-19 or ICPMS method as prescribed in IS 3025 (Part 65)
4.	Chloride, Clause 4.2 & B-5	– Dil.Nitic acid – Silver Nitrate – Std.Chloride – Solution Sodium Chloride – Distilled water – Volumetric Flask-1000ml – Weighing balance – Nessler Cylinder – Measuring jar Instrumental test method as prescribed at B-21
5.	Heavy Metals (as Pb), Clause 4.2 & B-6	<u>METHOD1(colorimetric determination, IS 7017)</u> – Distilled water – Nessler cylinder-50ml (as per IS 4161:1967) – Standard Lead solution – Lead nitrate – Nitric acid – Volumetric flask-1000ml – Dil .Ammonium hydroxide – Triammonium citrate/citric acid – Dithizone Chloroform – Hydroxylamine – Hydrochloride – Carbon tetrachloride – pH paper – Filter paper

		– Volumetric flask -100ml – Weighing balance – Measuring jar – Thymol blue indicator – Rectified spirit – Separating funnel – Beaker-250ml Method B – Spectrophotometer – Potassium Cyanide Solution – Oven – Petridish – Dil .Hydrochloric acid – Distilled water – Dil.Ammonia solution – Hydrogen sulphide gas – Standard lead solution – Dil.Acetic acid – Volumetric flask-100ml – Measuring jar – Weighing balance Method C – Nessler cylinders – 50 ml Capacity – p-Nitrophenol indicator solution – Dilute ammonium hydroxide — 1 : 9 (v/v) – Dilute hydrochloric acid — 1 : 99 (v/v) – Hydrogen sulphide solution – lead nitrate – Pipette
6.	Arsenic, Clause 4.2 & B-7	– Nitric acid – Distilled water – Conical flask-100ml Conc. – Hydrochloric acid – Potassium iodide solution – Stannous chloride solution – Zn granules(0.5 to 1.0mm) – Standard Arsenic Stock Solution (Arsenic trioxide, NaOH solution ,Beaker, Volumetric flask-1000ml) – Silver diethyldithiocarbamate Solution (Silver diethyldithiocarbamate, water white pyridine, pyridine ,beaker, Stoppered glass bottles) – Impregnated absorbent cotton wool – Connecting tube – Spectrophotometer/Photometric absorptiometer – Absorption tube As per B-19 or ICP-MS method as prescribed in IS 3025 (Part 65).
7.	Oxidizable Impurities, Clause 4.2 & B-8	– Potassium permanganate – Measuring jar – Conical flask-250ml

		– Distilled water – Burette – Pipette – Stand – Ice
8.	Organic Matter, Clause 4.2 & B-9	– Beaker – Bunsen flame with heating arrangement (stand, etc)
9.	Nitrates, Clause 4.2 & B-10	– Conc.Hydrochloric acid(as per IS 265:2024) – Distilled water Measuring jar Diphenylamine solution (diphenylamine & nitrogen free sulphuric acid,water) – Beaker – Heater Instrumental method as per B-20
10.	Ammonia, Clause 4.2 & B-11	– Sodium hydroxide Solution – Nessler Solution – Potassium iodide – Distilled water – Glass rod – Measuring jar – Mercuric chloride – Potassium hydroxide – Bottle – Well-fitting rubber stopper – Weighing balance – Ammonium chloride – Volumetric flask-1000ml – Ice
11.	Selenium, Clause 4.2 & B-12	– Conc. Hydrochloric acid – Sodium sulphite – Standard Selenium solution – Conc. Nitric acid – Volumetric flask-1000ml – Petri dish – Distilled water – Crushed ice – Dil.Selenium free Sulphuric acid Method by AAS as prescribed in IS 3025 (Part 56). or by ICP-OES
12.	Manganese, Clause 4.2 & B-13	– Conc.Nitric acid(as per IS 264:1976) – Potassium periodate – Potassium permanganate – Hot plate B-19 or ICP-MS method as prescribed in IS 3025 (Part 65)

13.	Copper, Clause 4.2 & B-14	<u>Method A</u> – Platinum/silica dish – Temperature – Desiccators – Weighing balance – Sand bath – Electric furnace – Nessler cylinder-50ml – Conc.Hydrochloric acid(as per IS 265:2024) – Ammonium hydroxide (density 0.90) – Cupric sulphate – Distilled water – Volumetric flask -1000ml – Steam bath – Filter paper – Funnel <u>Method B</u> – Spectrophotometer – Sodium sulphate – hydrochloric acid solution – amyl alcohol – (+) tartaric acid – sodium hydroxide – L-ascorbic acid (100 g/l) – 2, 2'-biquinolyl (0.5 g/l) – bromine water-saturated solution – copper (0.1 g/l) – standard solution – indicator paper (narrow range) pH 5.5 to pH 7.0 – methyl orange indicator (0.5 g/l) aqueous solution inductively coupled plasma optical emission spectrometry (ICP-OES) method as prescribed in IS 3025 (Part 2) or ICP-MS method as prescribed in IS 3025 (Part 65).
14.	Zinc, Clause 4.2 & B-15	– Nessler cylinder-100ml – Sulphuric acid – Hydrogen sulphide gas – Ammonium hydroxide(density 0.90) – Citric acid solution – Ammonium thiocyanate – Hydrochloric acid(density 1.20) – Potassium Ferrocyanide – Standard Zinc Solution – Volumetric flask-1000ml – Weighing balance – Pure Zinc – Calcium Carbonate – Silica dish – Filter paper – Arrangement for evaporation of solution with hot plate Funnel

15.	Nitrates, Nitrites & Ammonia, Clause 4.2 & B-16	– Nessler cylinder-50ml – Citric acid – Filtration assemblies – Sodium hydroxide – Devada's alloy(45 parts Al,50 parts Cu,5parts Zn) – Hessian crucible – Copper – Electric furnace – Iron rod – Lid to cover crucible – Dil.Hydrochloric acid – Nessler solution(Potassium iodide ,Mercuric chloride, distilled water,) – Standard Ammonium Chloride Solution – Weighing balance – Volumetric flask-1000ml – Distilled water – Conical flask-500ml – Distillation head & condenser (distillation set up)
16.	Antimony, B-17	– Hydrogen Sulphide – Mercuric Chloride – Test Paper – Dil. Ammonium Hydroxide – Con. Sulphuric Acid – Standard Antimony solution – Antimony potassium tartarate – Weighing balance – Volumetric flask-1000ml – Distilled water – Sodium sulphite – Arrangement for evaporation – Conc.Hydrochloric acid (as per IS 265:2024) Actual test (IS2088) – Apparatus for Gutzeit method – Hot plate
17.	Platinum, B-18	– Aqua Regia (Conc.HCl acid &Con. Nitric acid) – Measuring jar – Weighing balance – Porcelain evaporating dish with evaporation arrangement – Sand bath – Aqua regia – Watch glass – Steam bath – Thin Asbestos paper – Crucible tongs – Bunsen flame
18.	DETERMINATION OF ARSENIC, IRON, LEAD AND MANGANESE BY INDUCTIVELY COUPLED PLASMA OPTICAL EMISSION	– Nitric Acid (65 Percent) Suprapure – Standard Stock Solution – Standard Solution – polytetrafluoroethylene (PTFE) containers gas

	SPECTROMETER (ICP-OES) METHOD, B-19	(hydride)/vapour generating system coupled with ICP (For analysis of mercury and arsenic) – carrier gas
19.	ION CHROMATOGRAPHY FOR NITRATES, B-20	– ION CHROMATOGRAPH – Glass or Polyethylene Sample Bottles – Distilled Water or Deionized Water Free from the Anions of Interest – Eluent – Nitrate Stock Solution – PTTE/HDPE beaker
20.	ION CHROMATOGRAPHY FOR CHLORIDES, B-21	– Ion Chromatograph – Glass or Polyethylene Sample Bottles – Distilled Water or Deionized Water free from the Anions of Interest – Eluent – Micromembrane Suppressor Solution (0.025 N of Sulphuric Acid) – Standard Solutions – PTTE/HDPE beaker

ANNEX 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: Total quantity of the acid of one variety produced at a time in each reaction vessel.

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 containers of SULPHURIC ACID 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.

3.2 **Additional Marking requirements:** The container shall also be marked with the following additional requirement.

a) Grade and total acidity

b) *“For BIS certification details please visit www.bis.gov.in”*

4. 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
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
TEST DETAILS				Test equipment requirement R: required (or) S: Sub-contracting permitted	LEVELS OF CONTROL		
Clause	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4.1	Description	4.1	IS 266	R	Manufacturer shall maintain adequate inspection and in process control, to ensure product meets specified requirements and maintain test records for tests involving Visual examination		
4.2	Total Acidity	B-2	-do-	R	One	Each Control unit	
-do-	Residue on ignition	B-3	-do-	R	-do-	-do-	
-do-	Iron(Fe)	B-4, B19	-do-	R	-do-	-do-	
-do-	Chlorides(Cl)	B-5, B20	-do-	R	-do-	-do-	
-do-	Heavy metals (Pb)	B-6, B19	-do-	R	-do-	-do-	
-do-	Arsenic(As)	B-7, B19	-do-	R	-do-	-do-	
-do-	Oxidizable impurities(SO ₂)	B-8	-do-	R	-do-	-do-	
-do-	Organic matter	B-9	-do-	R	-do-	-do-	
-do-	Nitrates (NO ₃)	B-10, B20	-do-	R	-do-	-do-	
-do-	Ammonia (NH3)	B-11	-do-	R	-do-	-do-	
-do-	Selenium (Se)	B-12	-do-	R	-do-	-do-	
-do-	Manganese (Mn)	B-13, B19	-do-	R	-do-	-do-	
-do-	Copper (Cu)	B-14	-do-	R	-do-	-do-	
-do-	Zinc (Zn)	B-15	-do-	R	-do-	-do-	
-do-	Nitrate, Nitrite and Ammonia as Nitrogen(N)	B-16	-do-	R	-do-	-do-	
4.3.2.2	Antimony	B-17	-do-	R	-do-	-do-	Requirement applicable on battery grade and on agreement between purchaser and supplier
-do-	Platinum	B-18	-do-	R	-do-	-do-	