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उत्पाद मैन्युअल

उपोत्पाद जिप्सम, कृषि ग्रेड — विशिष्टि

IS 10170: 2025 के अनुसार

PRODUCT MANUAL

Byproduct Gypsum, Agricultural Grade — Specification

ACCORDING TO IS 10170: 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 10170: 2025
	शीर्षक **Title**	:	Byproduct Gypsum, Agricultural Grade — Specification
	संशोधनों की संख्या **No. of amendments**	:	NIL
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	No specific requirements. 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**	:	NA
c)	**नमूने का परिमाण** **Sample Quantity**	:	1 Kg 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–A

4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	Please refer ANNEX–B
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**		
	All tests are possible to 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:**		
	Licence is granted to use Standard Mark as per IS 10170: 2025 with the following scope:		
	Name of the product	:	**Byproduct Gypsum, Agricultural Grade**

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN,9, BAHADUR SHAH ZAFAR MARG,
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ANNEX A

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	**Fineness, Clause 3.1**	– 2 mm sieve – 0.25 mm (60 mesh) sieve – Digital Weighing balance – Isopropyl alcohol – Oven – Mechanical shaker – Brush Glazed paper
2.	**Calcium sulphate dehydrate content, Cl 3.2 (Table 1 Sl. No. i)**	**For Calcium** – Ammonium acetate-Acetic acid buffer – Ammonium chloride – Ammonium hydroxide – Ammonium oxalate (pure) – Bromophenol blue indicator – Hydrochloric acid (conc.) – Nitric acid (conc.) – Ammonium hydroxide (dil.) – Hydrochloric acid (dil.) – Potassium permanganate sol. (dil.) – Sulphuric acid (dil.) – Methyl red indicator Standard Potassium permanganate sol. 1.0 mm sieve – Oven Desiccator – Weighing balance – Hot plate – Thermometer – Porcelain dish – Petri dish – Filter paper – Conical flask – Beaker Burette – Pipette **For Sulphate** – Barium chloride – Nitric acid (conc.) – Sulphuric acid (conc.) – Hydrochloric acid (dil.) – Weighing balance – Hot plate – Water bath – Muffle furnace (capable of maintaining temp of 700°C) Desiccator – Filter paper (Whatman No.42)

3.	**Sodium content, Cl 3.2 (Table 1 Sl. No. ii)**	**Gravimetric method** – Ammonium carbonate – Ammonium hydroxide – Barium chloride – Conc. Hydrochloric acid – Ethanol – Magnesium uranyl acetate – Hot plate – Thermometer – Perchloric acid – Ethanol – potassium perchlorate – Weighing balance – Filter paper – Porcelain dish – Glass pestle – Sintered glass crucible – Oven – Desiccator **Flame Photometer method** – Flame photometer – Nitric acid – Deionized distilled water – Sodium chloride (AR grade) – Oven – Desiccator – 5 No of 100 ml Flask – 250 ml Flask
4.	**Fluorine content, Cl 3.2 (Table 1 Sl. No. iii)**	– Sulphuric Acid – Sodium Hydroxide – Perchloric Acid – Silver Perchlorate – p-Nitrophenol indicator – Eriochrome Cyanin-R – Zirconyl Chloride Octahydrate – Concentrated Hydrochloric Acid – Distilled water – Double distilled water – 50 ml volumetric flask – Pipette – Spectrophotometer (covering 525-530 nm range) – Weighing Balance – Distillation Apparatus – Thermometer (0-200 °C) – Steam Generator (2 ltr capacity) – Steam condensation trap (60 ml capacity) – Electric heating mantle – Mortar and pestle – 200 mm mesh sieve – Measuring cylinder flask 50 ml, 20 ml – 500 ml calibrated beaker

		– Hot plate – 500 ml volumetric flask
5.	Moisture content, **Cl 3.2 (Table 1 Sl. No. iv)**	– Sieve with 1 mm circular opening – Stoppered bottles – Weighing balance – Tared glass weighing dish – Vacuum oven or Oven – Desiccator
6.	Sulphur, **Cl 3.2 (Table 1 Sl. No. v)**	**Gravimetric Method:** – Barium chloride – Bromine – Carbon tetrachloride (Reagent Grade) – Whatman filter paper No. 42 – Beaker-250ml – Concentrated nitric acid – Hot plate/Water bath. – Concentrated hydrochloric acid – Hot water – Kjeldahl flask – 70 to 72 percent perchloric acid – Carbon disulphide – Gooch crucible – 1% silver nitrate solution – Furnace – Desiccator **Turbidity Method:** – Sodium chloride – Hydrochloric acid – Glycerol-alcohol Solution – Dry (Analytical Reagent Grade) potassium sulphate – Distilled water – (Analytical Reagent Grade) sodium chloride – Concentrated hydrochloric acid – Barium chloride - Use crystals of (Analytical Reagent Grade) barium chloride that pass through a 20-mesh sieve and are retained by a 30-mesh sieve – Pure glycerol – Absolute ethanol – Burette – 100 ml volumetric flasks – Stoppers – EEL nephelometer – Galvanometer – Whatman No. 40 filter paper – Silica basin – Silica clock glass – Cool silica-lined muffle furnace – Water-bath – Hot-plate – Nitric Acid

7.	Lead, **Cl 3.2 (Table 1 Sl. No. vi)**	**Method A - Colorimetric method using dithizone** – Lead nitrate – Concentrated nitric acid – Volumetric flask – Ammonium hydroxide – Triammonium citrate or citric acid – Hydroxylamine hydrochloride – Dithizone – Chloroform – Carbon tetrachloride – Filter paper – Thymol blue indicator solution – Nessler cylinders (50 ml capacity) – Distilled water – Sulphuric acid – Hydrogen sulphide gas or sodium sulphide solution **Method 2 - Spectrophotometric method** – Standard lead solution – Nitric acid solution (1 percent) – Zinc sulphate solution (20 percent) – Spectrophotometer –
8.	Cadimum, **Cl 3.2 (Table 1 Sl. No. vii)**	– Pure cadmium metal – 250 ml beaker – Concentrated nitric acid – One litre flask – Distilled water – sulphuric acid or sodium hydroxide solution – Atomic absorption spectrophotometer – Air Acetylene flame
9.	Chromium, **Cl 3.2 (Table 1 Sl. No. viii)**	– Distilled water – Calcium oxide – Concentrated hydrochloric acid – Orthophosphoric acid- 60 percent – Sulphuric acid – Potatsium permanganate solution - 1 percent – Sodium hydroxide solution - 15 percent – Sodium azide solution - 5 percent – Dilute sulphuric acid - 1: 20 – Diphenylcarbaeide solution – Standard chromium solution – Furnace – Calibrated flask – Water bath – Litmus paper – Filter paper – Spectrophotometer (capable of working at wavelength of 540 nm)/absorption meter having a suitable green filter

10	Nickel, **Cl 3.2 (Table 1 Sl. No. ix)**	– Sodium citrate solution - 25 percent. – Sodium dimethyl gtyoxime solution - 0.2 percent (m/v) – Chloroform – Dilute hydrochloric acid – Bromine water – saturated – Standard Nickel solution – 250-ml separating funnel – 100-ml beaker – Bunsen burner – Spectrophotometer (capable of working at wavelength of 400 nm)/absorption meter having a suitable blue filter
11.	Arsenic, **Cl 3.2 (Table 1 Sl. No. x)**	– Concentrated Hydrochloric Acid — AR grade – 0.5 M HCl – Potassium Iodide Solution C (2.5%) – 10 % Stannous Chloride Solution – 0.75 Percent Stannous Chloride Solution – 6 Ethyl Alcohol (Absolute) — 95 % – Mercuric Chloride Solution – Filter Paper (Whatman No. 40) — nine cm diameter or comparable grade – Mercuric Chloride Paper – Lead Acetate Solution – Glass Wool – Zinc Pellets (Arsenic Free Zinc Pellets) — AR grade – Sodium Arsenate (Na2HAsO4.7H2O) – Distilled water – Volumetric flasks – Concentrated hydrochloric acid – Gutzeit bottle

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 theStandard 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 quantity of Byproduct Gypsum, agricultural grade produced using same raw material & under similar conditions of manufacturing in a day.

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 requirementsof 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 facilitiesor get testing done from BIS recognized/empaneled laboratory or any other laboratory having validNABL 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 each package or Metallic/Cardboard label of Byproduct Gypsum, agricultural grade, 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 material shall also be marked with the following additional requirement on each package or Metallic/Cardboard label of Byproduct Gypsum, agricultural grade.

a) "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**		
Cl.	**Requirement**	**Test Methods**			**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**				
3.1	Fineness	3.1	IS 1288	R	One	Every four hours	
3.2 (Table 1 Sl. No. i)	Calcium sulphate dihydrate content	Annex B	IS 6046	R	One	Each control unit	
3.2 (Table 1 Sl. No. ii)	Sodium content	--	IS 6046	R	One	Each control unit	
3.2 (Table 1 Sl. No. iii)	Fluorine content	Annex A	IS 10170	R	One	Each control unit	
3.2 (Table 1 Sl. No. iv)	Moisture content	Appendix B	IS 10170	R	One	Each control unit	
3.2 (Table 1 Sl. No. v)	Sulphur	--	IS 6092 (Part 5)	R	One	Each control unit	
3.2 (Table 1 Sl. No. vi)	Lead	--	IS 6092 (Part 5)	R	One	Each control unit	
3.2 (Table 1 Sl. No. vii)	Cadimum	Annex C	IS 10170	R	One	Each control unit	
3.2 (Table 1 Sl. No. viii)	Chromium	--	IS 6092 (Part 6)	R	One	Each control unit	
3.2 (Table 1 Sl. No. ix)	Nickel	--	IS 6092 (Part 6)	R	One	Each control unit	
3.2 (Table 1 Sl. No. x)	Arsenic	Annex D	IS 10170	R	One	Each control unit	