



उत्पाद मानुयल
UREA, TECHNICAL - SPECIFICATION
IS 1781:2022 के अनुसार

PRODUCT MANUAL FOR
UREA, TECHNICAL - SPECIFICATION
ACCORDING TO IS 1781:2022

भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम 2018 की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरणके प्रचलन में रीति और पारदर्शिता के सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग 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 license/certificate.

1	उत्पाद Product	:	IS 1781:2022
	शीर्षक Title	:	Urea, Technical - Specification
	संशोधन संख्या No. of Amendments	:	Nil
2	नमूनाकरण दिशा निर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	No specific requirements
b)	समूहिकरण दिशा निर्देश Grouping guidelines	:	Not applicable
c)	नमूने का परिमाण Sample Size	:	500 gms
3	परीक्षण उपकरणों की सूची List of Test Equipment	:	कृपया Annex-A देखें Please refer ANNEX-A
4	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	कृपया Annex-B देखें Please refer ANNEX-B
5	एक दिन में संभावित परीक्षण Possible tests in a day:	:	i) Pass through sieve (if the material is in the form of prills) ii) Moisture iii) Nitrogen (on dry basis) iv) Free ammonia (as NH ₃)

			v) Ammonium salts (as NH ₃) vi) Residue on ignition vii) pH of 10 percent solution viii) Melting point ix) Alkalinity value (<i>Optional Requirement</i>) x) Buffer value (<i>Optional Requirement</i>)
6	लाइसेंस का कार्यक्षेत्र / Scope of the Licence:		
	IS 1781:2022 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 1781:2022 with the following scope:		
	उत्पाद का नाम Name of the product	Urea, Technical	

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

ANNEX – A
LIST OF TEST EQUIPMENT
UREA, TECHNICAL - SPECIFICATION
ACCORDING TO IS 1781:2022

Major test equipment required to test as per the Indian Standard

Sl. No	Tests used in with Clause Reference	Test Equipment
1	Pass through sieve Cl. 3.2	IS sieve (4.00 mm and 0.85 mm)
2	Optional Requirements a) Alkalinity value b) Buffer value Cl. 3.4, Annex H	pH Meter (With glass and calomel electrode assembly), Buffer Solutions in the pH range 6 to 10, Standard Hydrochloric Acid, 600 ml beaker, mechanical or magnetic stirrer
3	Moisture Cl. 3.3 and 6.2, Table 1, Annex A	Methanol, 2-Methoxyethanol (Ethylene Glycol Monomethyl Ether), Iodine, Pyridine, Sulphur Dioxide, Karl Fischer Reagent, coloured brown or painted black on the outside bottle fitted with a ground-glass stopper, Sodium Tartarate, Crystalline (Na ₂ C ₂ H ₃ O ₆ ·2H ₂ O), Aluminium Sodium Silicate/Activated Silica Gel, Silicone Base Grease, Karl Fischer apparatus, Analytical Balance readable to the nearest 0.1 mg, platinum electrodes
4	Nitrogen (on dry basis) Cl. 3.3 and 6.2, Table 1, Annex B	Potassium Sulphate-Copper Sulphate Mixture, Concentrated Sulphuric Acid, Standard Sulphuric Acid, Methyl Red-Methylene Blue Mixed Indicator, Sodium Hydroxide Solution, kjeldahl flask, mixed indicator, pumice stone, dropping funnel, sodium hydroxide solution
5	Biuret Cl. 3.3 and 6.2, Table 1, Annex C	Spectrophotometer or Photoelectric Colorimeter with 40 mm to 100 mm cell, Alkaline Rochelle Salt Solution, copper sulphate pentahydrate (CuSO ₄ ·5H ₂ O), biuret, sulphuric acid or sodium hydroxide, indicator paper, aluminum sulphate, filter paper, water-bath
6	Free ammonia (as NH ₃) Cl. 3.3 and 6.2, Table 1, Annex D	Standard Hydrochloric Acid, Methyl Red Indicator, rectified spirit, methyl red indicator
7	Ammonium salts (as NH ₃) Cl. 3.3 and 6.2, Table 1, Annex E	Standard Sodium Hydroxide Solution, Formaldehyde Solution, Phenolphthalein Indicator, rectified spirit
8	Residue on ignition Cl. 3.3 and 6.2, Table 1, Annex F	flat-bottomed platinum or silica dish, desiccator, electric furnace
9	Iron (as Fe) Cl. 3.3 and 6.2, Table 1, Annex G	<u>Method using 2,2'-BIPYRIDYL</u> Spectrophotometer (with 1 cm cells) OR Nessler cylinders, Dilute hydrochloric acid, ammonium ferrous sulphate hexahydrate, hydroxylammonium chloride, ammonium acetate, 2, 2'-Bipyridyl solution, Potassium hydrogen sulphate, anhydrous OR

		<u>Method using 1, 10- PHENANTHROLINE</u> volumetric flasks, UV-Vis spectrophotometer, Glass cell of 50 mm path length (2 Nos.), Standard micro burette 10 ml capacity, Hydrochloric Acid, Hydroquinone solution, Sodium citrate solution, 1, 10-Phenanthroline, ammonium ferrous sulphate [(NH ₄) ₂ Fe(SO ₄) ₂ ·6H ₂ O]
10	pH of 10 percent solution Cl. 3.3 and 6.2, Table 1, Annex H	pH Meter (With glass and calomel electrode assembly), Buffer Solutions in the pH range 6 to 10, Standard Hydrochloric Acid, 600 ml beaker, mechanical or magnetic stirrer
11	Melting point Cl. 3.3 and 6.2, Table 1	Heating Bath, Electrically Operated Melting Point Apparatus, Capillary Tubes, Thermometer (LC= 0.1 °C), Magnifying Glass, porcelain mortar

This is an indicative list and may not be taken as being exhaustive

ANNEX B
SCHEME OF INSPECTION AND TESTING
UREA, TECHNICAL - SPECIFICATION
ACCORDING TO IS 1781:2022

- 1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.
 - 1.1** The manufacturer shall prepare and implement a calibration plan for the test equipments.
- 2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.
- 3. PACKING AND MARKING** – The Standard Mark, as given in the Schedule of the licence, shall be printed on the air-tight resealable container or the label applied to it, provided always that the product so marked conform to requirements of the specification.
 - 3.1 Packing** – The material shall be packed as per provisions of Clause 4.1. of IS 1781:2022.
 - 3.2 Marking** - The information as mentioned under clause 4.2 of IS 1781:2022, shall be legibly and indelibly marked on each container. In addition, the following shall be incorporated on each container:
 - (i) BIS Licence No. CM/L --.
 - (ii) BIS website details i.e. — ”For details of BIS certification please visit www.bis.gov.in”.
- 4. CONTROL UNIT** – For the purpose of this scheme, all the material manufactured in a day shall constitute a control unit
- 5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.
 - 5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.
- 6. REJECTIONS** – 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)
(Para 5 of Scheme of Inspection and Testing)

(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	IS				
3.1	Description	3.1	1781:2022	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
3.2	Pass through sieve <i>(if the material is in the form of prills)</i>	3.2	1781:2022	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
3.4	Optional Requirements a) Alkalinity value b) Buffer value	Annex H	1781:2022	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
3.3 and 6.2, Table 1	Moisture	Annex A	1781:2022	R	One	Each control unit	
3.3 and 6.2, Table 1	Nitrogen (on dry basis)	Annex B	1781:2022	R	One	Each control unit	
3.3 and 6.2, Table 1	Biuret	Annex C	1781:2022	S	One	Once in a month	
3.3 and 6.2, Table 1	Free ammonia (as NH ₃)	Annex D	1781:2022	R	One	Each control unit	

3.3 and 6.2, Table 1	Ammonium salts (as NH ₃)	Annex E	1781:2022	R	One	Each control unit	
3.3 and 6.2, Table 1	Residue on ignition	Annex F	1781:2022	R	One	Each control unit	
3.3 and 6.2, Table 1	Iron (as Fe)	Annex G	1781:2022	S	One	Once in a month	
3.3 and 6.2, Table 1	pH of 10 percent solution	Annex H	1781:2022	R	One	Each control unit	
3.3 and 6.2, Table 1	Melting point	---	IS 5762	R	One	Each control unit	

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for the approval by BO Head.