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उत्पाद मैनुअल

ACETONE – SPECIFICATION

IS 170: 2020 के अनुसार

PRODUCT MANUAL
FOR ACETONE – SPECIFICATION
ACCORDINGTO IS 170:2020

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.	**उत्पाद** **Product**	:	IS 170 : 2020
	शीर्षक **Title**	:	Acetone
	संशोधन संख्या **No. of Amendments**	:	04
2.	**नमुनाकरण दिशा निर्देश** **Sampling Guidelines:**		
a)	**कच्चा माल** Raw material	:	No specific requirement
b)	**समूहिकरण दिशा निर्देश** Grouping guidelines	:	Not Applicable
c)	**नमूने का परिमाण** Sample Size	:	500 ml

3.	**परीक्षण उपकरणो की सूची** **List of Test Equipment**	:	कृ पया Annex- A देखें Please see Annex – A

4.	**निरीक्षण व परीक्षण स्कीम** **Scheme of Inspection and Testing**	:	कृ पया Annex-B देखें Please see Annex – B
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day :**		
	All the tests mentioned in the IS are possible to be carried out in a day		
6.	**लाइसेन्स का कार्यक्षेत्र / Scope of the Licence**:		
	IS 170:2020 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है "Licence is granted to use Standard Mark as per IS 170:2020 with the following scope:		
	उत्पाद का नाम Name of the product		**एसीटोन** Acetone

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

ANNEX – A

LIST OF TEST EQUIPMENT

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test equipment
1	Miscibility clause 3.2	Provision for maintaining temperature of 27 degree centigrade
2	PURITY Clause 3.3,Table 1, Sl.No. i	Any gas liquid chromatograph equipped with on-column injector and flame ionization detector (FID) with other accessories, reagents, calibration standards and materials as per Annex A (IS 170 : 2020)
3	colour, Pt – Co scale Clause 3.3,Table 1, Sl.No. ii	**APPARATUS** Colour Comparison Tubes, as per cl. 6.1 of ISS Colour Comparator, as per cl. 6.2 of ISS Spectrophotometer equipped for liquid samples and for measurements in the visible region Spectrophotometer Cells matched cells having 10 mm light path REAGENTS Cobalt Chloride Hexahydrate, Hydrochloric Acid Chloroplatinic Acid or Potassium Chloroplatinate
4	Relative Density, at 27/27°C Clause 3.3, Table 1, Sl. No. iii	**APPARATUS** Any one of the following may be used Standard hydrometer Hydrometer Jar, the jar shall be at least 2.5 cm greater than the diameter of the hydrometer to be used therein Relative density bottle or pyknometer of 25 ml capacity. Weighing balance Thermometer Note : Auto Density meter may also be used for determining relative density.
5	Distillation Range Clause 3.3,Table 1, Sl.No. iv	**APPARATUS** As per assembly of apparatus specified in ISS Distillation Flasks Condenser and Cooling Bath Metal Shield or Enclosure for Flask: Heat Source: Gas burner Electric Heater Flask Support: Graduated Cylinder: 100-ml graduated cylinder with 1 ml subdivisions Thermometers as per Annex B

6	Water Content Clause 3.3,Table 1, Sl.No. v	**KARL FISCHER TITRATION METHOD** **APPARATUS** (Any commercial Karl Fischer titrator with electrometric end point detection) Automatic Burette 10 to 25 ml capacity with a fine pointed tip and graduations of 0.05 Titration Vessel : 100 ml capacity Electrode : Double platinum Magnetic stirrer with PTFE coated stirring bar. Electrometric end point detection device utilizing a micrometer Glass syringe; Suitable capacity. Aluminum Sodium Silicate/Activated Silica Gel Silicone Base Grease **REAGENTS** Methanol 2-Methoxyetbanol (Ethylene Glycol Monomethyl Ether) Iodine Pyridine Karl Fischer Reagent Sodium Tartarate Crystalline **COULOMETRIC KARL FISCHER TITRATION METHOD** **APPARATUS** Automatic coulometric Karl Fischer titrator, as prescribed in ISS Non-aerating mixer Syringes Balance Volumetric Flask Sealable bottles or desiccators, Oven Cooling bath Thermometer **REAGENTS** Molecular sieve pellets, type 4A. Xylene, KARL FISCHER Reagents Sodium dioctylsulfosuccinate Water, conforming to grade 3 of ISO 3696 **Potentiometric Karl Fischer Titration Method** **APPARATUS** Karl Fischer titrator, using potentiometric end-point Non-aerating mixer Syringes Balance Volumetric Flask Sealable bottles or desiccators, Oven Cooling bath

		Thermometer **REAGENTS** Molecular sieve pellets, type 4A. Xylene, KARL FISCHER Reagents Sodium dioctylsulfosuccinate Water, conforming to grade 3 of ISO 3696 Methanol N-ethyl piperidine Titration solvent
7	RESIDUE ON EVAPORATION Clause 3.3, Table 1, Sl.No. vi	**APPARATUS** Glass or silica crucible of 150 ml capacity/Porcelain dish Water -bath. Oven with controlled heating. Measuring cylinder 100 ml capacity, Desiccators Weighing balance
8	**ACIDITY (as CH_3COOH)** Clause 3.3, Table 1, Sl.No. vii	Burette Phenolphthalein Indicator Standard Sodium Hydroxide Solution – 0.01N Ethyl alcohol
9	**ALKALINITY,** Clause 3.3,Table 1, Sl.No. viii	Burette Hydrochloric Acid – approximately 0.02N Sodium Hydroxide Solution Bromothymol Blue Indicator Solution(see IS 2263)
10	**PERMANGANATE TEST** Clause 3.3, Table 1, Sl.No. ix	**Apparatus** Two Matched Cylinders- capacity 100 ml graduated at 50 ml Constant Temperature Bath-– Capable of maintaining a temperature of 25±0.2^{0}C Pipette – Capable of delivering 2.0 ml solution Interval Timer or Clock- Capable of measuring a time interval of 120 min or more 50 ml volumetric flask **Reagents** Potassium permanganate solution (0.2 g/l) Cobaltous chloride (CoCl2.6H2O) 500 Pt-Co standard solution

11	**ALCOHOLIC** Clause 3.3,Table 1, Sl.No.x	**As per Annex –A** Any gas liquid chromatograph equipped with on- column injector and flame ionization detector (FID) with other accessories, calibration standards reagents and materials as per Annex A (IS170 : 2020) **As per Annex F** Agulhon's Reagent ,test tubes, provision for maintaining temperature of 27^0c
12	**BENZENE CONTENT** Clause 3.3, Table 1, Sl.No. xi	Any gas liquid chromatograph equipped with on-column injector and flame ionization detector (FID) with other accessories, reagents and materials as per Annex A (IS 170 : 2020)
13	**METHANOL CONTENT** Clause 3.3,Table 1, Sl.No. xii	Any gas liquid chromatograph equipped with on-column injector and flame ionization detector (FID) with other accessories, reagents and materials as per Annex A (IS 170 : 2020)

ANNEX B

SCHEME OF INSPECTION AND TESTING

For the purpose of this scheme, there shall be two types of units

a) Manufacturing units:
Manufacturing units are those units which produce the Acetone.

b) Repacking units:
Repacking units are those units which procure ISI Marked Acetone material as per IS 170 from a manufacturing unit holding a valid BIS licence for this product, repack it and dispatch it to the customer(s).

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturing units 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 manufacturing units 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. They 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 manufacturing units, the recommended definition of control unit is the entire quantity of material produced in a continuous run in one day shall constitute a control unit.

1.3.2 For the guidance of manufacturing units 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 manufacturing units shall ensure compliance of their products to all the requirementsof the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturing units (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In housetesting 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 manufacturing units, Table 1 giving the recommended levels of control is givenbelow. 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 manufacturing units, 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 valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale** manufacturing units **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 testsgiven 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 manufacturing units can also utilize theprovisions 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.

2.4TEST RECORDS- The manufacturing units 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 laboratoryor 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 container of Acetone 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.

3.2 If material is supplied in tank cars, tank trucks, container ships etc. the Standard Mark as given in Schedule of the licence and Licence Number (i.e. CM/L) shall be incorporated on a test certificate to be provided along with each tank car/tank truck/container ship as per the format at Appendix-1 enclosed, provided always that the product thus marked conforms to all the requirement of the specification. Packing shall be done as per provisions of Indian Standard and the marking details as per Cl 4.2 of IS 170 : 2020 shall also be indicated on the test certificate.

3.3 Each container shall also be marked with the minimum cautionary notice worded as

'FLAMMABLE'.

It shall also bear the corresponding symbol for labeling of dangerous goods [see Fig. 5 of IS 1260 (Part 1)]

3.4 Repacking units shall mark the following on each container/package in place of "Manufacturer's name" as per 4.2.1 (b) of the Marking requirements given in the Indian Standard

i) Manufactured by: Name, trade mark (if any) and BIS Licence Number CM/L—of the manufacturing unit
ii) Packaged by: Own Name, trade mark (if any) and BIS licence number (i.e. of therepackaging unit)

3.5 The repacker shall also maintain records of the repacked material, as per the format given in Table 2.

3.6 **Additional Marking requirements**: The material shall also be marked with the following additional requirement on each bag and/or unit package:

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 (Levels of Control)

(1)				(2)	(3)		
Test Details				**Test equipment requirement R: required (or)S: Sub-contracting permitted**	**Levels of Control**		
Cl.	**Requirement**	**Test Method Cl. Ref.**	**Test Method IS**		**No. of Sample**	**Frequency**	**Remarks**
3.1	Description	3.1	IS 170	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
3.2	Miscibility with water	3.2	IS 170	R	One	Each Control Unit	
3.3 Table 1	i)Purity percent by mass	Annex A	IS 170	R	One	-do-	
	ii) Colour, Pt-Co scale		IS 8678	R	One	-do-	
	iii) Relative density, at 27/27°C	6	IS 82 or Auto density meter	R	One	-do-	
	iv) Distillation range	Annex B [P:18] of IS 1448	[P:18] of IS 1448 with the thermometer containing to the requirements given to Annex B of this standard	S	One	Once a month	
	v) Water content, percent by mass		IS 2362 or [P:175] of IS 1448 [P:182] of IS 1448	R	One	Each control unit	

	vi) Residue on evaporation	8	IS 82	S	One	Once a month	
	vii) Acidity (as CH3COOH), g/100 ml	Annex C	IS 170	R	One	Each control unit	
	viii) Alkalinity	Annex D	IS 170	R	One	-do-	
	ix) Permanganate test	Annex E	IS 170	R	One	Each control unit	
	x)Total Alcoholic impurities	Annex A/ Annex F	IS 170	R	One	-do-	
	xi) Benzene Content	Annex A	IS 170	R	One	-do-	
	xii) Methanol Content	Annex A	IS 170	R	One	-do-	

APPENDIX-1

XYZ COMPANY (REGISTERED OFFICE ADDRESS AND WORKS ADDRESS)

TEST CERTIFICATE NO._____DATED

SUPPLIED TO M/s_____ (Name and Address of Consignee)

It is certified that the material described below fully conforms to IS 170 : 2020.
The properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks License No. CM/L_____are as indicated below against each order no. etc.

TEST RESULT

Order No. and date	Name of the material	Test	Requirement	Observed value	ControlUnit/ Batch Number	Month and Year of manufacture	Quantity	Remarks
		Description						
		Miscibility with water						
		Purity percent by mass						
		Colour, Pt-Co scale						
		Relative density, at 27/27 °C						
		Distillation range						
		Water content, percent by mass						
		Residue on evaporation						
		Acidity (as CH3COOH),g/100ml						
		Alkalinity						
		Permanganate test						
		Total Alcoholic impurities						
		Benzene Content						
		Methanol Content						

Remarks: The material supplied conforms to requirement of IS 170:2020
Tank Car/Tank Truck/Container Ship No.

Signature (XYZ Comapany)

TABLE 2
RECORD OF REPACKING OF ACETONE

Sl. No.	Name of the manufacturer	Particulars of test reports received with C.U/Batch no.	Date of manufacture	Quantity received	Date of receipt	Date of repacking	Batch No.	Details of repacking		Total quantity repacked	Details of dispatch
								Size of Packing	No.		
1	2	3	4	5	6	7	8	9	10	11	12