



उत्पाद मैनुअल
Methylene Chloride (Dichloromethane),
IS 4566:2020 के अनुसार

PRODUCT MANUAL
For Methylene Chloride (Dichloromethane),
ACCORDING TO IS 4566:2020

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.	मानक संख्या IS No.	:	IS 4566:2020
	शीर्षक Title	:	Specification For Methylene Chloride (Dichloromethane),
	संशोधनों की संख्या No. of amendments	:	2
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Each grade to be tested.
c)	नमूने का परिमाण Sample Quantity	:	1 litre
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	:	i) Name of the product ii) Grade: Pure/Technical iii) Optional Requirement: 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 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 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 4566:2020 with the following scope:		
	Name of the product	Methylene Chloride(Dichloromethane)- Technical	
	Variety	Grade 1(pure) /Grade 2(Technical)..	
	Optional requirements	With or Without Distillation Range at a pressure of 1 bar for Grade 1(pure)	

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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.	Description(CI 4.1)	Ethyl alcohol, Ethyl ether.
2	Relative Density at 27°C(CI 4.2 and SI.No 1 of Table1)	Specific Gravity Bottle or Pyknometer, Water bath, Thermometer, Weighing Balance of 0.1mg, Water bath, Distilled water.
3	Distillation range at a pressure of 1 bar(optional for grade 1)(CI 4.2 & SI.No 2 of Table1)	Distillation flask, Thermometer, Rectangular draught screen, Liebig condenser, Receiver or graduated cylinder Water bath, Half second pendulum, Heating mantle, Barometer.
4	Residue on evaporation(CI 4.2 & SI.No 3 of Table1)	Porcelain basin of 150ml capacity, Water bath,Oven,Desiccator,Weighing balance.
5	Moisture content (CI. 4.2 & SI.No 4 of Table1)	Methanol,2-Methoxyethanol, Iodine,Pyridine,Sulphur Dioxide or Any commercially available Karl Fischer reagent, Oven, Desiccator, Automatic burrette, Titration vessel, Reagent bottle, Double platinum electrode, Magnetic stirrer with PTFE coating, Electrometric end point detection device, Glass syringe, Glass tube.
6	Acidity as HCl(CI. 4.2 & SI.No 5 of Table1)	Bromothymol blue, methyl alcohol, Std sodium hydroxide solution, Titration apparatus
7	Free chlorine – (CI. 4.2 & SI.No 6 ofTable1)	Graduated measuring cylinder- 50ml,Weighing balance,3,3 dimethyl naphthidine, Glacial acetic acid.
8	Aldehydes – (CI. 4.2 & SI.No 7 ofTable1)	Weighing balance, Silver nitrate, Ammonium hydroxide,
9	Iron(as Fe)(CI. 4.2 & SI.No 8 of Table1)	Nessler cylinder 100 ml capacity, Conc HCL, Ammonium persulphate, Conc H ₂ SO ₄ ,Ferrous ammonium sulphate, Ammonium thiocyanate
10	Heavy metals(as lead)(CI. 4.2 & SI.No 9 of Table1)	Nesslers cylinder 100ml capacity, Hydrogen sulphide water. Alternate test method:ICP OES Method Ultra pure water, Supra pure nitric acid,50ml volumetric flask, Micro pipette (10 to 50µl & 100 to 1000 µl, Micro tips, Porcelain basin, water bath, oven, Lead reference material, Fume hood.ICP OES with plasma glass flow:15.00 (1/min),auxiliary gas flow(1/min),nebulizer gas flow(1/min),RF power(w):1450,Plasma view: Axial, Peristaltic pump flow rate:1.5 ml/min,Calibration:linear, Spray chamber: cyclonic, Nebulizer:Meinhard concentric, Injector ID(mm):2.0(alumina),Quartz torch:1-slot. Note: For other instrument, follow the procedure as prescribed in respective instrument operation and instruction manual.

11	Test for resistance to potassium permanganate(Cl. 4.2 & Sl.No 10 of Table1)	Potassium permanganate solution, Stoppered measuring cylinder, Icebath.
12	Nessler's reagent test (Cl. 4.2 & Sl.No 11 of Table1)	Nessler's reagent, Stoppered measuring cylinder.
13	Test for resistance to sulphuric acid (Cl. 4.2 & Sl. No 12 of Table1)	Conc sulphuric acid, Stoppered measuring cylinder.
14	Determination of Total impurities due to methyl chloride & chloroform.(Cl. 4.2 & Sl.No 13 of Table1)	Gas chromatograph with FID Detector, Material: Fused silica (DB 624) Length:60m Internal diameter:0.25mm approx. Film thickness: 1.4µm Stationary phase: cyanopropyl phenyl 94% dimethyl polysiloxane, Microliter syringe (25µl capacity),recorder, acetone The operating parameters of the gas chromatograph nitrogen as carrier gas shall be as follows: With Nitrogen as a carrier gas a) Detector block temperature, °C 250 o C b) Injection port temperature, °C 230 o C c) Column oven temperature, °C 50o C d) Bridge current NA e) Carrier gas pressure, bars 2.1 f) Carrier gas flow rate, m1/min 1.9 g) Sample size, microlitre 1 h) Make up (N2) flow m1/min 25 j) Hydrogen flow rate, m1/min 30 k) Zero air flow rate, m1/min 300 m) Septum purge Flow rate, m1/min 3 n) Oven Programming 50°C hold 4 min., increase temp. at 5°C/min. Note: Any GC method having difference in detector, column packing material and type (like packed/capillary, diameter, length, film thickness etc), calibration technique(internal std, external std, area normalization, percent area etc), carrier gas(He,H2,N2) may be used with applicable GC operating parameters, provided standardization & calibration of the components is established after setting GC parameters for the resolution & accuracy level as specified in the standard
15	Purity(Cl. 4.2 & Sl.No 14 of Table1)	As indicated in Sl.No 14

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, two types of units producing dichloromethane are envisaged. Manufacturing units are those units which manufacture and dispatch dichloromethane and repacking units are those which procure ISI marked dichloromethane from a dichloromethane manufacturing unit holding valid BIS licence, repack it and dispatch it under their own mark. The following definitions of control unit shall apply for these units:

- a) **Manufacturing Unit** - For the purpose of this scheme, the entire quantity of the material of the same grade produced in a continuous run in one day shall constitute a control unit.
- b) **Repacking Unit** – The entire quantity of material of the same grade repacked in one day from a single batch of ISI Marked dichloromethane received shall constitute one unit.

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 each container 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. In addition, BIS Licence Number CM/L- ..., and details of BIS website shall be marked on the product as follows:
—For details of BIS certification please visit www.bis.gov.in

3.2 The containers shall be suitably marked with letter “TOXIC”. The label shall also bear the following clear and legible instruction:

‘STORE IN A COOL, WELL VENTILATED PLACE AWAY FROM FIRE AND FLAMES USE WITH ADEQUATE VENTILATION. AVOID PROLONGED BREATHING OF VAPOURS’

3.3 Repacking units shall mark the following on each container in place of “Name of the Manufacturer” as per 5.2.2 of the Marking requirements given in the Indian Standard

3.3.1 Name of the original manufacturing unit along with BIS licence number

3.3.2 Name of the repackaging unit and their recognized trademark if any

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

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 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 4566:2020	R	Firm to have adequate in-process controls to ensure compliance to this parameter of the Indian Standard and appropriate records shall be maintained for evidence of conformity		
4.2 & Table 1	Requirements						
(i)	Relative Density	4.2 and Table 1	A 2 of IS 4566:2020	R	01	Each control unit	--
(ii)	Distillation range at a pressure of 1 bar	4.2 and Table 1	A 3 of IS 4566:2020	R	01	-do-	(optional for grade 1)
(iii)	Residue on evaporation	4.2 and Table 1	A 4 of IS 4566:2020	R	01	-do-	---
(iv)	Moisture content	4.2 and Table 1	A 5 of IS 4566:2020	R	01	-do-	---
(v)	Acidity as HCL	4.2 and Table 1	A 6 of IS 4566:2020	R	01	-do-	---
(vi)	Free chlorine	4.2 and Table 1	A 7 of IS 4566:2020	R	01	-do-	---
(vii)	Aldehydes	4.2 and Table 1	A 8 of IS 4566:2020	R	01	-do-	---

(viii)	Iron	4.2 and Table 1	A 9 of IS 4566:2020	R	01	-do-	---
(ix)	Heavy metals	4.2 and Table 1	A 10 of IS 4566:2020	R	01	-do-	---
(x)	Test for resistance to Potassium permanganate	4.2 and Table 1	A 11 of IS 4566:2020	R	01	-do-	---
(xi)	Nessler's reagent test	4.2 and Table 1	A12 of IS 4566:2020	R	01	-do-	---
(xii)	Test for resistance to sulphuric acid	4.2 and Table 1	A 13 of IS 4566:2020	R	01	-do-	---
(xiii)	Test for resistance to sulphuric acid	4.2 and Table 1	A 14 of IS 4566:2020	R	01	-do-	---
(xiv)	Determination of Total impurities due to methyl chloride & chloroform	4.2 and Table 1	A 15 of IS 4566:2020	S	01	Once in a month	---
(xv)	Purity	4.2 and Table 1	A 16 of IS 4566:2020	S	01	-do-	---

TABLE 2
RECORD OF REPACKING OF DICHLOROMETHANE

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