

**PRODUCT MANUAL FOR
Methylene Chloride (Dichloromethane)-Technical
According to IS 4566:2020**

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 licence/certificate.

1.	Product	:	IS 4566:2020
	Title	:	Methylene Chloride(Dichloromethane)-Technical
	No. of amendments	:	0
2.	Sampling Guidelines		None
a)	Raw material	:	Not Applicable
b)	Grouping Guidelines	:	None
c)	Sample Size	:	1 Litre
3.	List of Test Equipment	:	Please refer Annex - A
4.	Scheme of Inspection and Testing	:	Please refer Annex –B
5.	Possible tests in a day	:	All tests as per IS 4566:2020
6.	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)	

ANNEX – A

List of Test Equipment

Major test equipment required to test as per requirements of Indian Standard.

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 Pycnometer, 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 (Cl. 4.2 & SI.No 4 of Table1)	Methanol, 2-Methoxyethanol, Iodine, Pyridine, Sulphur Dioxide or Any commercially available Karl Fischer reagent, Oven, Desiccator, Automatic burette, 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 – (Cl. 4.2 & SI.No 6 of Table1)	Graduated measuring cylinder- 50ml, Weighing balance, 3,3 dimethyl naphthidine, Glacial acetic acid.
8	Aldehydes – (Cl. 4.2 & SI.No 7 of Table1)	Weighing balance, Silver nitrate, Ammonium hydroxide,
9	Iron(as Fe)(Cl. 4.2 & SI.No 8 of Table1)	Nessler cylinder 100 ml capacity, Conc HCL, Ammonium persulphate, Conc H ₂ so ₄ , Ferrous ammonium sulphate.
10	Heavy metals(as lead)(Cl. 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 & SI.No 10 of Table1)	Potassium permanganate solution, Stopped measuring cylinder, Icebath.
12	Nessler's reagent test (Cl. 4.2 & SI.No 11 of Table1)	Nessler's reagent, Stopped measuring cylinder.
13	Test for resistance to sulphuric acid(Cl. 4.2 & SI.No 12 of Table1)	Conc sulphuric acid, Stopped measuring cylinder.
14	Determination of Total impurities due to methyl chloride & chloroform.(Cl. 4.2 & SI.No 13 of Table1)	<p>Gas chromatograph with 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.</p> <p>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</p>
15	Purity(Cl. 4.2 & SI.No 14 of Table1)	As indicated in SI.No 14

The above list is indicative only and may not be treated as exhaustive.

ANNEX – B

SCHEME OF INSPECTION AND TESTING

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 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. LABELLING AND MARKING – The Standard Mark as given in Schedule of the license and Licence Number (i.e. CM/L) shall be marked legibly and indelibly on each container, provided always that the product thus marked conforms to all the 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

4. CONTROL UNIT – The entire quantity of Methylene chloride (Dichloromethane)-technical of the same grade produced under similar conditions 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 2 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 license should be marked with Standard Mark.

5.2 The containers shall be suitably marked in red letters as POISONOUS and shall be labelled as shown in Fig. 5 of IS 1260 (Part 1): 1973. 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’

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. Any rejected material which is potentially resalable shall be deformed in such a manner that it cannot be used for any other purpose. A separate record shall be maintained giving information relating to all such rejections/defective/substandard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

TABLE 1
LEVELS OF CONTROL
SCHEME OF INSPECTION AND TESTING

(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	01	Each control unit	
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-	Not applicable for Grade 2 (Technical)
(viii)	Iron	4.2 and Table 1	A 9 of IS 4566:2020	R	01	-do-	Not applicable for Grade 2 (Technical)
(ix)	Heavy metals	4.2 and Table 1	A 10 of IS 4566:2020	R	01	-do-	Not applicable for Grade 2 (Technical)
(x)	Test for resistance to potassium	4.2 and Table 1	A 11 of IS 4566:2020	R	01	-do-	Not applicable for Grade 2 (Technical)

	permanganate						
(xi)	Nessler's reagent test	4.2 and Table 1	A12 of IS 4566:2020	R	01	-do-	Not applicable for Grade 2 (Technical)
(xii)	Test for resistance to sulphuric acid	4.2 and Table 1	A 13 of IS 4566:2020	R	01	-do-	Not applicable for Grade 2 (Technical)
(xiii)	Test for resistance to sulphuric acid	4.2 and Table 1	A 14 of IS 4566:2020	R	01	-do-	Not applicable for Grade 2 (Technical)
(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	Not applicable for Grade 2 (Technical)
(xv)	Purity	4.2 and Table 1	A 16 of IS 4566:2020	S	01	-do-	Not applicable for Grade 2 (Technical)

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 approval to BO head.