PRODUCT MANUAL FOR
Sodium Hypochlorite Solution Part 2 Water Treatment Use
According to IS 11673 (Part 2):2019

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 certificationlicence/certificate.

1.	**Product**	**:**	IS 11673(part2):2019
	Title	**:**	Sodium Hypochlorite Solution-Specification Part2 Water Treatment Use.
	No. of amendments	**:**	0
2.	**Sampling Guidelines**		None
a)	**Raw material**	**:**	Not Applicable
b)	**Grouping Guidelines**	**:**	None
c)	**Sample Size**	**:**	500ml X 2 No.s
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 except keeping quality as per IS 11673(part2):2019
6.	**Scope of the Licence :**		
	Licence is granted to use Standard Mark as per IS11673 (part2):2019 with the following scope:		
	Name of the product	Sodium Hypochlorite Solution-Specification Part2 Water Treatment Use.	
	Variety	Grade 1/Grade 2.	

Annex – A

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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(Cl 4.1)	Visual
2	Relative Density at 25˚c(Cl 4.3 and Sl.No 1 of Table1)	Capillary stoppered relative density bottle or Twaddell or Baume Hydrometer, Weighing Balance —Least Count 0.1 mg., Water Bath,chromic acid,sulphuric acid,Alcohol,Ether.
3	Available Chlorine(Cl 4.3 &Sl.No 2 of Table1)	Weighing balance with accuracy of 0.001g,Laboratory equipment, glassware and Reagents: Glacial Acetic Acid, Starch Indicator Solution, Potassium Iodide —Iodate-free, Standard Sodium Thiosulphate Solution (Hypo), distilled water
4	Total Chlorine(Cl 4.3 &Sl.No 3 of Table1)	Weighing balance with accuracy of 0.001g,Laboratory equipment, glassware and Reagents: Iron Indicator Solution, Concentrated Nitric Acid, Standard Sodium Chloride Solution, Standard Potassium Thiocyanate Solution, Standard Silver Nitrate Solution, Sodium Metabisulphite, Potassium Chromate, distilled water
5	Free Alkali (Cl. 4.3&Sl.No 4 of Table1)	Weighing balance with accuracy of 0.001g, Suction pump, Laboratory equipment, glassware and Reagents: Barium Chloride Solution, Standard Hydrochloric Acid, Hydrogen Peroxide Solution, Phenolphthalein Indicator Solution, Sodium Hydroxide Solution, distilled water
6	Free Sodium carbonate(Cl. 4.3&Sl.No 5 of Table1)	Weighing balance with accuracy of 0.001g, Laboratory equipment, glassware and Reagents: Standard Hydrochloric Acid, Dilute Hydrogen Peroxide Solution, Standard Sodium Hydroxide Solution, methyl red-bromocresol mixed indicator solution, distilled water
7	Iron – (Cl. 4.3 &Sl.No 6 of Table1)	Weighing balance with accuracy of 0.001g, Nessler cylinders (50 ml), Silica dish, Laboratory equipment, glassware and Reagents: Ammonium Persulphate, Butanolic Potassium Thiocyanate Solution, ferrous ammonium sulphate, sulphuric acid, potassium permanganate, distilled water
8	Sodium chlorate – (Cl. 4.3 &Sl.No 7 of Table1)	Apparatus as per Annex G of IS 11673 (Part 1), and Reagents: Concentrated Hydrochloric Acid, Sodium Bromide Solution, Potassium Iodide Solution, Standard Sodium Thiosulphate Solution, Starch Indicator Solution
9	Lead(Cl. 4.3 &Sl.No 8 of Table1)	Nesslers cylinder 100ml capacity, Lead nitrate, Acetic acid, Hydrogen sulphide gas apparatus, Analytical balance. **ICP -OES method:** Inductive coupled plasma optical emission Spectrophotometer, Argon gas supply, Radio frequency generator, Mass flow Controller, Nebulizer, Multi

		lement standard reference material, general lab ware like Auto Dispensing pipettes etc. **AAS Method**: IS 12074:1987 Atomic Absorption spectrophotometer with Lamp current, Air support, Acetylene gas supply, Flame stichiometry, Wavelength of working range, Pure lead metal(Lead CRM), Conc. HNO3,Conc.HCL
10	Arsenic(Cl. 4.3 &Sl.No 9 of Table1)	**Modified Gutzeit method**: Distillation setup, Modified Gutzeit Apparatus/Spectrophotometer, Analytical balance, Distilled water, Concentrated Hydrochloric acid, Hydra zinc Sulphate, Sodium Bromide, Lead Acetate, Filter paper strips, Absorbent Cotton Wool, Mercuric Bromide Paper, Dilute Sulphuric Acid, Potassium Iodide, Stannous Chloride, Zinc granules, Arsenic trioxide, Sodium hydroxide **Silver Diethylcarbamate Method:** Silver diethyl carbamate,Pyridine, rectified spirit,ether,Silvernitrate,ConcHCL,Potassiumiodide,Stannouschloride,Zincgranules, Apparatus for determination of arsenic, Spectrophotometer& Other necessary glass ware. **AAS Method:** Atomic absorption spectrophotometer(with lamp current-7mA,Support-Air,Fuel-Acetylene,Wave length) Conc HCL, Conc HNO3,Conc. H2So4,Potassium Iodide, Sodium Borohydride, Standard Arsenic Solution/CRM.
11	Mercury(Cl. 4.3 &Sl.No 10 of Table1)	Mercury Analyser Method: Mercury analyser, Analytical Balance, Conc. HCL, Stannous chloride, Hydroxyl amine hydrochloride, Mercuric chloride, Potassium dichromate, Potassium permanganate & Other necessary glassware.
12	Manganese (Cl. 4.3 &Sl.No 11 of Table1)	Weighing balance, Nesslers cylinder 100ml capacity, Dil HNO3,Dil Phosphoric acid, Potassium periodate, Conc H2So4,Manganese sulphate monohydrate, Hot plate/Heating mantel. **ICP-OES Method**: Inductive coupled plasma optical emission Spectrophotometer, Argon gas supply m Radio frequency generator, Mass flow controller, Nebulizer, Multielement standard reference material, general lab ware like Auto Dispensing pipettes etc **AAS Method**: IS 12046:1987 Atomic Absorption spectrophotometer with Lamp current, Air support, Acetylene gas supply, Flame stichiometry, Wavelength of working range, Manganese metal(CRM),

		Dil. HNO3,Dil.HCL, general lab ware like Auto Dispensing pipettes etc
13	Total Chromium(Cl. 4.3 &Sl.No 12 of Table1)	Calorimetric method: Sulphuricacid,Phosphoricacid,Diphenylcarbazide,Ethanol,Brominewater,Potassium Iodide solution(16%),Sodium hydroxide solution(30%),Neutral sodium sulphite solution, Potassium dichromate, Conc HCL, Aluminium metal, Weighing Balance, Spectrophotometer, Hot plate/Heating mantel. **ICP-OES Method**: Inductive coupled plasma optical emission Spectrophotometer, Argon gas supply Radio frequency generator, Mass flow Controller, Nebulizer, Multi element standard reference material, general lab ware like Auto Dispensing pipettes etc **AAS Method**: IS 13319:1992(Wet method) Atomic Absorption spectrophotometer with Lamp current, Air support, Acetylene gas supply, Flame stichiometry, Wavelength of working range, Metallic chromium(CRM) Conc. HNO3,Conc.HCL,Conc H2So4,DilHCL, ,Kjeldahl flask, general lab ware like Auto Dispensing pipettes etc
14	Cadmium(Cl. 4.3 &Sl.No 13 of Table1)	**AAS Method**: IS 3025(part41):1992 Atomic Absorption spectrophotometer withCadmium hollow-cathode lamp or multielement hollow-cathode lamp for use at 228.8 nm. Lamp current, Air support, Acetylene Flame, Flame ststichiometry, Wavelength of working range, Conc HCL, Conc. HNO3,Dil HNO3,Standard cadmium sol, Stock cadmium sol **ICP-OES Method**: Inductive coupled plasma optical emission Spectrophotometer, Argon gas supply Radio frequency generator, Mass flow controller, Nebulizer, Multielement standard reference material, general lab ware like Auto Dispensing pipettes etc
15	Selenium(Cl. 4.3 &Sl.No 14 of Table1)	**ICP-OES Method**: Inductive coupled plasma optical emission Spectrophotometer, Argon gas supply Radio frequency generator, Mass flow controller, Nebulizer, Multielement standard reference material, general lab ware like Auto Dispensing pipettes etc

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

Annex – B

PRODUCT MANUALFOR
Sodium Hypochlorite Solution part2 Water Treatment Use
According to IS11673(part2):2019

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. PACKING AND MARKING – The Standard Mark as given in Schedule of the license shall be incorporated indelibly on each package of Sodium Hypochlorite Solution, provided always the material thus marked conforms to all the requirements of the specification.

3.1Packing, marking and storing shall be done as per the provisions of the Indian Standard. In addition, BIS Licence No. CM/L-.... and details of BIS website shall be marked on each package as follows: “For details of BIS certification please visit www bis.gov.in”

4. CONTROL UNIT – For the purpose of this scheme, the entire quantity of sodium hypochlorite solution of one grade manufactured at a time in one reaction vessel/tank 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 2above.

5.1 All the production which conforms to the Indian Standards and covered by the license should be marked with Standard Mark.

6. STORAGE –Instructions for storage as given in the Indian Standard shall be complied

7. 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. 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.

TABLE 1LEVELS 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	IS11673(part2):2019	R	01	Each control unit	
4.3 & Table 1	Relative Density	4.3 and Table 1	IS11673(part1):2019	R	01	Each control unit	
-Do-	Available Chlorine	4.3 and Table 1	IS11673(part1):2019	R	02	Each control unit	Both shall pass
-Do-	Total Chlorine	4.3 and Table 1	IS11673(part1):2019	R	02	-do-	-do-
-Do-	Free Alkali	4.3 and Table 1	IS11673(part1):2019	R	01	-do-	
-Do-	Free Sodium carbonate	4.3 and Table 1	IS11673(part1):2019	R	01	-do-	
-Do-	Iron	4.3 and Table 1	IS11673(part1):2019	R	01	-do-	
-Do-	Sodium chlorate	4.3 and Table 1	IS11673(part1):2019	R	01	-do-	
-Do-	Lead	4.3 and Table 1	Annex A of IS11673(part2):2019	R	01	-do-	

-Do-	Arsenic	4.3 and Table 1	Annex B of IS11673(part2):2019	R	01	-do-	
-Do-	Mercury	4.3 and Table 1	Annex C of IS11673(part2):2019	S	01	Once in a month	
-Do-	Manganese	4.3 and Table 1	Annex D of IS11673(part2):2019	R	01	-do-	
-Do-	Total chromium	4.3 and Table 1	Annex E of IS11673(part2):2019	R	01	-do-	
-Do-	Cadmium	4.3 and Table 1	IS 3025 (part41) & IS 3025(part2):2019	S	01	Once in a month	
-Do-	Selenium	4.3 and Table 1	IS 3025(part2):2019	S	01	Once in a month	
Clause 4.2	Keeping Quality	4.2	IS11673(part2):2019	S	02	Once in a month	Both shall pass (see note 3)

Note-1: 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 by BO Head.

Note-2: 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 empanelled by the Bureau.

Note 3-Once in a month, from one control unit, a packed container shall be stored in a cool, dark place. After a period of 30 days from the date of packing, two samples of sodium hypochlorite solution shall be drawn and tested for available chlorine content. Both the samples shall conform to the requirement as given in Table 1 to the Indian Standard