PRODUCT MANUAL FOR BORAX ACCORDING TO IS 1109:1980

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 1109:1980
	Title	:	BORAX
	No. of Amendments	:	Nil
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	Shall be as per Clause 3.1 of IS 1109:1980
b)	**Grouping guidelines**	:	For covering ***Technical(TECH), Pure and Analytical Reagent (AR)*** grades in the scope of license, Sample Shall be tested for each Type to cover respective type.
c)	**Sample Size**	:	1000 g.
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** • Description (Cl.3.1), • Sodium tetra borate decahydrate content ($Na_2B_4O_7.10\ H_2O$ • Matter insoluble in water • pH value • Chlorides • Sulphates • Phosphates • Iron • Calcium • Heavy Metal • Reaction to Ammonical silver Nitrate		
6.	**Scope of the Licence :**		
	Licence is granted to use Standard Mark on Borax as per IS 1109:1980 with the following scope:		
	Name of the product	BORAX	
	Grade	***Technical(TECH)/ Pure/ Analytical Reagent(AR)***	

ANNEX A

List of Test Equipment

Major test equipment required to test as per the Indian Standard

S.No	Name of the Equipment	Tests used in with Clause Reference
1	pH meter	3.2 & Table1 of IS 1109
2	Analytical weighing Balance	
3	Hot Air Oven	
4	Water Bath	
5	Atomic Absorption Spectrophotometer	
6	Heating Mantle	
7	Sintered Glass Crucucible	
8	Nessler Cylinder	
9	Polyethylene Bottle	
10	Staem Bath Appratus	
11	Filter Paper	

LIST OF CHEMICALS

S.No	Chemical name	3.2 & Table1 of IS 1109
01	Sodium hydroxide	
02	Hydrochloric acid	
03	Sulphuric acid	
04	D-Mannitol/ Sorbitol	
05	Phenolphthalene Indicator	
06	Methyl red Indicator	
07	Distilled Water	
08	Nitric Acid	
09	Silver Nitrate Solution	

10	Barium chloride solution –	
11	Alcoholic barium chloride solution	
12	Ammonium Molybdate	
13	n-methyl-p-amenophenol sulphate (Metol)	
14	Potassium metabisulphite	
15	Potassium dihydrogen ortho-phosphate	
16	Ammonium Persulphate	
17	Butanolic Potassium Thiovanate	
18	Ferrous Ammonium Sulphate	
19	Acetic acid	
20	Ammonium Oxalate Solution	
21	Hvdrogen Sulphide Solution	
22	Lead Nitrate	
23	Arsenic Trioxide	
24	Lead Acetate	
25	Mercuric Bromide	
26	Potassium Iodide	
27	Stannous chloride	
28	Zinc	
29	Silver Diethydithiocarbamet	
30	Pyridine	
31	Ammonium Hydroxide	

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

ANNEX B

SCHEME OF INSPECTION AND TESTING
For BORAX **according to IS 1109:1980**

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. MARKING– The Standard Mark as given in Column (l) of the first Schedule of the licence shall be stenciled with indelible ink or printed on labels applied to the container/bags of borax provided always that the material in each container to which this mark is applied conforms to every requirement of the specification.

Other Marking – Each package shall bear legibly and indelibly the following information.

a) Name and grade of the material
b) Name and address of the manufacturer and his recognized trade mark if any;
c) Gross and net mass in grams
d) Date of manufacture
e) Batch number;
f) Full details of analysis as prescribed in Table-1 of IS 1109 shall also be printed on the label of Analytical Reagent grade(AR).
g) BIS certification details, visit website www.bis.org.in

3.1 PACKING-The Technical(TECH) and *Pure and Analytical Reagent (AR)*Grades of the material shall be packed in well-closed, sound, clean and dry jute bags lined with polyethylene sheets or as agreed to between the purchaser and the supplier as mentioned in clause 4.1 of IS 1109: 1980 and records maintained as per Table 2 of Annex A

4. CONTROL UNIT -For the purpose of this Scheme, the total quantity of each grade of Borax manufactured continuously from a blender at a time in a period of 24 hours shall constitute a control unit. On the basis of test and analysis results decision regarding the conformity or otherwise of a control unit of borax to the requirements of the specification shall be made as follows:

A sample shall be taken at the packing stage after every hour which shall be examined visually. It shall be in the form of hard, colourless or white crystals, granules or powder consisting essentially of sodium tetraborate decahydrate and free from visible impurities and other foreign matter.

If the sample does not conform to the specification in the above mentioned description requirement, the material manufactured during that hour prior to the drawl of sample shall either be rejected or reprocessed for its conformity to these requirements of the specification.

One sample shall be drawn from every control and tested for test parameters as given in table 1. If the

sample fails to conform to anyone or more of these requirement(s) as given in the specification, the entire material in the control unit shall not be marked. The material may, however, be reprocessed and the defect(s) rectified. Such reprocessed material when tested again shall conform to all the requirements of the specification.

In respect of all other clauses of the specification, the factory shall maintain appropriate controls and checks to ensure that the product conforms to the various requirements of the specification.

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. A separate record shall be maintained giving information relating to the rejection of the production not conforming to the requirements of 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 shall be defaced.

TABLE 1

Levels of Control
(Para5 .0 of the Scheme of Inspection and Testing

Test Details				Levels of Control		
IS Clause no	**Requirement**	**Test method reference**	Test equipment requirement R: required (or) S: Sub-contracting permitted	**No. of samples to be tested**	**Frequency**	**Remarks**
3.1	Description	3.1	R	One	Ever hour	For Technical, Pure and Analytical reagent grades
3.2 & Table1						
i.)	Sodium tetra borate decahydrate content ($Na_2B_4O_7.10\ H_2O$), percentage by mass	*A-2	R	One	Each control unit	For Technical, Pure and Analytical reagent grades
ii.)	Matter insoluble in water, percent by mass, Max	A-3	R	One	-do-	For Technical, Pure and Analytical reagent grades
iii.)	Carbonates	A-4	R	One	-do-	For Pure and Analytical reagent grades only
iv.)	Chlorides(as cl), percent by mass, Max	A-5	R	One	-do-	For Pure and Analytical reagent grades only
v.)	Sulphates (as SO_4), percent by mass, Max	A-6	R	One	-do-	For Pure and Analytical reagent grades only
vi.)	Phosphates(as PO_4), percent by mass, Max	A-7	R	One	-do-	For Analytical reagent grade only
vii.)	Iron(as Fe), percent by mass, Max	A-8	R	One		For Pure and Analytical reagent grades only
viii.)	Calcium	A-9	R	One	-do-	For Analytical reagent grade only
ix.)	Heavy metals(as Pb),mg/kg, Max	A-10	R	One	-do-	For Pure and Analytical reagent grades only
x.)	Arsenic(as As_2O_3) mg/kg, Max	A-11	R	one	-do-	For Pure and Analytical reagent grades only
xi.)	pH value	A-12	R	One		For Technical, Pure and Analytical reagent grades
	Additional requirement For Photographic Industry					
xii.)	Reaction to ammonical silver nitrate	A-13	R	One	-do-	For Pure grade only

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled 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 by BO Head.