

**PRODUCT MANUAL
FOR SODIUM BICARBONATE
ACCORDING TO IS 2124:2000**

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	:	2124:2000
	Title	:	SODIUM BICARBONATE
	No. of Amendments	:	0
2.	Sampling Guidelines:		
a)	Raw material	:	No specific requirement
b)	Grouping guidelines	:	N.A
c)	Sample Size	:	500 grams
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 :	:	Please refer ANNEX - C
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 2124:2000 with the following scope:		
	Name of the product	SODIUM BICARBONATE	
	Grade	Pure grade, Analytical reagent grade, Refined grade	

ANNEX-A
TO PRODUCT MANUAL FOR
Sodium Carbonate
According to IS 2124:2000

LIST OF TEST EQUIPMENT
Major test equipment required to test as per the Indian Standard

SI No.	Test Equipment	Tests used in with Clause Reference
1.	<ul style="list-style-type: none"> i) Analytical Balance ii) Burette iii) Conical flask iv) Standard Hydrochloric acid (1.0 N) v) Standard Hydrochloric acid (0.1N) vi) Methyl Orange or Bromothymol Blue Indicator vii) Distilled Water 	Total Alkalinity (as NaHCO ₃), Clause 4.2 and Table 1, SI No. (i)
2.	<ul style="list-style-type: none"> • Electrometric Method : pH meter or • Indicator Method : <ul style="list-style-type: none"> i) Bromothymol Blue Indicator ii) Rectified Spirit iii) Analytical Balance iv) Buffer Solutions (range 8-9) 	pH, Clause 4.2 & Table 1 Sl. No. (ii)
3.	<ul style="list-style-type: none"> • Volumetric method: <ul style="list-style-type: none"> i) Analytical Balance ii) Hot air oven iii) Dessicators iv) Nessler Cylinders v) Burette and Pipette vi) Conc. Nitric acid (Conforming to IS 264) vii) Standard AgNO₃ (0.1 N) viii) Nitrobenzene ix) Standard ammonium thiocyanate solution (0.1 N) x) Ferric ammonium sulphate indicator or • Spectrophotometric Method: <ul style="list-style-type: none"> i) Spectrophotometer ii) Platinum evaporating Dish iii) Hot Water Bath iv) Volumetric Flask v) Beaker vi) Ferric Ammonium Sulphate Dodecahydrate vii) Nitric acid viii) Mercury Thiocyanate solution ix) Concentrated Sulphuric acid 	Chloride (as Cl), Clause 4.2 and Table 1, SI No. (iii)

	<ul style="list-style-type: none"> x) Analytical Balance xi) Hot Air Oven xii) A.R. sodium chloride xiii) Filter Paper 	
4.	<ul style="list-style-type: none"> i) Analytical Balance ii) Gooch crucible and Sintered glass crucible iii) Hot air oven iv) Beaker v) Distilled Water 	Insoluble matter, Clause 4.2 and Table 1, Sl No. (iv)
5.	<p>Gravimetric method</p> <ul style="list-style-type: none"> i) Analytical Balance ii) Hot air oven iii) Crucible iv) Beaker v) Filter paper vi) Concentrated Hcl vii) Barium chloride solution viii) Distilled water ix) Nessler cylinders x) Water Bath xi) Potassium sulphate <p style="text-align: center;">or</p> <p>Turbidimetric method</p> <ul style="list-style-type: none"> i) Spectrophotometer ii) Evaporating dish iii) Water Bath iv) Hot air oven v) Filter paper vi) Sodium carbonate vii) Barium chloride 	Sulphates (as SO ₄), Clause. 4.2 and Table 1 Sl.No. (v)
6.	<ul style="list-style-type: none"> i) Analytical Balance ii) Hot air oven iii) Dessicators iv) Nessler cylinders v) Concentrated Hcl vi) Ammonium persulphate vii) n-butanol viii) Potassium thiocyanate ix) Ferrous ammonium sulphate x) Sulphuric acid 	Iron (as Fe), No. Clause 4.2 and Table, Table 1 Sl. No. (vi)
7.	<ul style="list-style-type: none"> • Visual colour comparison: <ul style="list-style-type: none"> i) Analytical Balance ii) Water bath iii) Nessler cylinder iv) Volumetric flask v) Hydrogen sulphide solution vi) Acetic acid (1 N) vii) Lead nitrate <ul style="list-style-type: none"> • Concentrated Hcl <p style="text-align: center;">or</p> <ul style="list-style-type: none"> • Spectrophotometric : <ul style="list-style-type: none"> i) Spectrophotometer ii) pH meter iii) Fume cupboard 	Heavy metals (as pb), Clause. 4.2 and Table 1, Sl. No. (vii)

	<ul style="list-style-type: none"> iv) Separating funnels v) Lead nitrate vi) Distilled water vii) Chloroform viii) Dithizone reagent ix) Potassium cyanide x) Concentrated ammonia xi) Sodium sulphite xii) HCl 	
8.	<ul style="list-style-type: none"> i) Gutzeit apparatus ii) Analytical Balance iii) Arsenic trioxide iv) Distilled Water 	Arsenic (as As), Clause 4.2 and Table 1, SI No. (viii)
9.	<ul style="list-style-type: none"> i) Analytical Balance ii) Nessler Cylinders iii) Devarda's alloy iv) Muffle furnace v) Hessian crucible vi) Iron rod vii) Potassium iodide viii) Mercuric chloride ix) Potassium hydroxide x) Sintered glass crucible xi) Litmus paper xii) Sodium hydroxide solution 	Ammonium compounds (as NH ₄), Clause 4.2 and Table 1 SI No. (ix)
10.	<ul style="list-style-type: none"> • Visual colour comparison i) Nessler cylinders ii) Water bath iii) Distilled water iv) Analytical balance v) Dilute Sulphuric acid vi) Ammonium molybdate vii) Sodium metabisulphite viii) Methyl-p-aminophenol ix) Potassium dihydrogen phosphate <li style="text-align: center;">or • Spectrophotometric: i) Spectrophotometer ii) Platinum evaporating dish iii) Volumetric flask iv) Filter paper v) Analytical balance vi) Perchloric acid vii) Ammonium molybdatetetrhydrate viii) Distilled water ix) Sulphuric acid 	Phosphates (as PO ₄), Clause 4.2 and Table 1, SI. No. (x)

	<ul style="list-style-type: none"> x) 1-amino 2- naphthol 4- sulphonic acid xi) A.R. Potassium dihydrogen phosphate xii) Water bath xiii) Conductivity meter 	
11.	<ul style="list-style-type: none"> i) Analytical balance ii) Hot air oven iii) Conical flask iv) Burette v) Calcium carbonate vi) Distilled Water vii) Hcl viii) EDTA solution ix) Eriochrome Black T indicator solution x) Ammonium chloride xi) Ammonium hydroxide xii) Disodium ethylene diamine tetraacetate dehydrate xiii) Magnesium sulphate 	Calcium and Magnesium (as Ca), Clause 4.2 and Table 1, SI No. (xi)
12.	<ul style="list-style-type: none"> i) pH meter ii) Analytical balance iii) Nessler cylinders iv) Concentrated HCl v) Concentrated HNO₃ vi) Citric acid vii) Ammonium hydroxide viii) Sodium diethyldithiocarbamate ix) Copper sulphate pentahydrate x) Chloroform <p style="text-align: center;">or</p> <ul style="list-style-type: none"> • Spectrophotometric : i) Spectrophotometer ii) Platinum dish iii) Analytical balance iv) Distilled water v) HCl vi) EDTA solution vii) Sodium diethyldithiocarbamate solution viii) Copper solution ix) Volumetric flask x) Ammonium hydroxide solution xi) Carbon tetra chloride xii) Phenolphthalein xiii) Separatory funnels xiv) Water bath xv) Filter paper 	Copper (as Cu), Clause 4.2 and Table 1, SI No. (xii)

13.	<ul style="list-style-type: none"> i) Analytical balance ii) Indigo carmine solution iii) Concentrated sulphuric acid (iv) Potassium nitrate Concentrated hydrochloric acid 	Nitrates (as NO ₃) Clause 4.2 and Table 1 Sl No. (xiii)
14.	<ul style="list-style-type: none"> • Visual comparison method <ul style="list-style-type: none"> i) Analytical balance ii) Platinum crucible iii) Silica iv) Nessler cylinders v) Dilute sulphuric acid vi) Ammonium molybdate solution vii) Sodium citrate solution viii) Potassium metabisulphite solution ix) Anhydrous sodium carbonate or • Spectrophotometric: <ul style="list-style-type: none"> i) Spectrophotometer ii) pH meter iii) Platinum crucible with lid iv) Dessicator v) Muffle furnace vi) Boric acid solution vii) Sodium fluoride solution viii) Sodium metabisulphite ix) 4-amino-3-hydroxyl naphthalene-1-sulphonic acid x) Sodium sulphite xi) Ascorbic acid xii) Oxalic acid xiii) Sodium molybdate xiv) Sulphuric acid xv) Distilled water 	Silicates (as SiO ₂), Clause 4.2 and Table 1, Sl. No. (xiv)
15.	<ul style="list-style-type: none"> i) Flame photometer ii) Potassium chloride iii) Distilled water iv) Measuring flask v) Analytical balance vi) Conductivity mater (Galvanometer) 	Potassium (as K), Clause 4.2 and Table 1, Sl. No. (xv)
16.	<ul style="list-style-type: none"> i) Analytical balance ii) Burette and pipette iii) Hot air oven iv) Water bath v) Starch vi) Mercuric chloride vii) Distilled water 	Substances reducing iodine, Clause 4.2 and table 1,Sl No. (xvi)

ANNEX – B

**TO PRODUCT MANUAL FOR
Sodium Carbonate
According to IS 2124:2000
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 equipment.
- 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 the Schedule of the license shall be incorporated on each package of the material provided that Sodium Carbonate in the package thus marked conforms to the requirement of the specification.
 - 3.1** Packing and Marking shall be done as per the provisions of IS 2124:2000. In addition, details of BIS Certification i.e. BIS Licence Number CM/L – and BIS website shall be marked on the package as follows “For details of BIS certification please visit www.bis.gov.in”
- 4. CONTROL UNIT** – For the purpose of this scheme, 500 bags (a bag equivalent to a unit weight of 50 kg) of the material or part thereof manufactured continuously at a time 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 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 Standard 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.

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	Requirements	Test Method			No. of Samples	Frequency	Remarks
		Clause	Reference				
4.1	Description	4.1	IS 2124:2000	R	Five	Each Control Unit	
4.2 & Table 1	Total Alkalinity (as NaHCO ₃)	Annex A	IS 2124:2000	R	Five	Each Control Unit	When tests have been performed on each of the sample drawn from a control unit for total alkalinity, the test results of the individual sample shall be recorded as given in Table II. The average (X) and the range (R) shall be calculated. The appropriate expressions as given under column 5 of Table II shall be calculated. This should satisfy the inequality as given under column 5 of Table II. In case the criterion fails, the entire material in the control unit shall be rejected. Such material, however, can be reprocessed and tested again as above.
-do-	pH	Annex B	IS 2124:2000	R	One composite sample	Each Control Unit	See Note-3

4.2 & Table 1	Chloride (as Cl)	Annex C	IS 2124:2000	R	One composite sample	Each Control Unit	See Note-3
4.2 & Table 1	Insoluble matter	Annex D	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Sulphate (as SO ₄)	Annex E	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Iron (as Fe)	Annex F	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Heavy Metals (as pb)	Annex G	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Arsenic (as As)	Annex H	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Ammonium compounds (as NH ₄)	Annex J	IS 2124:2000	R	One composite sample	Each Control Unit	Not required for refined grade. Also See Note-3
4.2 & Table 1	Phosphates (as PO ₄)	Annex K	IS 2124:2000	R	One composite sample	Each Control Unit	Not required for pure grade and refined grade. Also See Note-3
4.2 & Table 1	Calcium (as Ca) and Magnesium (as Mg)	Annex L	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Copper (as Cu)	Annex M	IS 2124:2000	R	One composite sample	Each Control Unit	Not required for analytical reagent grade. Also See Note-3
4.2 & Table 1	Nitrates (as NO ₃)	Annex N	IS 2124:2000	R	One composite sample	Each Control Unit	Not required for pure grade and refined grade. Also See Note-3
4.2 & Table 1	Silicates (as SiO ₂)	Annex P	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Potassium (as K)	Annex Q	IS 2124:2000	R	One composite sample	Each Control Unit	-do-
4.2 & Table 1	Substances reducing iodine	Annex R	IS 2124:2000	R	One composite sample	Each Control Unit	-do-

Note-1: Whether test equipment is required or sub-contracting in column 2 shall be decided by the Bureau and shall be mandatory.

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.

Note-3: Every 500 bags(a) bag being equivalent to a unit weight of 50kg of the material or part thereof manufactured continuously shall constitute a control unit . Individual samples of a control unit shall be prepared by compositing samples drawn from every 50 Bags. This composite sample shall be prepared from individual samples of each control unit manufactured in a day.

TABLE II

Characteristics	Test Results					Average(X)	Range (R)	Criterion of Conformity
	1	2	3	4	5			
Total Alkalinity								X-0.6R99.00

Note: The value of the constant given under column 5 may be required to be revised after the scheme is in operation for some time.

ANNEX-C

POSSIBLE TESTS IN A DAY

- i) Description
- ii) Total alkalinity (as NaHCO_3), percent by mass
- iii) pH
- iv) Chlorides (as Cl), percent by mass
- v) Insoluble matter, percent by mass
- vi) Sulphates (as SO_4), percent by mass
- vii) Iron(as Fe), percent by mass
- viii) Heavy metals (as Pb), parts per million
- ix) Arsenic (as As),parts per million
- x) Ammonium compounds (as NH_4), parts per million
- xi) Phosphates (as PO_4), percent by mass
- xii) Calcium and Magnesium (as Ca), percent by mass
- xiii) Nitrates (as NO_3), percent by mass
- xiv) Silicates (as SiO_2), percent by mass
- xv)Potassium (as K), percent by mass