PRODUCT MANUAL FOR SODIUM NITRATE AND POTASSIUM NITRATE FOR GLASS COMPOSITIONS ACCORDING TO IS 9157:1979

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 9157: 1979
	Title	:	Sodium Nitrate and Potassium Nitrate for Glass Compositions.
	No. of Amendments	:	0
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	No specific requirement.
b)	**Grouping guidelines**	:	Not applicable
c)	**Sample Size**	:	500 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, Moisture and volatile Matter, Matter insoluble in water, Carbonates, Nitrites, Chlorides (as Cl), Sulphates (as SO_4), Iron (as Fe)		
6.	**Scope of the Licence :**		
	"Licence is granted to use Standard Mark as per IS 9157: 1979 with the following scope:		
	Name of the product		Potassium and/or Sodium Nitrate for Glass Compositions.
	Grades		Grade 1 and/or Grade 2.

ANNEX A

List of Test Equipment

Major test equipment required to test as per the Indian Standard

S. No.	Tests used in with Clause Reference		Test Equipment
	Cl. No.	**Test**	
1.	(Cl. 3.2) Table 1, Sl. No. (i)	Determination of Moisture And Volatile Content	i. Weighing Balance ii. Tared Petri Dish iii. Thermo Probe iv. Air-Oven v. Desiccator vi. 500 Micron IS Sieve vii. Wall Clock viii. Calculator
2.	(Cl. 3.2) Table 1, Sl. No. (ii)	Determination of Matter Insoluble In Water	i. Above facilities and, ii. Measuring Cylinder(10 ml, 25ml, 50 ml, 100ml, 250ml, 500ml, and 1000ml). iii. Tared sintered glass crucible G4. iv. Desiccator v. Volumetric flask [Class A] -(5ml, 10ml, 25 ml, 50ml, 100ml , 250ml , 500ml, 1000m)
3.	(Cl. 3.2) Table 1, Sl. No. (iii)	Carbonates	i. Above facilities and, ii. Dilute Hydrochloric Acid iii. Lime Water iv. Test Tube v. Fume hood vi. Nessler's Cylinder

4.	(Cl. 3.2) Table 1, Sl. No. (iv)	Nitrites	i. Above facilities and, ii. Potassium Iodide Solution iii. Carbon Tetrachloride, Copper Free iv. Acetic Acid - glacial. v. Pipette vi. Dropper vii. Stop Watch
5.	(Cl. 3.2) Table 1, Sl. No. (v)	Chlorides	i. Above facilities and, ii. Standard Silver Nitrate Solution iii. Concentrated Nitric Acid iv. Ferric Ammonium Sulphate Indicator, 10 % (m/v). v. Standard Ammonium Thiocyanate Solution. vi. Nitrobenzene vii. 250 ml volumetric flask viii. Conical Flask (250ml, 500ml) ix. Burette (Class A) & Stand x. Pipette 50 ml
6.	(Cl. 3.2) Table 1, Sl. No. (vi)	Determination of Sulphates	i. Above facilities and, ii. Concentrated Hydrochloric Acid iii. Dilute Hydrochloric Acid iv. Barium Chloride Solution - 10 % (m/v) v. Beaker (25ml, 50ml, 100ml, 250ml, 500ml, 1000ml, 2000ml, 5000ml) vi. Hot Plate/Water Bath vii. Sintered Glass Crucible (G 4) viii. Hot Air Oven

7.	(Cl. 3.2) Table 1, Sl. No. (vii)	Copper	i. Above facilities and, ii. Citric Acid iii. Carbon Tetrachloride iv. Ethylene Diamine Tetra Acetate (Disodium Salt) Solution – 4 % (m/v) in water. v. Cresol Red Indicator vi. Dilute Ammonium Hydroxide - 50 % (v/v). vii. Sodium Diethyl Dithiocarbamate Solution viii. pH Meter ix. Air Conditioner x. Volumetric Flask 100ml
8.	(Cl. 3.2) Table 1, Sl. No. (viii)	Iron	i. Above facilities and, ii. Spectrophotometer with 1cm cell iii. Anhydrous Sodium Acetate iv. Hydroxylamine Hydrochloride Solution v. o-Phenanthroline vi. Standard Iron Solution vii. Dark bottle with ground- glass stopper viii. Conc. Sulphuric Acid
9.	(Cl. 3.2) Table 1, Sl. No. (ix)	Manganese	i. Above facilities and, ii. Syrups Phosphoric Acid -- manganese free. iii. Potassium Periodate - powder.
10.	(Cl. 3.2) Table 1, Sl. No. (xi)	Potassium compounds (as K) and Sodium Compounds (As Na)	i. Above facilities and, ii. Flame Emission Spectrophotometer (as per A-11.1.1) iii. Potassium Chloride iv. Sodium Chloride v. Mixing Glass Rod

11.	(Cl. 3.2) Table 1, Sl. No. (xii)	Sodium Nitrate and Potassium Nitrate	i. Above facilities and, ii. Devarda's Alloy iii. Sodium Hydroxide Solution iv. Standard Sodium Indicator Solution v. Methyl Orange Indicator vi. Apparatus as per Fig 1 a. Round bottom boiling flask b. Thistle Funnel c. Condenser Plate d. Receiver e. Heating Mantle

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

b) The least count, range, and other specifications of the equipment, reagents etc shall be as specified in the standard

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 equipment.

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 the Schedule of the license and Licence Number (i.e.CM/L- ...) shall be incorporated legibly and indelibly on each container/package of the product, provided always that the product thus marked conforms to specifications of the standard. Labelling/marking and packing shall be done as per the provision of the Indian Standard. In addition, details of BIS website shall be marked as follows: "For details of BIS certification please visit www.bis.gov.in".

4. CONTROL UNIT – For the purpose of this Scheme, all packages of Sodium Nitrate and/or Potassium Nitrate for Glass Compositions of the same grade and belonging to the same batch of manufacture and produced from same machinery/plant, in a day shall constitute a control unit.

4.1 In case the plant operates in several shifts, one sample may be taken from the production of each shift and mixed together to form a composite sample, on which the tests may then be conducted as per the frequency defined in the levels of control in Table 1.

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 2.0 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.

TABLE 1: LEVELS OF CONTROL

(1)				(2)	(3)		(4)
Test Details				**Test Equipment Requirement R: required (or) S: Sub-contracting permitted**	**Levels of Control**		**Remarks**
Clause	**Requirement**	**Test Method**			**No. of Sample**	**Frequency**	
		Clause	**Reference**				
3.1	Description	Cl. 3.1	IS 9157	R	One Sample	Each Control Unit	See 4.1
3.2	Moisture and volatile matter	A-2	IS 9157	R	One Sample	Each Control Unit	-do-
	Matter insoluble in water	A-3	IS 9157	R	One Sample	Each Control Unit	-do-
	Carbonates	A-4	IS 9157	R	One Sample	Each Control Unit	-do-
	Nitrites	A-5	IS 9157	R	One Sample	Each Control Unit	-do-
	Chlorides	A-6	IS 9157	R	One Sample	Each Control Unit	-do-
	Sulphates	A-7	IS 9157	R	One Sample	Each Control Unit	-do-
	Copper	A-8	IS 9157	S	One Sample	Once in three months	These properties are majorly depended on quality of raw materials. Caustic soda procured is ISI marked as it is under compulsory certification from BIS. Liquid ammonia and nitric acidare very stable in nature with respect to relevant properties. Unless there is a change in supplier, the properties are likely to remain same. Thus once tested, these values may be considered to be consistent for a longer period.
	Iron	A-9	IS 9157	S	One Sample	Once in three months	
	Manganese	A-10	IS 9157	S	One Sample	Once in three months	
	Potassium Compounds	A-11	IS 9157	S	One Sample	Once in three	

(1)				(2)	(3)		(4)
Test Details				**Test Equipment Requirement R: required (or) S: Sub-contracting permitted**	**Levels of Control**		**Remarks**
Clause	**Requirement**	**Test Method**			**No. of Sample**	**Frequency**	
		Clause	**Reference**				
						months	
3.2	Sodium Compounds	A-11	IS 9157	S	One Sample	Once in three months	-do-
	Sodium nitrate	A-12	IS 9157	R	One Sample	Each Control Unit	See 4.1
	Potassium nitrate	A-12	IS 9157	R	One Sample	Each Control Unit	-do-

Note-1: Whenever there is a change in raw material supplier, all tests may be carried out at the first control unit produced to ensure conformity of the product as per the standard notwithstanding the level of control mentioned above. Same may be kept in record accordingly.

Note-2: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-3: 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.