PRODUCT MANUAL FOR
Milk Cereal Based Complementary foods
ACCORDING TO
IS 1656:2007

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 1656:2007
	Title	:	Milk Cereal Based Complementary foods
	No. of Amendments	:	3
2.	**Sampling Guidelines:**		
a)	Raw material	:	NA
b)	Grouping guidelines	:	NA
c)	Sample Size	:	500g
3.	**List of Test Equipment**	:	ANNEX - A
4.	**Scheme of Inspection and Testing**	:	ANNEX - B
5.	**Possible tests in a day :**		
	Moisture Total protein Fat Total carbohydrates Total Ash Acid insoluble Ash Vitamin A Vitamin C Iron		
6.	**Scope of the Licence :** "Licence is granted to use Standard Mark as per IS 1656 with the following scope:		
	Name of the product	Milk-Cereal Based Complimentary foods	
	Any other aspect required as per the Standard	For age group	

ANNEX-A

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

Sr. No.	Tests used in with Clause Reference	Test Equipment
1	Bacterial Count(5.7.1)	Petri Dish, Autoclave, Incubator (30 ± 1°C), Water Bath (44 to 47°C), pH Meter, Colony Counter, Laminar Air Flow, Weighing Balance, Refrigerator
2	Coliform Count(5.7.2)	Incubator (35±1°C), (other equipment's same as 1)
3.	E-Coli (5.7.3)	(Same equipment's as 2)
4.	Yeast and Mould (5.7.6)	Incubator(25±1°C), (other equipment's same as 1)
5.	Moisture (IS 11623 and IS 16072)	Flat bottom moisture dishes, Drying Oven, Desiccators
6.	Total Proteins (kjeldahl method)	Kjeldahl flask, Kjejdahl distillation assembly, Glass beads, Erlenmeyer flask
7	Fat (annex B of IS 1656)	Analytical Balance, Distillation evaporation apparatus, Drying oven, Mojonneir flask fat extracting flask, Water Bath (65±5°C), Fat collecting vessel
8	Total Ash(annex B of IS 1656)	Flat bottom dish, Muffle Furnace, Desiccators
9	Acid Insoluble ash(annex C of IS 1656)	Muffle Furnace(same as 8)
10	Vitamin A (carr price method)	Photo electric Colorimeter(610-620nm)
11	Vitamin C(2-6 Dichlorophenol Indophenol method)	Same as 10
12	Iron (Wong's Spectrocholoric method) (Annex D of IS 1656)	Spectrophotometer
13	Crude fibre(IS 10226)	Grinding Device, Drying oven, Air condenser, Heating device, Hot plate and magnetic stirrer, Muffle furnace Desecrator, Analytical balance

ANNEX – B

SCHEME OF TESTING & INSPECTION

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped and staffed to carry out the different tests in accordance with the methods given in the Indian Standards.

2. TEST RECORD - All records of analysis and tests shall be kept in suitable forms approved by the Bureau of Indian Standards.

3. PACKING AND MARKING – The Standard Mark as given in the Schedule of the license shall be printed on each container of Milk Cereal Based Complementary foods; provided that the material to which this mark is thus applied conforms to every requirement of the specification.

3.1 Marking and packing shall be done as per the provisions of the Indian Standard. In addition In addition, the following details shall be printed on each container:

a) BIS Licence No. CM/L _____.

b) BIS website details i.e–"For details of BIS certification please visit www.bis.gov.in"

4. CONTROL UNIT – For the purpose of this Scheme, the quantity of milk –cereal based Complementary foods manufactured continuously 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 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 A sample shall be taken at the packing stage every hour which shall be examined visually for description, color, absence of dust and extraneous matter; examined by organoleptic methods for flavour and odour. If the sample does not conform to the specification in any one or more of these requirements, the material manufactured during the hour prior to the drawal of sample either be rejected or reprocessed for its conformity to these requirements of the standard.

5.2 Four samples/control unit before packing and at equal intervals of time shall be taken for testing moisture. In case of failure of any of these samples, the material in the control

unit be either rejected or reprocessed for rectification of the defect. The material so reprocessed shall be tested for moisture after every two hours for consequent four such control unit and when all these samples conform to the requirements of the specification, the original frequency given in Table 1 for the parameter shall be restored.

5.3 Two samples shall be taken from every control unit before packing and at equal interval of time (one sample to be drawn after every 12 hours in case of 3 shifts operation & one sample after 8 hours in case of 2 continuous shift operation) and individually tested for fat, total carbohydrates, bacterial count, coliform count, Escherichia coli and Yeast and Mould. If any one or both the samples fail to conform to anyone or more of these requirements 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.

5.4 One sample from every seventh control unit shall be tested for Vitamin A; Vitamin C, Iron. One sample from every 15^{th} control unit shall be tested for Crude Fibre. If anyone sample fail to satisfy the requirements of any one or more of these characteristics, the corresponding control unit shall not be marked, the material in the control unit may, however, be reprocessed and the defect(s) rectified. Such reprocessed material when tested again shall conform to all the requirements of the specification. One sample from every subsequent control unit shall be tested for the characteristics where failure has occurred till seven consecutive control units are found meeting the specification requirements, whereupon the original frequency of testing may be resumed. In case the production is started after the shut down of the plant, for more than a week's time for any reason, it shall be ensured, before packing and dispatching the material with Standard Mark that the material is tested and found conforming to all the requirements of the specification.

5.5 One sample shall be tested for Heavy metals and the absence of Staphylococcus, aureus, Salmonella and Shigella. In case of failure of the sample in any one or more of these characteristics, the corresponding Control Unit shall not be marked and two samples from every subsequent Control unit shall be tested for the Characteristics(s) where failure has occurred till five consecutive Control units are found to meet the specified requirements, whereupon the original frequency of testing may be resumed. The requirements for salmonella and shigella shall be tested in the laboratory situated away from the production area.

5.6 One sample from every fourth Control Unit of the same type shall be tested for proteins, total ash and acid insoluble ash. In case failure of the sample in either of these requirements, the Control Unit shall be considered unfit for the purpose of marking, the control unit may, however, be reprocessed and the defect(s) rectified. Such reprocessed material when tested again shall conform to all these requirements before it is considered

fit for marking. All subsequent Control Units shall be tested for those requirements till five consecutive Control Units tested conforms to these requirements of the specification.

5.7 All ingredients used in manufacturing the product including the optional ones shall be clean, of good quality, safe and suitable for ingestion by infants. They shall conform to their normal quality requirements such as colour, flavour&odour. The vitamins and minerals shall be of good grade. Iron salts should be such as to ensure high bio-availability of iron. The source of mineral salts and vitamin compounds may be used as given under clause 5.4.2 of IS 1656:2007. Appropriate records in relation the statement made in the Para shall be maintained.

5.8 Milk-cereal based Complementary foods shall contain a minimum of 20 percent milk Casien by mass of the product, and a minimum of 5 percent of milk fat of the product. It shall not contain hydrogenated fats containing terms-fatty acids. It may contain fungal alpha amylase upto a maximum extent of 0.025 percent by mass. It may also include amino acids such as lysine, methionine, taurine, carnitine etc. Records for these shall be maintained by the manufacturers.

5.9 Milk-cereal based Complementary foods shall be free from dirt and extraneous matter, preservatives, added colour, added flavour. It shall also be free from any material which are harmful to human health. It shall be reasonably free from scorched particles.

5.10 As there is no suitable and easily workable method at present for determination Vitamin D, Thiamine, Riboflavin, and Nicotinic acid content of a product like milk – cereal based weaning foods, the manufacturers would be required to maintain a record showing the quantity of these 'Vitamins' added to each batch. A register shall also be maintained separately giving details of added vitamins. The total quantity of these materials in stock, the quantity used in each batch and the balance in stock shall also be recorded. (See note 3 under Table 1)

5.11 In respect of all other Clauses of the specification, the factory shall maintain controls to ensure that the product conforms to the various requirements of the specification.

6. HYGIENIC CONDITIONS - The factory shall maintain clean and hygienic condition as given in IS 2491. All the processing equipments should be properly cleaned and care should be taken to prevent infestation.

7. REJECTION - A separate record shall be maintained giving information relating to the rejection of units of Milk-cereal based Complementary foods which do not conform to the specification and the method of their disposal. Such material, if packed in containers, shall in no case be stored together with that conforming to the specification. 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, 5.1 to 5.4	Description	4, 5.1 to 5.4	IS 1656	R	One	Every hour	See 5.1 of STI
5.6	Flavour and Odour	5.6	-do-	R	One	-do-	-do-
5.7.1	Bacterial Count	-	IS 5402	R	Two	Each Control Unit	See 5.3 of SIT
5.7.2	Coliform Count	-	IS 5401(Part 1)	R	Two	-do-	-do-
5.7.3	Escherichia Coli	-	IS 5887 (Part 1)	R	Two	-do-	-do-
5.7.4	Staphylococcus Aureus	-	IS 5887 (Part 2)	S	One	Once in a month	See 5.5 of SIT
5.7.5	Salmonella and Shigella	-	IS 5887 (Part 3) & IS 5887 (Part 7)	S	One	-do-	-do-
5.7.6	Yeast and Mould count		IS 5403	S	One	Each Control Unit	See 5.3 of SIT
Table 1 5.8							
Sr	Moisture	-	IS 16072 (Routine Purpose)	R	Four	Each Control Unit	See 5.2 of SIT

i)			&IS 11623 (Reference Purpose)				
ii)	Total Protein	-	IS 7219	R	One	4th Control Unit	See 5.6 of SIT
iii)	Fat	Annex B	IS 1656	R	Two	Each Control Unit	See 5.3 of SIT
iv)	Total Carbohydrates	AnnexC	IS 1656	R	Two	Each Control Unit	See 5.3 of SIT
v)	Total Ash	Annex B	IS 14433	R	One	4th Control Unit	See 5.6 of SIT
vi)	Acid Insoluble Ash	Annex C	-do-	R	One	4th Control Unit	See 5.6 of SIT
vii)	Vitamin A	-	IS 5886	R	Two	Every 7th Control Unit	See 5.4 of SIT
viii)	Vitamin C	-	IS 5838	R	Two	-do-	-do-
ix)	Iron	Annex D	IS 14433	R	Two	Every 7th Control Unit	See 5.4 of SIT
x)	Crude Fibre	-	IS 10226 (Pt 1)		-	-	*
xi)	Added Vitamin D	-	IS 5835		-	-	
xii)	Thiamine	-	IS 5398		-	-	
xiii)	Riboflavin	-	IS 5399		-	-	
xiv)	Niacin	-	IS 5400	S	One	Once in a month	See 5.5 of SIT
xv)	Folic Acid	-	IS 7234	S	One	-do-	-do-
xvi)	Zinc	15	IS 1699	S	One	-do-	-do-
xvii)	Copper	15	IS 1699		Heavy Metals		
xviii)	**Heavy Metal**						
	a) Lead	-	IS 12074	S	One	-do-	-do-
	b) Arisenic	-	IS 11124	S	One	-do-	-do-
	c) Tin	17	IS 2860	S	One	-do-	-do-
	d) Cadmium	15	IS 1699	S	Two	Every 7th Control Unit	See 5.4 of SIT

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: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.

Note-3: The manufacturers would be required to maintain a record showing the quantity of these ‘Vitamins” added to each batch/C.U (See 5.10)