

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 12566 (1989): Ready-to-eat Extruded Snacks [FAD 16: Foodgrains, Starches and Ready to Eat Foods]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



IS 12566 : 1989
(Reaffirmed 1994)

Indian Standard

**'READY-TO-EAT' EXTRUDED SNACKS —
SPECIFICATION**

भारतीय मानक

रेंडी-टू-ईट एक्स्ट्रूडेड अल्पाहार — विशिष्ट

(First Reprint DECEMBER 1996)

UDC 664·696·1

© BIS 1989

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 1989

Price Group 2

AMENDMENT NO. 1 SEPTEMBER 1990
TO
IS 12566 : 1989 'READY-TO-EAT' EXTRUDED
SNACKS — SPECIFICATION

[*Page 1, clause 3 (p)*] — Substitute 'High protein flours (vegetable or animal source)' for 'High protein flours'.

[*Page 1, clause 3(s) and (v)*] — Delete.

(*Page 1, clause 4.3, line 1*) — Insert the words 'and emulsifying/stabilizing agents' after the word 'colours'.

(*Page 1, clause 5.1, line 5*) — Insert the words 'and water vapour' after the word 'oxygen'.

[*Page 2, clause 5.2(g)*] — Insert the following new item after '(g)' and renumber the subsequent item accordingly:

'h) In case protein rich flours of animal sources have been used, the specific source shall be declared on the label.'

(FADC 21)

Reprography Unit, BIS, New Delhi, India

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 25 January 1989, after the draft finalized by the Nutrition Sectional Committee had been approved by the Agricultural and Food Products Division Council.

'Ready-to-eat' extruded snacks are made by a process known as 'extrusion cooking'. This is a process by which pre-conditioned raw food material is subjected to high-temperature short-time cooking which results in the material becoming of plastic consistency. This material is then extruded through specially tapered dies. As it emerges from the dies, it passes from a high pressure to a low pressure zone and this results in puffing of the product. The cooked dough is cut to the desired size, after which it is dried to the desired moisture. Finally, the product is coated with oil, flavours, salt, spices or sweetening agent, etc, and packed. These ingredients may also be added before extrusion.

Several types of such snacks, both sweet and savoury, have been recently introduced under different names. To safeguard the health of the consumers which are mainly children, and at the same time, to provide guidelines for manufacture of such foods, it has been felt necessary to prescribe requirements for them.

This standard does not define any particular composition of the 'ready-to-eat' extruded snack but leaves to option of using different types of raw materials in optional proportions to the manufacturers.

A standard on 'ready-to-eat', protein-rich, extruded foods (IS 9487 : 1980 Specification for 'ready-to-eat' protein rich extruded foods) has already been published. This is a nutritive food and covers the minimum levels of nutrients, namely, proteins, vitamins, minerals, etc. A standard on extruded breakfast cereals is also being brought out.

While formulating this standard, necessary consideration has been given to the relevant rules prescribed by the Government of India, under the *Prevention of Food Adulteration Act, 1954*. Consideration has also been given to the *Standard of Weights and Measures (Packaged Commodities) Rules, 1977*. However, this standard is subject to restrictions imposed under these wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

‘READY-TO-EAT’ EXTRUDED SNACKS — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for ‘ready-to-eat’ extruded snacks.

2 REFERENCES

The standards listed in Annex A are necessary adjuncts to this standard.

3 RAW MATERIALS

The following raw materials may be used for the production of ready-to-eat extruded snacks. They should be clean and of good quality and should conform to the relevant Indian Standards wherever available:

- a) Dehusked and/or degermed cereals and millets;
- b) Wheat flour/semolina (see IS 1009 : 1979/ IS 1010 : 1968);
- c) Edible tubers and starches;
- d) Dehusked pulses;
- e) Refined edible vegetable oils, edible hydrogenated fat (see IS 10633 : 1986) or *Ghee* singly or in combination;
- f) Salt (see IS 253 : 1985 or IS 7224 : 1985);
- g) Spices, spice extracts and condiments;
- h) Tomato, onion and garlic powder;
- j) Powder of other edible vegetables and fruits;
- k) Cheese powder (see IS 9584 : 1980);
- m) Skimmed milk powder;
- n) Dextrins;
- p) High protein flours;
- q) Sugar and sugar products;
- r) Jaggery;
- s) Permitted flavourings;
- t) Citric acid/tartaric acid (see IS 9504 : 1980);
- u) Monosodium glutamate (see IS 9505 : 1980); and
- v) Permitted emulsifying/stabilizing agents.

4 REQUIREMENTS

4.1 Description

The method of production shall be extrusion cooking. The cooker extruder configuration used for the purpose of extrusion cooking shall ensure adequate cooking of raw ingredients. The shape and size of the extruded product shall be

reasonably uniform, being governed by the nature of die used for extrusion-cooking. The product shall be fully cooked. It shall also be free from insects, insect residues, rodent hair and excreta, fungal infection and any other extraneous and harmful material. The product shall be crisp, and free from grits or uncooked particles.

4.2 Flavour

The ‘ready-to-eat’ extruded snacks shall be of pleasant taste and smell, and free from rancid, soapy, bitter or burnt taste and smell. They shall have an aroma and taste characteristic of the flavours and spices used.

4.3 Additives

Preservatives, flavours and colours permitted under the *Prevention of Food Adulteration Act*, 1954 may be added.

4.4 The ready-to-eat extruded snacks shall also comply with the requirements given in Table 1.

**Table 1 Requirements for ‘Ready-to-Eat’
Extruded Snacks**
(Clauses 4.4, 7.1, B-5.1 and B-5.3)

Sl No.	Characteristic	Requirement	Methods of Test, Ref to
i)	Moisture, percent by mass, <i>Max</i>	6.0	Annex A of IS 1011 : 1981
ii)	Fat (on dry basis), percent by mass, <i>Max</i>	25	Annex F of IS 4684 : 1975
iii)	Peroxide value meq oxygen/kg fat, <i>Max</i>	10	Clause 22 of IS 3508 : 1986
iv)	Total bacterial count, per g, <i>Max</i>	50 000	IS 5402 : 1969
v)	Coliform count, per g, <i>Max</i>	10	IS 5401 : 1969
vi)	<i>Salmonella</i>	Absent	IS 5887 (in 1 g) (Part 3) : 1976
vii)	<i>Shigella</i>	Absent	IS 5887 (in 1 g) (Part 3) : 1976
viii)	<i>E Coll</i>	Absent	IS 5887 (in 1 g) (Part 1) : 1976

4.5 Hygienic Conditions

The product shall be processed, packed, stored and distributed under hygienic conditions in licensed premises (see IS 2491 : 1972).

5 PACKING AND MARKING

5.1 Packing

The product shall be packed in flexible thermo-plastic films of multi-layer or mono-layer construction, or their laminates with paper and/or aluminium foil so as to provide a high resistance to the passage of oxygen and to produce an effective heat seal. The sealing shall

be done hermetically with or without nitrogen flushing to retain the contents in a fresh condition.

5.2 Marking

The following particulars shall be marked or labelled on each container:

- a) Name of the material and trade-mark, if any;
- b) Name and address of the manufacturer;
- c) Batch or code number;
- d) Net mass in grams or kilograms;
- e) Date of manufacture;
- f) List of ingredients;
- g) The words 'Best before —' (the date to be given by the manufacturer); and

h) Any other details required under the *Standards of Weights and Measures (Packaged Commodities) Rules 1977.*

6 SAMPLING

Representative samples of material shall be drawn and criteria for ascertaining conformity to the requirements of this specification shall be as prescribed in Annex B.

7 TESTS

7.1 Tests shall be carried out as prescribed in 3.1 and Table 1.

7.2 Quality of Reagents

Unless otherwise specified, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of test or analysis.

ANNEX A
(*Clause 2*)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
253 : 1985	Specification for edible common salt (<i>third revision</i>)	5402 : 1969	Method for plate count of bacteria in foodstuffs
1009 : 1979	Specification for <i>MAIDA</i> for general purposes (<i>second revision</i>)	5887 (Part 1) : 1976	Methods for detection of bacteria responsible for food poisoning : Part 1 Isolation, identification and enumeration of <i>Escherichia coli</i> (<i>first revision</i>)
1010 : 1968	Specification for <i>SUJI</i> or <i>RAWA</i> (semolina) (<i>first revision</i>)	5887 (Part 3) : 1976	Methods for detection of bacteria responsible for food poisoning: Part 3 Isolation and identification of <i>Salmonella</i> and <i>Shigella</i> (<i>first revision</i>)
1011 : 1981	Specification for biscuits (<i>second revision</i>)	7224 : 1985	Specification for iodized salt (<i>first revision</i>)
1070 : 1977	Specification for water for general laboratory use (<i>second revision</i>)	9504 : 1980	Specification for L. (+) - tartaric acid, food grade
2491 : 1972	Code for hygienic conditions for food processing units (<i>first revision</i>)	9505 : 1980	Specification for monosodium L-glutamate, food grade
3508 : 1966	Methods of sampling and test for <i>ghee</i> (butterfat)	9584 : 1980	Specification for cheese powder
4684 : 1975	Specification for edible groundnut flour (expeller pressed) (<i>first revision</i>)	10633 : 1986	Specification for <i>vanaspati</i> (<i>first revision</i>)
4905 : 1968	Methods for random sampling		
5401 : 1969	Methods for detection and estimation of coliform bacteria in foodstuffs		

ANNEX B
(*Clause 6*)

SAMPLING OF 'READY-TO-EAT' EXTRUDED SNACKS

B-1 GENERAL REQUIREMENT OF SAMPLING

B-1.1 In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

B-1.1.1 Samples shall be taken in a protected place, not exposed to damp air, dust or soot.

B-1.1.2 The sampling instrument shall be clean and dry when used. When taking samples for bacteriological examination, it shall be sterile.

B-1.1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

B-1.1.4 The samples shall be placed in clean and dry containers. The sample containers shall be of such a size that they are almost completely filled with the sample. The sample containers shall, in addition, be sterile when they are used for samples for bacteriological examination.

B-1.1.5 Each container shall be sealed air-tight after filling and marked with full details of sampling, such as, date of sampling, date of manufacture and batch number or code number, if any.

B-1.1.6 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

B-2 SCALE OF SAMPLING

B-2.1 Lot

In any consignment all the containers of the same size and belonging to the same batch of manufacture shall be grouped together to constitute a lot.

B-2.2 Samples shall be tested from each lot for ascertaining conformity of material to the requirements of the specification.

B-2.3 The number of containers to be tested from a lot shall depend upon the size of the lot and shall be in accordance with Table 2.

Table 2 Scale of Sampling

Number of Containers in the Lot	Sample Size (For Tests Other than Microbiological)	Sub-sample Size (For Microbiological Tests)
Up to 25	2	1
26 to 50	3	1
51 to 100	5	2
101 to 150	6	3
151 and above	8	4

B-2.3.1 The containers shall be chosen at random from the lot. In order to ensure the randomness of selection, procedures given in IS 4905 : 1968 may be followed.

B-3 TEST SAMPLES AND REFEREE SAMPLES

B-3.1 Empty the contents of the container on a sheet of paper and mix thoroughly. Take equal quantities of the material from each selected container and mix thoroughly as to form a composite sample weighing about 500 g. This composite sample shall be divided into three equal parts, one for the purchaser, another for the supplier and the third for the referee.

B-3.2 From the remaining portion of the material from each container, draw three samples each weighing not less than 100 g. These will constitute individual test samples for the container. These individual samples shall be

separated into three identical sets of samples in such a way that each set has an individual test sample representing each container selected. One of these three sets shall be for the purchaser, another for the supplier and the third to be used as the referee sample.

B-3.3 From the containers selected according to Table 2, the number of containers given in Table 2 shall be randomly selected. Draw with a suitable sampling instrument which is sterile, the representative quantity of material under aseptic conditions to form a sample of container for microbiological examination. Divide the sample (taking care not to bring in microbiological combination in the material) into three equal parts. Each part so obtained shall constitute a test sample representing the container and shall be transferred to sterile containers, sealed air-tight and labelled with full identification particulars given in B-1.1.5. These shall be marked, in addition, with the words, 'For microbiological examination' The sample so obtained shall be divided into three sets in such a way that each set has a sample representing each selected container. One of these sets shall be marked for the purchaser, another for the vendor and third for the referee.

B-3.4 Referee samples shall consist of a set of individual samples, the composite sample and a set of samples for microbiological examination marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place agreed to between the purchaser and the vendor to be used in case of dispute between the two.

B-4 NUMBER OF TESTS

B-4.1 Tests for determination of moisture, fat and peroxide value shall be conducted on each of the samples constituting a set of individual samples.

B-4.2 Tests for description and flavour shall be conducted on the composite sample.

B-4.3 Tests for bacterial count, coliform count, *Salmonella*, *Shigella* and *E Coli* shall be conducted on each of the samples constituting a set of test samples labelled with the words 'For microbiological examination'.

B-5 CRITERIA FOR CONFORMITY

B-5.1 For Individual Samples

The lot shall be declared to satisfy the requirements of moisture, fat and peroxide value, if each of the test results satisfies the corresponding requirements given in Table 1.

B-5.2 For Composite Sample

The test result on the composite samples shall meet the corresponding requirements specified in 4.1 and 4.2.

B-5.3 For Samples for Microbiological Examination

The test results on the sample for microbiological examination shall meet the corresponding requirements specified in Table 1.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publication), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'.

This Indian Standard has been developed from Doc: No. AF 37 (2978).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 323 01 31, 323 83 75, 323 94 02

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices:

Telephone

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

323 76 17, 323 38 41

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola
CALCUTTA 700054

{ 337 84 99, 337 85 61
337 86 26, 337 91 20

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 38 43
60 20 25

Southern : C.I.T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42
235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
MUMBAI 400093

{ 832 92 95, 832 78 58
832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR.
COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI.
HYDERABAD. JAIPUR. KANPUR. LUCKNOW. PATNA.
THIRUVANANTHAPURAM.