

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 8220 (1976): Protein-rich Concentrated Nutrient Supplementary Foods [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 : 8220 - 1976

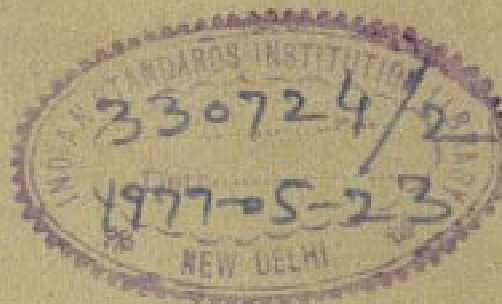
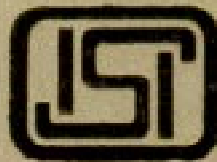
REAFFIRMED

1983

Indian Standard

SPECIFICATION FOR PROTEIN-RICH CONCENTRATED NUTRIENT SUPPLEMENTARY FOODS

UDC 664.38 : 612.398



© Copyright 1977

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

Price Rs 5⁰⁰

January 1977

Indian Standard

SPECIFICATION FOR PROTEIN-RICH CONCENTRATED NUTRIENT SUPPLEMENTARY FOODS

Nutrition Sectional Committee, AFDC 37

Chairman

DR B. L. AMLA

Representing

Central Food Technological Research Institute
(CSIR), Mysore

Members

DR K. T. ACHAYA

Protein Foods and Nutrition Development
Association of India, Bombay

DR A. AUSTIN

Indian Agricultural Research Institute (ICAR),
New Delhi

DR M. S. NAIK (*Alternate*)

DR B. P. BALIGA

Tata Oil Mills Company Limited, Bombay

SHRI M. C. BADAMI (*Alternate*)

DR S. N. BANERJEE

Food and Nutrition Board, Ministry of Agriculture
& Irrigation, New Delhi

SHRI T. V. SUBRAMANIAN (*Alternate*)

DR BHAVANI BELAVADY

National Institute of Nutrition, Hyderabad
Bangalore Dairy Miltone Project, Bangalore

SHRI M. R. CHANDRASEKHARA

LT-GEN S. N. CHATTERJEE

Directorate General of Armed Forces Medical
Services, New Delhi

MAJ-GEN D. C. SACHDEVA (*Alternate*)

DR J. D. CONTRACTOR

Coca-Cola Export Corporation, New Delhi

SHRI P. C. VIN (*Alternate*)

DR M. G. DE

Indian National Science Academy, New Delhi

DR BALDEV SINGH (*Alternate*)

DR (SMT) RAJAMAL P. DEVADAS

Home Science Association of India, Coimbatore

SMT JALAJA SUNDARAM (*Alternate*)

SHRI R. S. IYER

Glaxo Laboratories (India) Limited, Bombay

DR V. S. MOHAN (*Alternate*)

DR K. K. G. MENON

Hindustan Lever Limited, Bombay

DR P. J. THOMAS (*Alternate*)

DR V. B. MITBANDER

Modern Bakeries (India) Limited, New Delhi

DR M. M. KRISHNA (*Alternate*)

(*Continued on page 2*)

© Copyright 1977

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
DR N. VIJAYAKRISHAN NAIR SHRI D. S. CHADHA (<i>Alternate</i>)	Directorate General of Health Services, New Delhi
DR H. NATH DR P. K. VIJAYARAGHAVAN (<i>Alternate</i>)	Defence Food Research Laboratory, Mysore
DR T. M. PAUL DR R. BHIMASENA RAO (<i>Alternate</i>)	National Dairy Research Institute (ICAR), Karnal
DR S. V. PINGALE SHRI LALJEET SINGH (<i>Alternate</i>)	Food Corporation of India, New Delhi
SHRI S. RAMASWAMY SHRI B. B. DABRAL (<i>Alternate</i>)	Directorate General of Technical Development, New Delhi
SHRI R. B. RAO DR S. VENKATA RAO	The Britannia Biscuit Company Limited, Bombay Central Food Technological Research Institute (CSIR), Mysore
DR P. B. RAMA RAO (<i>Alternate</i>) SHRI M. G. SATHE	Sathe Biscuits and Chocolate Company Limited, Pune
SHRI U. R. KULKARNI (<i>Alternate</i>) SHRI V. H. SHAH	Kaira District Cooperative Milk Producers Union Limited, Anand
DR I. M. PATEL (<i>Alternate</i>) DR M. S. SWAMINATHAN	Indian Council of Agricultural Research, New Delhi
KUMARI M. S. USHA SHRI VINEET VIRMANI	G. B Pant University of Agriculture and Tech- nology, Pantnagar, District Nainital Roller Flour Millers Federation of India, New Delhi
SHRI SANTANU CHAUDHURI (<i>Alternate</i>) SHRI T. PURNANANDAM, Deputy Director (Agri & Food)	Director General, ISI (<i>Ex-officio Member</i>)

Secretary

DR R. B. MATHUR
Deputy Director (Agri & Food), ISI

Protein Rich Foods Subcommittee, AFDC 37 : 2

Convener

SHRI M. R. CHANDRASEKHARA Bangalore Dairy Miltone Project, Bangalore

Members

DR K. T. ACHAYA SHRI J. M. DATTA	Protein Foods and Nutrition Development Association of India, Bombay
DR B. S. NARASINGA RAO DR M. S. NARASINGHA RAO	The Britannia Biscuit Company Limited, Bombay National Institute of Nutrition, Hyderabad Central Food Technological Research Institute, (CSIR), Mysore
SHRI M. KANTHARAJ URS (<i>Alternate</i>) SHRI V. H. SHAH	Kaira District Cooperative Milk Producers Union Limited, Anand

Indian Standard

SPECIFICATION FOR
PROTEIN-RICH CONCENTRATED
NUTRIENT SUPPLEMENTARY FOODS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 September 1976, after the draft finalized by the Nutrition Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 A number of over-the-counter products designed for convalescents, invalids or those in indifferent health are in the market; these carry exceptionally high levels of nutrients like proteins, often accompanied by high dosages of one or more vitamins and minerals. These are not classed as drugs or medicines, but like the former are consumed in teaspoon or tablespoon quantities. Quite often they are manufactured by pharmaceutical companies but promoted and sold as nutritive foods. This standard is intended to cover products of this type, which do not fall in the purview of any other specifications.

0.3 In the processed nutritive foods for which Indian Standard specifications have so far been issued, the addition of vitamins and minerals is so designed that an expected daily consumption of the food would provide, for any nutrient, one-third the recommended daily allowance laid down by the Indian Council of Medical Research. When these nutrients are present at much higher levels, there is a possibility of harm through over-consumption, for example of vitamin A or vitamin D. This has been given consideration in drawing up this specification. The nutrient level is so specified that the daily consumption prescribed on the label by the manufacturer should furnish half the recommended daily allowance of the Indian Council of Medical Research for water-soluble materials as a minimum limit, and the total requirement for fat-soluble materials as a maximum limit.

0.4 Most of the protein-rich concentrated nutrient supplementary foods now commercially available are in powder, granule, grit or flaky form. The present standard is applicable only to solid products of this type, though chewy, pasty or emulsion forms of such foods are not impossible.

0.5 This standard has been formulated in close collaboration with the Protein Foods and Nutrition Development Association of India. In the preparation of this standard, due consideration has been given to the provisions of the Prevention of Food Adulteration Act, 1954, and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these rules, wherever applicable.

0.6 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*. The number of significant places retained in the rounded off value should be the same as that of the specified values in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for protein-rich concentrated nutrient supplementary foods, containing high levels of proteins, with or without high levels of one or more vitamins and minerals.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Routine Tests — Tests carried out on each lot to check the essential requirements that are likely to vary during production.

2.2 Type Tests — Tests to approve the design and micronutrient quality of the product at least at the beginning of marketing or certification, and conducted periodically thereafter to check the product quality or whenever the formulation is changed.

2.3 Acceptance Tests — Tests carried out on samples selected from the lot for the purposes of acceptance of the lot.

3. REQUIREMENTS

3.1 Raw Materials — Raw materials and other ingredients used in the manufacture of protein-rich concentrated nutrient supplementary foods shall be of good quality. In particular the edible oilseed flours and protein isolates, where used, shall conform to relevant Indian Standards:

*Rules for rounding off numerical values (*revised*).

- a) Groundnut — IS : 4684-1975¹, IS : 4875-1975² and IS : 8212-1976³
- b) Soya — IS : 7837-1975⁴, IS : 7835-1975⁵, IS : 7836-1975⁶ and IS : 8211-1976⁷
- c) Cottonseed — IS : 4874-1968⁸ and IS : 4876-1968⁹
- d) Sesame — IS : 6109-1971¹⁰ and IS : 6108-1971¹¹
- e) Sunflower
- f) Coconut

3.1.1 The fats, sweeteners, preservatives, flavours and colours used shall be those permitted under the PFA Rules and of good quality.

3.2 Description — Protein-rich concentrated nutrient supplementary foods shall be solid products in the form of powder, granules, grits, flakes or in other form. The material shall be free from dirt, extraneous and deleterious materials, and from fungus and insect infestation.

3.3 Organoleptic Quality — Protein-rich concentrated nutrient supplementary foods shall have an agreeable flavour, and shall be free from rancid taste or disagreeable odour.

3.4 Hygienic Conditions — Protein-rich concentrated nutrient supplementary foods shall be manufactured, packed, stored and distributed under hygienic conditions in a licensed premises (*see* IS : 2491-1972¹²).

3.5 The product shall also conform to the requirements given in Tables 1 and 2.

3.6 Protein Efficiency Ratio — The protein in protein-rich concentrated nutrient supplementary foods shall have a protein efficiency ratio (PER) of 2.0 (corrected) when determined by the method described in IS : 7481-1974¹³.

¹ Specification for edible groundnut flour (expeller pressed) (*first revision*).

² Specification for edible groundnut flour (solvent extracted) (*first revision*).

³ Specification for edible groundnut protein isolate.

⁴ Specification for edible full-fat soya flour.

⁵ Specification for edible medium-fat soya flour.

⁶ Specification for edible low-fat soya flour.

⁷ Specification for edible soya protein isolate.

⁸ Specification for edible cottonseed flour (expeller pressed).

⁹ Specification for edible cottonseed flour (solvent extracted).

¹⁰ Specification for edible sesame flour (expeller pressed).

¹¹ Specification for edible sesame flour (solvent extracted).

¹² Code for hygienic conditions for food processing units (*first revision*).

¹³ Method for determination of protein efficiency ratio (PER).

**TABLE 1 REQUIREMENTS FOR COMPOSITION OF PROTEIN-RICH
CONCENTRATED NUTRIENT SUPPLEMENTARY FOODS**

(Clause 3.5)

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, <i>Max</i>	5	Appendix A of IS : 1547-1968*
ii)	Protein ($N \times 6.25$) (on dry basis), percent by mass, <i>Min</i>	20	IS : 7219-1973†
iii)	Fat (on dry basis), percent by mass	to be declared on the container	Appendix F of IS : 4684-1975‡
iv)	Carbohydrates (on dry basis), percent by mass	to be declared on the container	Appendix D of IS : 1547-1968*
v)	Calories per 100 g, <i>Min</i>	350	See Note 1
vi)	Acidity of extracted fat (as oleic acid), percent by mass, <i>Max</i>	0.5	Appendix G of IS : 4684-1975‡
vii)	Acid-insoluble ash (on dry basis), percent by mass, <i>Max</i>	0.08	Appendix E of IS : 4684-1975‡
viii)	Crude fibre (on dry basis), percent by mass, <i>Max</i>	3.0	Appendix H of IS : 4684-1975‡
ix)	Total bacterial count/g, <i>Max</i>	50 000	IS : 5402-1969§
x)	Coliform bacterial count/g, <i>Max</i>	10	IS : 5401-1969
xi)	Salmonella sp	Nil	Cl 6 of IS : 5887-1970¶

NOTE 1 — Calories may be calculated from composition, using the following factors per g of nutrient : protein 4, fat 9 and carbohydrates 4.

NOTE 2 — Requirement given at Sl No. (vi) may be determined when fat percentage exceeds 10 percent.

*Specification for infant milk foods (*first revision*).

†Method for determination of protein in foods and feeds.

‡Specification for edible groundnut flour (expeller pressed) (*first revision*).

§Method for plate count of bacteria in foodstuffs.

||Methods for detection and estimation of coliform bacteria in foodstuffs.

¶Methods for detection of bacteria responsible for food poisoning and food-borne diseases.

3.7 Aflatoxin — The aflatoxin content shall not exceed 30 µg/kg of the food when tested by the method described in Appendix J of IS : 4684-1975*.

3.8 Gossypol — The gossypol level shall not exceed 0.065 percent by mass, and the total gossypol level 1.10 percent when determined by the method described in Appendix A of IS : 4874-1968†.

3.9 Urease Activity — The change of pH shall not be more than 1.0 when determined by the method described in Appendix D of IS : 7837-1975‡.

NOTE — Aflatoxin content, urease activity and gossypol content shall be determined when flours or groundnut, soyabeans and cottonseed respectively have been employed in manufacture of the protein-rich concentrated nutrient supplementary food.

4. TESTS

4.1 Type Tests — The following characteristics shall be tested for type approval:

- a) Protein efficiency ratio (PER) (3.6),
- b) Aflatoxin (3.7),
- c) Gossypol (3.8),
- d) Urease activity (3.9), and
- e) Vitamins and minerals (Table 2).

4.2 Routine Tests — The following characteristics shall be tested to check the essential requirements likely to vary during production:

- a) Description (3.2),
- b) Organoleptic quality (3.3), and
- c) Composition (Table 1).

4.3 Acceptance Tests — For acceptance of lot, the material shall be tested for following characteristics:

- a) Description (3.2), and
- b) Composition (Table 1).

4.4 The tests shall be carried out as prescribed in 3.2, 3.3, 3.6 to 3.9 and Tables 1 and 2.

4.4.1 Quality of Reagents — Unless specified otherwise chemicals and distilled water (see IS : 1070-1960§) shall be employed in tests.

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

*Specification for edible groundnut flour (expeller pressed) (*first revision*).

†Specification for edible cottonseed flour (expeller pressed).

‡Specification for edible full-fat soya flour.

§Specification for water, distilled quality (*revised*).

TABLE 2 REQUIREMENTS OF VITAMINS AND MINERALS FOR PROTEIN-RICH CONCENTRATED NUTRIENT SUPPLEMENTARY FOODS

(Clause 3.5)

Sl No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO
(1)	(2)	(3)	(4)
i)	Vitamin A, μg per manufacturers' daily prescribed consumption (MDPC), <i>Max</i>	300	IS : 5886-1970*
ii)	Vitamin D, μg /MDPC, <i>Max</i>	5	IS : 5835-1970†
iii)	Vitamin E (tocopherols) mg/MDPC, <i>Min</i>	30	IS : 7235-1974‡
iv)	Vitamin C (ascorbic acid) mg/MDPC, <i>Min</i>	20	IS : 5838-1970§
v)	Vitamin B ₁ [Thiamine (as hydrochloride)], mg/MDPC, <i>Min</i>	0.4	IS : 5398-1969
vi)	Vitamin B ₂ (Riboflavin), mg/MDPC, <i>Min</i>	0.4	IS : 5399-1969¶
vii)	Nicotinic acid, mg/MDPC, <i>Min</i>	4.5	IS : 5400-1969**
viii)	Folic acid, μg /MDPC, <i>Min</i>	40	IS : 7234-1974††
ix)	Vitamin B ₆ (pyridoxine), mg/MDPC, <i>Min</i>	1.0	IS : 7530-1975‡‡
x)	Biotin, mg/MDPC, <i>Min</i>	0.15	See Note
xi)	Vitamin B ₁₂ , μg /MDPC, <i>Min</i>	0.5	IS : 7529-1975§§
xii)	Pantothenic acid, μg /MDPC, <i>Min</i>	2.5	See Note
xiii)	Calcium, mg/MDPC, <i>Min</i>	225	Appendix F of IS : 1656-1969
xiv)	Iron, mg/ MDPC, <i>Min</i>	9	do
xv)	Phosphorus, mg/MDPC, <i>Min</i>	500	See Note
xvi)	Iodine, μg /MDPC, <i>Min</i>	75	do
xvii)	Magnesium, mg/MDPC, <i>Min</i>	200	do
xviii)	Zinc, mg/MDPC, <i>Min</i>	7.5	do
xix)	Copper, mg/MDPC, <i>Min</i>	1.0	do

NOTE — To check the levels of pyridoxine, biotin, phosphorus, iodine, magnesium, zinc and copper, manufacturers should maintain a record showing the quantities added to the product.

*Methods for estimation of carotenes and vitamin A (retinol) in foodstuffs.

†Methods for estimation of vitamin D in foodstuffs.

‡Method for estimation of tocopherols (vitamin E) in foodstuffs.

§Method for estimation of vitamin C in foodstuffs.

||Method for estimation of thiamine (vitamin B₁) in foodstuffs.

¶Method for estimation of riboflavin (vitamin B₂) in foodstuffs.

**Methods for estimation of nicotinic acid (niacin) in foodstuffs.

††Method for estimation of folic acid in foodstuffs.

‡‡Method for estimation of pyridoxine (vitamin B₆) in foodstuffs.

§§Method of estimation of vitamin B₁₂ in foodstuffs.

|||Specification for processed cereals weaning foods (first revision).

5. PACKING AND MARKING

5.1 Packing — The protein-rich concentrated nutrient supplementary foods shall be packed in moistureproof, clean, dry and sound containers, in such a way as to protect it from deterioration, in quantities of 100 g, 200 g, 500 g or 1 kg unless otherwise agreed to between the purchaser and the vendor.

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

- a) Directions for use, with quantity of the product prescribed for daily consumption;
- b) Calories, proteins and fat per 100 g of the product;
- c) Vitamins and minerals in the quantity of the product prescribed for daily consumption;
- d) Trade or brand name of the material;
- e) Name and address of the manufacturer;
- f) Batch or code number, and date of manufacture;
- g) Net mass;
- h) Fat and carbohydrates content; and
- j) Requirements as given in Packaged Commodities Regulation 1975.

5.2.1 The container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. SAMPLING AND CRITERIA FOR CONFORMITY

6.1 Samples shall be taken to determine the acceptance of the lot. Each lot shall be tested separately.

6.2 The representative samples shall be drawn as prescribed in Appendix N of IS : 1547-1968*.

*Specification for infant milk foods (*first revision*).

6.3 Number of Tests

6.3.1 Tests for moisture shall be conducted individually on each of the samples constituting a set of individual samples.

6.3.2 Tests for the determination of protein, fat, acid-insoluble ash, crude fibre and acidity of extracted fat shall be conducted on the composite sample. Microbiological tests [Sl No. (ix), (x) and (xi) of Table 1] may be carried out at the time of type testing or whenever any specific need arises.

6.4 Criteria for Conformity — A lot shall be declared as conforming to the requirements of the specification for protein-rich concentrated nutrient supplementary foods when the following criteria are satisfied:

- a) In case of general requirements, the product shall satisfy the requirements given in **3.2**.
- b) In case of moisture, each of the test results as obtained from the individual samples shall be less than or equal to 5 percent.
- c) For the remaining characteristics, the test results obtained from the composite sample shall conform to the corresponding requirements given in Table 1.

INDIAN STANDARDS

ON NUTRITION

IS :

- 3137-1974 High protein mixes for use as food supplement (*first revision*)
4684-1975 Edible groundnut flour (expeller pressed) (*first revision*)
4874-1968 Cottonseed flour (expeller pressed) (*first revision*)
4875-1975 Edible groundnut flour (solvent extracted) (*first revision*)
4876-1968 Cottonseed flour (solvent extracted) (*first revision*)
6108-1971 Edible sesame flour (solvent extracted)
6109-1971 Edible sesame flour (expeller pressed)
7021-1973 Protein rich foods supplements for infants and preschool children
7481-1974 Method for determination of protein efficiency ratio (PER)
7482-1974 Protein-based beverages
7487-1974 Protein rich biscuits
7835-1975 Edible low-fat soya flour
7836-1975 Edible medium-fat soya flour
7837-1975 Edible full-fat soya flour
8211-1976 Edible soya protein isolate
8212-1976 Edible groundnut protein isolate
8220-1976 Protein-rich concentrated nutrient supplementary foods
8222-1976 Edible leaf protein concentrate

INDIAN STANDARDS INSTITUTION

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

Telephone : 27 01 31 (20 lines)

Telegrams : Manaksanstha

Regional Offices:

		Telephone
Western :	Novelty Chambers, Grant Road	BOMBAY 400007 37 97 29
Eastern :	5 Chowringhee Approach	CALCUTTA 700072 23-08 02
Southern :	C. I. T. Campus, Adyar	MADRAS 600020 41 24 42

Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur	AHMADABAD 380001	2 03 91
'F' Block, Unity Bldg, Narasimharaja Square	BANGALORE 560002	2 76 49
Ahimsa Bldg, SCO 82-83, Sector 17C	CHANDIGARH 160017	2 83 20
5-8-56/57 L. N. Gupta Marg	HYDERABAD 500001	4 57 11
117/418 B Sarvodaya Nagar	KANPUR 208005	82 72
B.C.I. Bldg (3rd Floor), Gandhi Maidan East	PATNA 800004	5 36 55
Hantex Bldg (2nd Floor), Rly Station Road	TRIVANDRUM 695001	32 27