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IS 7161 (1973): Vegetable parchment or grease proof paper/aluminium foil laminate for wrapping butter [CHD 15: Paper and its products]



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IS : 7161 - 1973

(Reaffirmed 1987)

Indian Standard

**SPECIFICATION FOR
VEGETABLE PARCHMENT OR GREASEPROOF
PAPER/ALUMINIUM FOIL LAMINATE FOR
WRAPPING BUTTER**

(First Reprint SEPTEMBER 1991)

UDC 676·242·3+676·264·2 : 669·71 ; 637·235

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

Indian Standard

SPECIFICATION FOR VEGETABLE PARCHMENT OR GREASEPROOF PAPER/ALUMINIUM FOIL LAMINATE FOR WRAPPING BUTTER

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Indian Standard

SPECIFICATION FOR VEGETABLE PARCHMENT OR GREASEPROOF PAPER/ALUMINIUM FOIL LAMINATE FOR WRAPPING BUTTER

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 28 December 1973, after the draft finalized by the Paper and Flexible Packaging Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 With the onset of 'White revolution' in the country, a large quantity of table butter, commonly known as pasturized butter, is being produced and packed for consumers by more and more organized dairies. In order to maintain a high standard of quality and to ensure no violation of the provisions of the Prevention of Food Adulteration Act of 1954, this Indian Standard has been formulated.

0.3 Butter is required to be packed in most hygienic conditions and under low temperatures. The wrappers which are in direct contact with butter should be able to withstand these low temperatures under which the butter is also stored, and transported. In preparing this standard prevailing indigenous trade practices have been kept in view.

0.4 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 value in this standard.

1. SCOPE

1.1 This standard specifies the requirements of vegetable parchment or greaseproof paper/aluminium foil laminate for wrapping butter.

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

2. TERMINOLOGY

2.1 For the purpose of this standard the definitions given in IS:4261-1967* and IS:7186-1973† shall apply.

3. REQUIREMENTS

3.1 **General**—The laminate shall consist of a layer of aluminium foil bonded to one layer of vegetable parchment or greaseproof paper with the help of food grade micro-crystalline paraffin wax adhesive. The aluminium foil may be either plain or printed or embossed, or printed and embossed.

3.1.1 The composition of the components like aluminium foil, vegetable parchment or greaseproof paper, wax adhesive, surface coating, food grade nontoxic coating or printing ink shall be such that it does not introduce into the wrapped product, substances injurious to health or having any deleterious effect on flavour, odour or appearance of the wrapped product.

3.2 **Vegetable Parchment**—The vegetable parchment used in the manufacture of the laminate shall not have any offensive odour and shall not rupture on twisting or folding. It shall be white, smooth and uniform in texture and free from pinholes. The substance of the vegetable parchment shall be as agreed to between the purchaser and the supplier.

NOTE—It is recommended that vegetable parchment of substance not less than 35-45 g/m² be used.

3.3 **Greaseproof Paper**—The paper shall conform to IS:6622-1972‡. It shall also conform to the additional requirements as given in Table 1.

TABLE 1 ADDITIONAL REQUIREMENTS FOR GREASEPROOF PAPER

Sl. No.	CHARACTERISTIC	REQUIREMENT	TEST METHOD, REF TO
(1)	(2)	(3)	(4)
i)	Water soluble chloride (as NaCl) content, <i>Max</i>	0.07 percent	Cl 17 of IS : 1060 (Part II)-1960*
ii)	Water soluble sulphate (as Na ₂ SO ₄) content, <i>Max</i>	0.20 percent	Cl 18 of IS : 1060 (Part II)-1960*
iii)	pH (by hot extraction method)	5.5 to 7.0	Cl 10 of IS : 1060 (Part I)-1966†
iv)	Copper content	30 ppm	Appendix A

*Methods of sampling and test for paper and allied products, Part II.

†Methods of sampling and test for paper and allied products, Part I (*revised*).

*Glossary of terms relating to paper and pulp based packaging materials.

†Glossary of terms relating to paper and flexible packaging.

‡Specification for greaseproof paper.

3.4 Aluminium Foil — Aluminium foil shall be fully annealed after rolling and shall comply with the requirements for chemical composition to SIC or NS 3 grade of IS : 737-1965*.

3.4.1 Surface — The surface condition of the aluminium foil shall be such as to permit satisfactory adhesion to the vegetable parchment or greaseproof paper.

3.4.2 Thickness — The nominal thickness of the aluminium foil used in manufacture of the laminate shall be as agreed to between the purchaser and the vendor. It shall be determined by the method described in Appendix B. The tolerance on the agreed nominal thickness shall be such that the average value of the thickness of sample specimens, shall not deviate by more than ± 8 percent from the agreed nominal value.

NOTE — It is recommended that the nominal thickness of foil may be not less than 0.009 mm.

3.5 Adhesive — The adhesive shall conform to Type 1 of IS : 4654-1968†. The wax shall not flake when either in the dry or moist condition and shall not support the growth of micro-organism.

3.6 Bleeding of Colour — The colour of any coating or printing ink used shall not bleed into the wrapped product or be of toxic nature. The bleeding resistance of the coatings or inks shall be determined by the method prescribed in Appendix C.

3.7 Laminate — The laminate shall conform to the physical requirements as given in Table 2.

4. DIMENSIONAL TOLERANCES

4.1 The length and width of the laminate shall be as agreed to between the purchaser and the supplier. A tolerance of ± 2 mm shall be allowed on the width of the reel or sheet.

5. SAMPLING

5.1 For sampling of greaseproof paper the procedure given in **5.1** of IS : 6622-1972‡ shall be adopted.

5.1.1 For sampling of vegetable parchment the procedure given in 'Indian Standard specification for vegetable parchment' (*under preparation*) shall be adopted, however the buyer and the seller may agree to follow the procedure given in **5.3** to **5.5**.

5.2 For sampling of aluminium foil or the laminate, the sampling plan as given in **5.3** to **5.5** shall be followed.

*Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (*revised*).

†Specification for paraffin wax.

‡Specification for greaseproof paper.

TABLE 2 PHYSICAL REQUIREMENTS OF LAMINATE

(Clause 3.7)

Sr. No.	CHARACTERISTIC	REQUIREMENT	TEST METHOD, REF TO
(1)	(2)	(3)	(4)
i)	Bursting strength, <i>Min</i>	1.4 kg/cm ²	Cl 12.5 of IS : 1060 (Part I)-1966*
ii)	Folding endurance (Double fold), <i>Min</i> :		Cl 12.6 of IS : 1060 (Part I)-1966*
	CD	8	
	MD	103	
iii)	Tensile strength, <i>Min</i> :		Cl 12.3 of IS : 1060 (Part I)-1966*
	CD	1.25 kg/cm width	
	MD	2.45 kg/cm width	
iv)	Moisture vapour transmission rate (MVTR):		Cl 14 of IS : 1060 (Part II)-1960†
	Plain	0.5 to 1.0 g/m ² 24 h at 90% RH	
	Creased	2.0 to 2.5 g/m ² 24 h at 90% RH	

*Methods of sampling and test for paper and allied products, Part I (revised).

†Methods of sampling and test for paper and allied products, Part II.

5.3 Lot—The quantity of aluminium foil or the laminate of the same quality produced under essentially the same conditions shall constitute a lot.

5.3.1 For ascertaining the conformity of the lot to the requirements of this specification, samples shall be examined from each lot separately. The number of rolls or packages to be selected at random from the lot shall be in accordance with col 1 and 2 of Table 3.

TABLE 3 SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

(Clauses 5.3.1 and 5.5)

NO. OF ROLLS OR PACKAGES IN THE LOT	NO. OF ROLLS OR PACKAGES TO BE SELECTED	PERMISSIBLE NUMBER OF DEFECTIVE TEST SAMPLES	
		For Rolls	For Packages
(1)	(2)	(3)	(4)
Up to 100	5	0	1
101 ,, 150	8	0	1
151 ,, 300	13	0	2
301 and above	20	1	3

5.4 Test Sample—The test sample, unless otherwise specified shall consist of a sheet or sheets each having a total area of not less than 650 cm². For consignments in rolls, test sample sheets shall be taken from the first undamaged layer of each sample roll. For consignment in sheets, 4 sheets at random shall be taken from each package sampled. The sample sheets shall be kept flat and free from wrinkles and folds, and shall be protected from exposure to liquids, direct sunlight and other harmful influences. Test shall not be made on portions of sheets in which there are obvious isolated flaws.

5.5 Criteria for Conformity—The lot shall be considered in conformity with the requirements of this standard, if the number of test samples found defective for any one or more of the characteristics does not exceed the corresponding number given in col 3 or 4 of Table 3.

6. PACKING AND MARKING

6.1 Unless otherwise specified, laminate shall be supplied in reels wound on aluminium, steel, HDPE or straw board cores. Recommended internal core diameters are 58, 70 and 76 mm. The outer diameters of the spool shall be as agreed to between the purchaser and the supplier.

6.1.1 Spools may be packed in wooden boxes. The spools may be separated from each other by partitions of rectangular pieces of plywood each of the size of the width and height of the box. A wooden rod or cross dowel may be inserted to run through all the spools and the partitions so that the adjacent spools do not come in contact with each other during transportation.

6.2 Each spool shall be marked with the following particulars:

- a) Name of the manufacturer,
- b) Code number, and
- c) Date of manufacture.

6.2.1 The laminate and spool 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.

6.3 The box shall be marked with the following information:

- a) Name or trade-mark of the manufacturer,
- b) Batch number and date of manufacture, and
- c) Net metal weight of the contents.

APPENDIX A

[Table 1, Item (iv)]

METHOD OF DETERMINING THE COPPER CONTENT

A-1. REAGENTS

A-1.1 Citric Acid

A-1.2 Ammonia Solution — sp gr 0.880.

A-1.3 Sodium Diethyl Dithiocarbamate — 0.2 percent solution, freshly prepared.

A-1.4 Standard Copper Solution — 1 ml of which is equivalent to 0.01 mg of copper.

A-1.5 Nitric Acid — conforming to analytical grade of IS : 264-1968*.

A-2. PROCEDURE

A-2.1 Weigh 5 g of the sample cut into strips, fold and place in a Kjeldahl flask. Add 20 ml of sulphuric acid. Warm very gently until the initial reaction is over and then more strongly adding 1 ml of nitric acid at a time whenever white fumes indicate that an excess of nitric acid is no longer present. Continue until the paper is completely oxidized. When further addition of nitric acid produces no further change in the yellow or green solution, cool carefully and dilute to 50 ml with water and re-evaporate until copious white fumes are evolved. Repeat the operation of dilution and evaporation to ensure that the nitric acid has been entirely removed. Finally dilute the solution to 100 ml.

A-2.2 Take 20 ml or a suitable aliquot of the working solution and add 1 g of citric acid and make alkaline with ammonia solution. Make it up to 50 ml in a Nessler cylinder. Add 5 ml of 0.2 percent solution of sodium diethyl dithiocarbamate.

*Specification for nitric acid (*first revision*).

A-2.3 Take 20 ml of distilled water in Nessler cylinder, add 1 g of citric acid and make alkaline with ammonia solution. Make the volume up to 50 ml. Add 5 ml of 0.2 percent solution of sodium diethyl dithiocarbamate. To this solution add standard copper solution (see **A-1.4**) from a burette drop by drop. Match yellow colour of this solution against the colour of the solution produced in **A-2.2**.

A-2.4 Make a blank test on the reagents.

APPENDIX B

(Clause 3.4.2)

METHOD OF DETERMINING THE THICKNESS OF FOIL

B-1. PROCEDURE

B-1.1 Samples of laminate of known area shall be prepared from flat, uncreased sheets by cutting round a metal template with bevelled edges by means of a sharp knife. The sample shall be washed with a suitable solvent to remove all traces of wax, adhesive or coating, and to separate the paper from the foil. The samples of foil shall be dried and weighed on a balance, accurate to at least 0.5 mg.

NOTE -- Templates of 100 × 100 mm have been found suitable.

B-2. CALCULATIONS

$$\text{Thickness of foil in mm} = \frac{W}{27.1}$$

where W is the mass of the foil sample (100 × 100 mm) in grams.

APPENDIX C

(Clause 3.6)

TEST FOR DETERMINATION OF RESISTANCE OF BLEEDING OF COLOURS INTO BUTTER

C-1. PRINCIPLE

C-1.1 For fat solid at 20°C, the printed side of the foil specimen is placed in contact with the fat to be tested. Alterations to the print and bleeding of colour to the fat are then assessed visually.

C-2. PROCEDURE

C-2.1 The fat melted or pressed is placed in a petri dish so as to obtain as flat surface as possible. The printed side of the foil specimen, not less than 20×50 mm is placed in contact with fat and pressed down so as to obtain complete and even contact over its surface.

C-2.1.1 The dish containing the specimen is allowed to stand for 24 hours at $20 \pm 2^\circ\text{C}$ and then placed for 1 hour in a refrigerator at $4 \pm 2^\circ\text{C}$ to facilitate removal of the specimen.

C-2.1.2 The specimen is removed and examined for the change in colour. The fat which was in direct contact with the print is examined for bleeding.

C-2.1.3 A change in colour of the print caused by the absorption of fat or the deposit of a thin film of fat is not considered deterioration within the meaning of this test.

NOTE — Water in oil type solid fat emulsions, for example, butter and margarine, shall not have separated before or during the test. For instance butter shall not be changed by melting.

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