

SECRETARIAT

OF

THE TECHNICAL STANDARDISATION COMMITTEE (FOOD STUFFS)
(DIRECTORATE GENERAL OF SUPPLIES AND TRANSPORT)

DEFENCE FOOD SPECIFICATIONS - 2023

SPECIFICATION NO 423 : REFINED SUNFLOWER OIL

Quality

1. The Refined Sunflower Oil shall be obtained by the process of expression or solvent extraction from clean and sound Sunflower Seeds (*Helianthus annuus* Linn fam) or good quality Sunflower Seed Oil cake. The solvent extracted oil shall be obtained from oleaginous material using solvent hexane not more than 5.0 ppm in solvent extracted oils conforming to BIS Specification No IS: 3470 (as amended).
2. The raw Sunflower Oil shall be degummed, neutralised with alkali and bleached with bleaching earth or activated charcoal or both, thereafter deodorised with steam at a suitable temperature. No other chemical agents shall be used.
3. The Refined Sunflower Oil shall be wholesome, clear, clean, sparkling and odourless liquid and shall be pleasant to taste and smell.
4. Antioxidant or synergist may be added in accordance with FSSAI Regulations.
5. It shall be free from rancidity, adulterants, sediments, suspended or other foreign matter, separated water and added colouring and flavouring substances.
6. The material shall also be free from admixture with other oils and non edible oils when tested according to the methods prescribed in BIS Specification No IS: 548-(Part-II)-1976.
7. When tested as prescribed in para 20 of IS: 548 (Part I)-1964 the material shall have peroxide value of not more than 10.0 milliequivalents per 1000 gm.

Packing

8. (a) **Tins.** The Refined Sunflower Oil shall be packed in new 15 kg square tins conforming to BIS specification No IS :10325 (as amended) for packing ghee, vanaspati, edible oils and bakery shortenings and shall bear ISI certification mark on one side of vertical panel of the tin. The tins in addition shall be provided with tamper proof collapsible plastic spouts.

OR

The Refined Sunflower Oil shall be packed in new 15 kg square tins conforming to BIS specification No IS : 10325 (as amended) for packing ghee, vanaspati, edible oils and bakery shortenings and shall bear ISI certification mark on one side of vertical panel of the tin. The tins in addition shall be provided with tagger plates over Newman cap seals, soldered all around.


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(b) The net content of each tin shall be 15 kg. Each tin shall be reinforced with top and bottom three poly CFB covers of kraft paper. The tin with the CFB covers will be strapped with two rounds of virgin polypropylene straps with one in longitudinal direction and other at right angles to it. The straps must cross between the carrying handle of the tin. The detailed specifications as under:-

(i) **Top and Bottom Covers.**

- (aa) Composition. Three ply.
- (ab) Type of Paper. Kraft paper.
- (ac) Construction. Outer layer 230 GSM, 130 GSM in second and inner layer.
- (ad) Dimensions. 340 x 340 mm or the size to provide tight fit top/bottom cover.

(ii) **Strappings.**

- (aa) Type. Virgin white Polypropylene strap roll type.
- (ab) Dimensions. Minimum 12 mm width and 0.5 mm thickness.

(c) Each tin shall be given a protective outside lacquer coating in such a manner that the welded / soldered seams shall also get covered with lacquer.

(Note- Ref Para 6 (a) above. The tins which will be opened to draw composite samples, shall be secured with the help of a tagger plate placed on the mouth of the tin soldered all around.)

9. (a) **Polypouches.** The Refined Sunflower Oil shall be packed in one litre polypouches conforming to Appx "G" to this specification.

(b) **Corrugated Fibreboard Cartons (CFCs).** 10/12 such polypouches/ 2Ltr & 5Ltr HDPE Jars shall be further packed in a CFC conforming to Appx "K" & Appx 'L' respectively to this specification. The quality of CFC will be as per DFS No 311 (main body of CFC)

10. **15 Kg HDPE Drums.**

(a) Refined Sunflower Oil shall be packed in new 15 kg HDPE drums made from virgin, dye free, food grade quality HDPE conforming to shape and design as given in Appendix 'A' and 'B' attached. The colour of the drum shall be white or natural and the grade of HDPE used for fabrication shall be GF 7755(PIL).

(b) The fabrication of the drum shall be such that the wall thickness throughout the drum shall be 3 ± 1 mm and tare weight not less than 950 gm. The drum shall be provided with tightly fitting press-in-poly cap having flattened thin profile rim and screw cap which should not rotate freely when tightened properly.


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(c) After filling 15 kg Refined Sunflower Oil the press-in-poly cap shall be inserted in the mouth and heat sealed by covering it with a LDPE laminated aluminium foil disc, ensuring overall sealing/covering of mouth and press in poly cap to make the drum leak proof and pilfer proof. The LDPE laminated aluminium foil disc may be plain or printed with brand name of the firm. Thereafter the screw cap shall be fitted tightly. Such drums shall not show any signs of leakage or change in shape when kept in inverted position for 48 hours or suspended freely and shall have proper stability and stackability when stacked 3 or 4 high.

11. 5 Kg Bag-in-box Packing.

(a) 5 Kg Refined Sunflower Oil shall be first packed in a polybag consisting of 2 layers made from LLDPE-50-Micron (Inner ply) and LLDPE/Nylon/LLDPE-100 micron (outer ply) of size 345 x 425 mm (outer dimensions) having an inbuilt poly tap (SMX/TRU SEAL) with locking sleeve as per the specification given in Appendix 'C' attached.

(b) The polybag shall be made by band sealing all-around having seal width not less than 5 mm with no discontinuity or leakage.

(c) Each filled polybag shall then be placed in a 5 ply CFB having moisture barrier capability of size 160x160x240 mm (closed box) conforming to Specification and drawing as given in Appendix 'D' attached. The top flaps of the box shall be closed with good quality starch or dextrin based adhesive. Silicates or highly alkaline adhesives will not be used.

12. 10 Kg Bag-in-box Packing.

(a) 10 Kg Refined Sunflower Oil shall be first packed in a polybag consisting of two layers made from LLD-50 micron (inner ply) and LLDPE-Nylon-LLDPE-100 micron (outer ply) of size 435 x 520 mm having an inbuilt pourer with locking sleeve as per the specification given in Appendix 'E' attached. The polybag shall be made by band sealing all-around having seal width not less than 5.0 mm with no discontinuity/leakage.

(b) Each filled poly bag shall then be placed in a 7 ply CFB having moisture barrier capability and size 205 x 205 x 290 mm conforming to Specification and drawing as given in Appendix 'F' attached.

(c) Each Bag-in-box shall be then strapped with four rounds of strappings made from virgin plastic/nylon/PVC having width not less than 1.20 cm and thickness not less than 0.45 mm, two in longitudinal direction and the remaining two at right angles duly secured at junctions either by rust proof metal staples of appropriate size duly crimped or by heat welding.

13. Oil shall be packed in 2 Ltr & 5 Ltr HDPE cans conforming to BIS Specification No IS 15473 (as amended).


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Marking

14. The following particulars shall be printed or stencilled with indelible ink or embossed on each tin/CFB Box of 5 and 10 kg bag-in-box/15 kg HDPE drum/ 1 litre poly pouch & 2 Ltr & 5 Ltr HDPE cans :-


- (a) Description of contents i.e. Refined Sunflower Oil (Expressed/ Solvent extracted) of suitable size as per the Legal Metrology (Packaged Commodities) Acts 2009 and Rules 2011.
- (b) List of ingredients used in descending order of wt or volume.
- (c) Nutritional information per 100 gm / 100 ml / per serving as indicated in the para for mandatory requirements of FSSAI/BIS.
- (d) Date of manufacture.
- (e) Name of manufacturer.
- (f) Nett Weight (in kg).
- (g) Batch/Lot No.
- (h) AT No and date.
- (j) Warranty expiry date.
- (k) For Defence Services Only.
- (l) Brand name of the firm shall be marked in tins/CFCs/Pet bottles/Poly pouches.
- (m) FSSAI License No.
- (n) Green/Veg Logo

Note: (Applicable to 1 litre polypouches only)

- (i) The ink and colour used for marking/printing shall be of approved quality conforming to FSSAI act and also Food and Drug Authority Rules.
- (ii) The ink and colour used shall be non toxic and non poisonous. It shall not peel off or melt before or after impulse sealing operation. It shall not get dissolved with oil under any hot or cold operation conditions.

15. **Corrugated Fibreboard Cartons (CFCs).** Each CFC shall be printed with the following particulars (Applicable to one litre polypouches & 2 Ltr & 5 Ltr HDPE cans):-

- (a) Description of contents i.e Refined Sunflower Oil (Expressed/ Solvent extracted) as per the Legal Metrology (Packaged Commodities) Acts 2009 and Rules 2011.
- (b) Gross Weight (In Kg).
- (c) Number of polypouches /HDPE Cans x Nett Wt (In Kg).
- (d) Name of manufacturer.
- (e) Date of manufacture.
- (f) Batch No/Lot No.
- (g) Warranty expiry date.
- (h) AT No and date.
- (j) FOR DEFENCE SERVICES ONLY.


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Warranty

16. In accordance with the standard warranty clause, Appendix 'J' the warranty period shall be nine months.

Hygiene

17. The Refined Sunflower Oil shall be manufactured in premises maintained in hygienic condition which shall be open to inspection at any time by a competent authority approved by the Quartermaster General and Director General of Medical Services (Army).

18. The basic hygienic requirements in a factory producing Refined Sunflower Oil shall be in accordance with Appendix 'H'.


Inspection

19. An inspection shall be carried out by the Director General of Supplies and Transport or an officer acting on his behalf on all supplies tendered for acceptance. The decision of this officer shall be final.

20. The Refined Sunflower Oil shall conform to the following analysis:-

- | | | |
|-----|---|--------------------|
| (a) | Moisture, percent by mass, max | - 0.1 |
| (b) | Colour in a 2.5 cm cell on the Lovibond Tintometer scale expressed as (Y + 5R) shall not be deeper than | - 5.0 |
| (c) | Refractive index at 40° C | - 1.4640 to 1.4691 |
| (d) | Saponification value | - 188 to 194 |
| (e) | Iodine value (wijs) | - 100 to 140 |
| (f) | Acid value, max | - 0.3 |
| (g) | Un saponifiable matter, percent by mass, max | - 1.5 |
| (h) | Flash point, Pensky - Martens (Closed) (in case of solvent extracted oil only), min | - 250° C |
| (j) | <u>Clarity Test</u> : The Refined Sunflower Oil shall not show any turbidity after keeping the filtered sample at 30° C for 24 hours. | |

21. The methods of analysis shall be those as laid down in the BIS Specification No IS : 548 (Part-I) - 1964, IS: 548 (Part-II) - 1976 and IS : 1448-1970.


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Mandatory Requirements Of FSSAI/ BIS

22. All mandatory requirements of FSSAI/ BIS, as amended from time to time, pertaining to the above Specification including marking of BIS certification mark for container/contents, Best Before _____, coloured symbol for declaring vegetarian and non-vegetarian food etc on packs shall be complied with.

23. The list of ingredients, nutritional information per 100 gm / 100 ml / per serving etc, as given in the Govt of India, Office of the ADG (PFA) GSR No 664(E) dt 19 Sep 2008 published in Part II, Section 3, Sub sec (i) of Gazette of India, Extra Ordinary, amended vide corrigendum GSR 135 (E) dt 27 Feb 2009, issued on 06 Mar 2009, to be complied with.


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APPENDIX 'C'
TO SPECIFICATION NO 423 FOR
REFINED SUNFLOWER OIL-2023
(Para 11 (a) refers)

SPECIFICATION FOR 5 KG POLY BAG

- | | | | | |
|-----|------------------------|---|---|-----------------------------|
| 1. | Bag size | : | 5 Kg edible oil. | |
| 2. | Material Specification | : | Inner Ply - LLDPE - 50 Micron.
Outer Ply - LLDPE/Nylon/LLDPE - 100 micron. | |
| 3. | Bag OD | : | 345 x 425 mm. | |
| 4. | Bag ID | : | 320 x 400 mm. | |
| 5. | Spout Location | : | 160 x 120 mm. | |
| 6. | Spout/Cap | : | SMX/TRU SEAL. | |
| 7. | Quality Parameters | : | (a) Air Burst Test | - 5 PSI. |
| | | | (b) Spout Pull Test | - 35 PSI. |
| | | | (c) Hot Oil Test | - 165 ⁰ F 2 hrs. |
| 8. | Packing | : | Master Shipper. | |
| 9. | Box I.D. | : | 160 x 160 x 240 mm. | |
| 10. | Special Instructions | : | Location of inbuilt poly tap
(SMX / TRU SEAL). | |

APPENDIX 'D'
TO SPECIFICATION NO 423 FOR REFINED
SUNFLOWER OIL-2023 (Para 11 (c) refers)

SPECIFICATION FOR 5 KG BOX

- | | | | |
|----|--------------------------------------|---|---|
| 1. | Size | : | 5 Kg |
| 2. | Box Internal Dimensions (closed box) | : | 160 x 160 x 240 mm |
| 3. | No of plies | : | 5 ply |
| 4. | Substance specifications | : | 250 GSM coated Kraft Liner (Outer)
120 GSM Virgin Kraft (Flute Med)
250 GSM Kraft Liner (Inner) |
| 5. | Bursting Strength (Min) | : | 12-13 Kg/sq cm |
| 6. | Compression Strength(Min) | : | 100 Kg |
| 7. | Moisture content of Box material | : | 8% |
| 8. | Puncture Resistance (Min) | : | 175 Ounce inch/Tear inch |

SPECIAL FLUTING INSTRUCTIONS

- | | | | |
|-----|--|---|---|
| 9. | Flute Type | : | Narrow (B Type) |
| 10. | Peel Strength | : | Delamination should be with
fibre breaks |
| 11. | Adhesive - Starch Based solid content (Min): | | 16% |
| 12. | Pasting of kraft tape on stitching ends | : | Should be stuck properly |
| 13. | Cutting & Creasing | : | Cracking on the edges should
be avoided. |
| 14. | Manufacturer's joint | : | Should be on the inner side. |

SPECIAL PRINTING INSTRUCTIONS

- | | | | |
|-----|------------------|---|----------------------------|
| 15. | Scuff Resistance | : | 60 Revolutions with 2 lbs. |
|-----|------------------|---|----------------------------|

APPENDIX 'E'
TO SPECIFICATION NO 423 FOR REFINED
SUNFLOWER OIL-2023 (Para 12 (a) refers)

SPECIFICATION FOR 10 KG POLY BAG

- | | | |
|----|------------------------|---|
| 1. | Purpose | - 10 Kg edible Oil. |
| 2. | Material Specification | - Inner ply - LLD - 50 Micron.
Outer Ply - LLDPE / Copolymer/
Nylon/Copolymer/LLDPE-100
Micron |
| 3. | Seal Width | - Min 5 mm. |
| 4. | Outer Dimension | - 435 x 520 mm. |
| 5. | Inner Dimension | - 410 x 495 mm. |
| 6. | Spout Location | - 205 x 67.5 mm. |
| 7. | Spout | - Pourer. |
| 8. | Cap | - Pourer. |
| 9. | Special Instructions | - (a) Air Burst Test - 5 PSI.
(b) Spout Pull Test - 35 PSI.
(c) Hot Oil Test - 165° F 2 hrs. |

**APPENDIX 'F' TO SPECIFICATION NO 423 FOR
REFINED SUNFLOWER OIL-2023
(para 12 (b) refers)**

SPECIFICATION FOR 10 KG BOX

1. Product : Edible oil.
2. Box Internal Dimensions (Closed Box): 205 x 205 x 290 mm.
3. Box Design : As per unit drawing.
4. No of plies : 7 ply.
5. Unit size : 876 x 529 mm.
6. Sheet Size : 895 x 535 mm.
7. Substance Specification : 180 GSM Virgin Kraft (Top & Bottom)
120 GSM Virgin Kraft (Balance).
8. Bursting Strength (Min) : 16 - 17 Kg/sq cm.
9. Compression Strength (Min) : 300 Kg.
10. Moisture content of box material : 8%
11. Puncture Resistance (Min) : 300 Ounce Inch/Tear Inch.

Special Fluting Instructions

12. Flute Type : Narrow (B Type).
13. Peel Strength : Delamination should be with Fibre Breaks.
14. Adhesive - Starch Based : 16%
Solid Content (Min)
15. Pasting of Kraft Tape on stitching Ends: Should be stuck properly.
16. Cutting & Creasing : Cracking on the edges should be avoided.
17. Manufacturer's Joint : Should be on the inner side.
18. No of staples & Distance : 10 Nos i.e. 5 pairs of staples at a distance
of 2"(5 cm).

**APPENDIX 'G' TO SPN NO 423 FOR
REFINED SUNFLOWER OIL-2023
(Para 9 (a) refers)**

PACKING FOR REFINED OIL IN ONE LITER POLYPOUCHES

Material

1. White Opaque Co-extruded nylon barrier 5 layer film conforming to BIS Specification No IS: 9845-1986 (first revision)
2. The Polymer used for the manufacture of the film shall conform to BIS Spn No IS: 11705-1985 and IS: 11352-1990.
3. The raw material and pigments used for the manufacture of film shall be virgin and of food grade quality.
4. Thickness - 110 +/- 5% microns
5. Width - 324 mm with a tolerance of + 2 mm

Filled Poly pouches

1. The filled pouches shall conform to storage test & stack load test as per BIS Spn No IS: 12724-1989.
2. The Water Vapour Transmission Rate (WVTR) shall conform to BIS Spn No IS: 1060 (Part - 2) 1960 at 38⁰C and 90% RH.
3. The Oxygen Transmission Rate (OTR) shall conform to BIS Spn No IS: 4006 (Part-1) 1985 at 27⁰C and 65% RH.

APPENDIX 'K'
TO SPN NO 423 FOR
REFINED SUNFLOWER OIL-2023
(Para 9 (b) Refers)

SPECIFICATION FOR 1 LITRE POUCH CARTON (10/12x1 LTR POUCH)

1. Functional Requirement

The Corrugated paper cartons shall be used for packing 10/12 x 1 litre pouch for long distance transportation.

2. Design

Ply 5NF Type

3. Bursting strength (Carton)

10Kg/Sq cm (Min)

4. Compression Strength

135 Kg/Sq cm (Min)

5. Carton Weight

300 Gms (+/- 10 Gms)

6. Printing

One colour printing as per the art work

7. Strapping :-

(a) Material : Plastic/Nylon/PVC, virgin and strong strap having width not less than 1.25 cm and thickness not less than 0.45 mm shall be used.

(b) Method : There shall be at least four rounds of strappings, two in longitudinal direction and the remaining two at right angles duly secured at junctions either by rust proof metal staples of appropriate size duly crimped or by heat welding.

Plats : Two Months.

9. CFCs will be closed with PVC adhesive tape, having width not less than 5 cm on both flaps opening (i.e. top and bottom).

APPENDIX 'L'
TO SPN NO 423
FOR REFINED SUNFLOWER OIL-2023
(Para 9 (b) refers)

CORRUGATED FIBREBOARD CARTONS: SPECIFICATION
FOR PACKING EDIBLE OIL FOR 2/5 LTR HDPE CANS

1. Type of pack : 2/5 Ltr HDPE Cans.
2. Maximum Mass contents per carton in Kg : 20 Kg
3. Packing unit per carton : 10 for 2 Ltr/4 for 5 Ltr HDPE Cans.
4. Internal Dimensions: The carton shall have the internal dimensions of appropriate/ suitable size provided the integrity of the product is not disturbed/ broken/ crushed.
5. Number of Partitions : One Number
6. Centre Plates : Nil
7. Gap fillers : (a) Eight for 2 Ltrs
(b) Two for 5 Ltrs
8. Type of board : 7 Ply CFC
9. Weight of empty carton : 800 gm minimum
10. End Plates : Two numbers
11. Strappings
 - (a) Material : Plastic/Nylon/PVC, virgin and strong strap having width not less than 1.25 cm and thickness not less than 0.45 mm shall be used.
 - (b) Method : There shall be at least four rounds of strappings, two in longitudinal direction and the remaining two at right angles duly secured at junctions either by rust proof metal staples of appropriate size duly crimped or by heat welding.12. CFCs will be closed with PVC adhesive tape, having width not less than 5 cm on both flaps opening (i.e. top and bottom).

APPENDIX `J`
TO SPN NO 423
FOR REFINED SUNFLOWER OIL-2023
(Para 16 refers)

STANDARD WARRANTY CLAUSE

1. The contractor warrants the supplies delivered to be sound, wholesome, and meeting the quality parameters as per DFS for a specified number of months from the last day of the month of manufacture, in any climate and under all conditions of storage and movement in India.
2. In the event of the supplies or a part thereof having been declared during the period of warranty as being not meeting the quality parameters as per DFS by the Director General of Supplies and Transport, or any officer acting on his behalf, (whose opinion as to whether or NOT the particular consignment is meeting the quality parameters as per DFS will be final), the purchaser will have the right to dispose of the condemned stock in any way he considers necessary after giving due notice to the contractor and also, at his discretion, either to allow the contractor to replace the condemned stock within a specified period, or to recover from the contractor the contract price thereof together with all incidental and freight charges incurred from the place of delivery to the place where the supplies were ultimately condemned. The opinion of the Brigadier Procurement or an officer acting on his behalf, in regard to these charges will be final.
3. The declaration by the Brigadier Procurement or an officer acting on his behalf, communicated to the contractor in writing that a particular consignment has been condemned will be taken by the Contractor as the conclusive evidence of the proper condemnation of that consignment.

APPENDIX 'H'
TO SPN NO 423
FOR REFINED SUNFLOWER OIL-2023
(Para 18 refers)

STANDARD MINIMUM REQUIREMENTS OF HYGIENE IN FOOD FACTORIES

1. To ensure the standard of hygiene in a factory the following minimum requirements shall apply:-

- (a) **Floors.** The floors should be impervious and kept clean all times.
- (b) **Lighting and Ventilation.** Adequate standards of lighting (natural and artificial) in working parts of the factory together with adequate ventilation and sufficient space for and protection from machinery.
- (c) **Fly / Rodent / Pest / Bird Proofing.** Fly / rodent / pest / bird proofing of factory premises to the extent necessary to protect raw material during storage and processing and the manufactured products until it has been packed and the containers sealed.
- (d) **Water-Supply.** An adequate supply of potable water in the factory and drinking water for the employees will be provided which shall be periodically tested and certified as free from injurious bacteria and other substances by a public health laboratory.
- (e) **Disposal of Wastes.** An efficient drainage system must be provided with proper methods of disposal of waste water and other effluents. Provision must exist to eliminate dusts/fumes if any.
- (f) **Conservancy.** A proper conservancy system adequately serviced with approved methods of disposal of human excreta.
- (g) Additional special hygiene precautions are necessary when waste products which are dangerous or likely to create conditions which are dangerous to health are produced at any stage during handling of raw materials or its manufacture.
- (h) **Safety.** Adequate fencing of machinery shall be secured in the case of all types of machinery and its moving parts and the moving machinery shall be kept in a position which provides sufficient safeguard against any accident. Each factory must have first aid box with necessary minimum items.

2. **Workers.**

- (a) So far as the health of the employees is concerned, they shall be periodically examined by Medical Officer and it should be ensured that no individual suffering from any communicable disease or any disability likely to result in contamination of the raw materials, implements, equipments or finished products, is employed.
- (b) All the employees should be protected against communicable diseases with preventive inoculation / vaccination.
- (c) Provisions for personal hygiene of employees will include potable drinking water, washing facilities (Soap, basin or taps, nail brushes and towels) sanitary annexes and at least two sets of clean clothing for each employee for use only in the factory and Masks / hand gloves, where necessary. There should be a separate room for keeping the personal belongings and to change the clothes and for drying of wet clothes.

SECRETARIAT

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(DIRECTORATE GENERAL OF SUPPLIES AND TRANSPORT)

DEFENCE FOOD SPECIFICATIONS - 2023

SPECIFICATION NO 425 : REFINED MUSTARD OIL

Quality


1. The refined mustard oil shall be the oil obtained by method of expression or solvent extraction from clean and sound seeds of yellow/brown sarson or Rai (Mustard, Brassica Juncea Linn.) or pahari rai (Mustard, Brassica Juncea Var Rugosa) or Banarasi Rai (Mustard Brassica Trigra) or a mixture thereof or good quality mustard seed oil cake. The solvent extracted oil shall be obtained from oleaginous material using solvent hexane not more than 5.0 ppm in solvent extracted oils conforming to BIS Specification No IS: 3470 (as amended).
2. The raw mustard oil shall be deacidified either with alkali or physical refining or by miscella refining by bleaching with absorbent earth and/or carbon and deodorised with steam. No other chemical agents shall be used.
3. The Refined Mustard Oil shall be wholesome, clear, clean, sparkling and odourless liquid and shall be pleasant to taste and smell.
4. Antioxidant or synergist may be added in accordance with FSSAI Regulations.
5. It shall be free from rancidity, adulterants, sediments, suspended or other foreign matter, separated water and added colouring and flavouring substances.
6. The material shall also be free from admixture with other oils and non edible oils when tested according to the methods prescribed in BIS Specification No IS:548-(Part-II)-1976.
7. When tested as prescribed in para 20 of IS: 548 (Part I)-1964 the material shall have peroxide value of not more than 10.0 milliequivalents per 1000 gm.

Packing

8. (a) Tins. The Refined Mustard Oil shall be packed in new 15 kg square tins conforming to BIS specification No IS:10325 (as amended) for packing ghee, vanaspati, edible oils and bakery shortenings and shall bear ISI certification mark on one side of vertical panel of the tin. The tins in addition shall be provided with tamper proof collapsible plastic spouts.

OR

The Refined Mustard Oil shall be packed in new 15 kg square tins conforming to BIS specification No IS:10325 (as amended) for packing ghee, vanaspati, edible oils and bakery shortenings and shall bear ISI certification mark on one side of vertical panel of the tin. The tins in addition shall be provided with tagger plates over Newman cap seals, soldered all around.


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(b) The net content of each tin shall be 15 kg. Each tin shall be reinforced with top and bottom three ply CFB covers of kraft paper. The tin with the CFB covers will be strapped with two rounds of virgin polypropylene straps with one in longitudinal direction and other at right angles to it. The straps must cross between the carrying handle of the tin. The detailed specifications as under:-

(i) **Top and Bottom Covers.**

- (aa) Composition. Three ply.
- (ab) Type of Paper. Kraft paper.
- (ac) Construction. Outer layer 230 GSM, 130 GSM in second and inner layer.
- (ad) Dimensions. 340 x 340 mm or the size to provide tight fit top/bottom cover.

(ii) **Strappings.**

- (aa) Type. Virgin white Polypropylene strap roll type.
- (ab) Dimensions. Minimum 12 mm width and 0.5 mm thickness.

(c) Each tin shall be given a protective outside lacquer coating in such a manner that the welded / soldered seams shall also get covered with lacquer.

(Note- Ref Para 6 (a) above. The tins which will be opened to draw composite samples, shall be secured with the help of a tagger plate placed on the mouth of the tin soldered all around.)

9. (a) **Polypouches.** The Refined Mustard Oil shall be packed in one litre polypouches 2Ltr & 5Ltr HDPE Jars conforming to Appx 'G' to this specification.

(b) **Corrugated Fibreboard Cartons (CFCs).** 10/12 such polypouches/2Ltr & 5Ltr HDPE Jars shall be further packed in a CFC conforming to Appx "K" & Appx 'L' respectively to this specification. The quality of CFC will be as per DFS 311 (main body of CFC)

10. **15 Kg HDPE Drums.**

(a) Refined Mustard Oil shall be packed in new 15 kg HDPE drums made from virgin, dye free, food grade quality HDPE conforming to shape and design as given in Appendix 'A' and 'B' attached. The colour of the drum shall be white or natural and the grade of HDPE used for fabrication shall be GF 7755(PIL).

(b) The fabrication of the drum shall be such that the wall thickness throughout the drum shall be 3 ± 1 mm and tare weight not less than 950 gm. The drum shall be provided with tightly fitting press-in-polycap having flattened thin profile rim and screw cap which should not rotate freely when tightened properly.


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(c) After filling 15 kg Refined Mustard Oil the press-in-polycap shall be inserted in the mouth and heat sealed by covering it with a LDPE laminated aluminium foil disc, ensuring overall sealing/covering of mouth and press in polycap to make the drum leak proof and pilfer proof. The LDPE laminated aluminium foil disc may be plain or printed with brand name of the firm. Thereafter the screw cap shall be fitted tightly. Such drums shall not show any signs of leakage or change in shape when kept in inverted position for 48 hours or suspended freely and shall have proper stability and stack ability when stacked 3 or 4 high.

11. 5 Kg Bag-in-box Packing.

(a) 5 Kg Refined Mustard Oil shall be first packed in a polybag consisting of 2 layers made from LLDPE-50-Micron (Inner ply) and LLDPE/Nylon/LLDPE-100 micron (outer ply) of size 345 x 425 mm (outer dimensions) having an inbuilt poly-tap (SMX/TRU SEAL) with locking sleeve as per the specification given in Appendix 'C' attached.

(b) The polybag shall be made by band sealing all-around having seal width not less than 5 mm with no discontinuity or leakage.

(c) Each filled polybag shall then be placed in a 5 ply CFB having moisture barrier capability of size 160x160x240 mm (closed box) conforming to Specification and drawing as given in Appendix 'D' attached. The top flaps of the box shall be closed with good quality starch or dextrin based adhesive. Silicates or highly alkaline adhesives will not be used.

12. 10 Kg Bag-in-box Packing.

(a) 10 Kg Refined Mustard Oil shall be first packed in a polybag consisting of two layers made from LLD-50 micron (inner ply) and LLDPE-Nylon-LLDPE-100 micron (outer ply) of size 435 x 520 mm having an inbuilt pourer with locking sleeve as per the specification given in Appendix 'E' attached. The polybag shall be made by band sealing all-around having seal width not less than 5.0 mm with no discontinuity/leakage.

(b) Each filled polybag shall then be placed in a 7 ply CFB having moisture barrier capability and size 205 x 205 x 290 mm conforming to Specification and drawing as given in Appendix 'F' attached.

(c) Each Bag-in-box shall be then strapped with four rounds of strappings made from virgin plastic/nylon/PVC having width not less than 1.20 cm and thickness not less than 0.45 mm, two in longitudinal direction and the remaining two at right angles duly secured at junctions either by rust proof metal staples of appropriate size duly crimped or by heat welding.

13. Oil shall be packed in 2 Ltr & 5 Ltr HDPE cans conforming to BIS Specification No IS 15473 (as amended).


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Marking

14. The following particulars shall be printed or stencilled with indelible ink or embossed on each tin/CFB Box of 5 and 10kg bag-in-box/15 kg HDPE drum/1 litre polypouch & 2 Ltr & 5 Ltr HDPE cans :-


- (a) Description of contents i.e. Refined Mustard Oil (Expressed/ Solvent extracted) of suitable size as per the Legal Metrology (Packaged Commodities) Acts 2009 and Rules 2011.
- (b) List of ingredients used in descending order of wt or volume.
- (c) Nutritional information per 100 gm / 100 ml / per serving as indicated in the para for mandatory requirements of FSSAI/BIS.
- (d) Date of manufacture.
- (e) Name of manufacturer.
- (f) Nett Weight (in kg).
- (g) Batch/Lot No.
- (h) AT No and date.
- (j) Warranty expiry date.
- (k) For Defence Services only.
- (l) Brand name of the firm shall be marked in tins/CFCs/Pet bottles/poly puches.

Note: (Applicable to 1 litre polypouches only)

- (i) The ink and colour used for marking/printing shall be of approved quality conforming to FSSAI act and also Food and Drug Authority Rules.
- (ii) The ink and colour used shall be non toxic and non poisonous. It shall not peel off or melt before or after impulse sealing operations. It shall not get dissolved with oil under any hot or cold operation conditions.

15. **Corrugated Fibreboard Cartons (CFCs).** Each CFC shall be printed with the following particulars (Applicable to one litre polypouches/ 2 Ltr & 5 Ltr HDPE cans):-

- (a) Description of contents i.e. Refined Mustard Oil (Expressed/ Solvent extracted) as per the Legal Metrology (Packaged Commodities) Acts 2009 and Rules 2011.
- (b) Gross Weight (In Kg).
- (c) Number of polypouches /HDPE Cans x Nett Wt (In Kg).
- (d) Name of manufacturer.
- (e) Date of manufacture.
- (f) Batch No/Lot No.
- (g) Warranty expiry date.
- (h) AT No and date.
- (j) FOR DEFENCE SERVICES ONLY.
- (k) FSSAI License No


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Warranty

16. In accordance with the standard warranty clause Appendix 'J' the warranty period shall be nine months.

Hygiene

17. The Refined Mustard Oil shall be manufactured in premises maintained in a hygienic condition which shall be open to inspection at any time by a competent authority approved by the Quartermaster General and Director General of Medical Services (Army).

18. The basic hygienic requirements in a factory producing Refined Mustard Oil shall be in accordance with Appendix 'H'.

Inspection

19. An inspection shall be carried out by the Director General of Supplies and Transport or an officer acting on his behalf on all supplies tendered for acceptance. The decision of this officer shall be final.

20. The Refined Mustard Oil shall conform to the following analysis:-

- | | | |
|-----|--|--|
| (a) | Moisture, percent by mass, max | - 0.1 |
| (b) | Colour in a 2.5 cm cell on the Lovibond Tintometer scale expressed as (Y + 5R) shall not be deeper than (with red units not exceeding 0.5) | - 5.0 |
| (c) | Refractive index at 40 ⁰ C | - 1.4646 to 1.4662 |
| (d) | Saponification value | - 168 to 177 |
| (e) | Iodine value (wijs) | - 98 to 110
(Polybromide test shall be negative). |
| (f) | Acid value, max | - 0.3 |
| (g) | Un saponifiable matter, percent by mass, max | - 1.2 |
| (h) | Flash point, Pensky - Martens (Closed) (in case of solvent extracted oils only), min | - 250 ⁰ C |
| (j) | Bellier Turbidity Temperature | - 23 ⁰ C to 27.5 ⁰ C |
| (k) | Test for Argemone oil | - Negative |
| (l) | Test for hydrocyanic Acid | - Negative |


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(m) Test for mineral oil - Negative


(n) Clarity Test: The Refined Mustard Oil shall not show any turbidity after keeping the filtered sample at 30°C for 24 hours.

21. The methods of analysis shall be those as laid down in the BIS Specification No IS: 548 (Part-I) - 1964, IS: 548 (Part-II) - 1976 and IS: 1448-1970.

Mandatory Requirements Of FSSAI/BIS

22. All mandatory requirements of FSSAI/BIS, as amended from time to time, pertaining to the above Specification including marking of BIS certification mark for container/contents, Best Before _____, coloured symbol for declaring vegetarian and non-vegetarian food etc on packs shall be complied with.

23. The list of ingredients, nutritional information per 100 gm / 100 ml / per serving etc, as given in the Govt of India, Office of the ADG (PFA) GSR No 664(E) dt 19 Sep 2008 published in Part II, Section 3, Sub sec (i) of Gazette of India, Extra Ordinary, amended vide corrigendum GSR 135 (E) dt 27 Feb 2009, issued on 06 Mar 2009, to be complied with.


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APPENDIX 'C'
TO SPECIFICATION
NO 425 FOR REFINED MUSTARD OIL-2023
(Para 11 (a) refers)

SPECIFICATION FOR 5 KG POLY BAG

- | | | | |
|-----|------------------------|---|--|
| 1. | Bag size | : | 5 Kg edible oil. |
| 2. | Material Specification | : | Inner Ply - LLDPE - 50 Micron.
Outer Ply - LLDPE/Nylon/LLDPE
- 100 micron. |
| 3. | Bag OD | : | 345 x 425 mm. |
| 4. | Bag ID | : | 320 x 400 mm. |
| 5. | Spout Location | : | 160 x 120 mm. |
| 6. | Spout/Cap | : | SMX/TRU SEAL. |
| 7. | Quality Parameters | : | (a) Air Burst Test - 5 PSI.
(b) Spout Pull Test - 35 PSI.
(c) Hot Oil Test - 165 ⁰ F 2 hrs. |
| 8. | Packing | : | Master Shipper. |
| 9. | Box I.D. | : | 160 x 160 x 240 mm. |
| 10. | Special Instructions | : | Location of inbuilt poly tap
(SMX / TRU SEAL). |

APPENDIX 'D' TO SPECIFICATION
NO 425 FOR REFINED MUSTARD OIL-2023
(Para 11 (c) refers)

SPECIFICATION FOR 5 KG BOX

- | | | | |
|----|---|---|---|
| 1. | Size | : | 5 Kg |
| 2. | Box Internal Dimensions
(closed box) | : | 160 x 160 x 240 mm |
| 3. | No of plies | : | 5 ply |
| 4. | Substance specifications | : | 250 GSM coated Kraft Liner
(Outer)
120 GSM Virgin Kraft(Flute Med)
250 GSM Kraft Liner (Inner) |
| 5. | Bursting Strength (Min) | : | 12-13 Kg/sq cm |
| 6. | Compression Strength (Min) | : | 100 Kg |
| 7. | Moisture content of Box
material | : | 8% |
| 8. | Puncture Resistance (Min) | : | 175 Ounce inch/Tear inch |

SPECIAL FLUTING INSTRUCTIONS

- | | | | |
|-----|--|---|---|
| 9. | Flute Type | : | Narrow (B Type) |
| 10. | Peel Strength | : | Delamination should be with
fibre breaks |
| 11. | Adhesive - Starch Based
solid content (Min) | : | 16% |
| 12. | Pasting of kraft tape
on stitching ends | : | Should be stuck properly |
| 13. | Cutting & Creasing | : | Cracking on the edges should
be avoided. |
| 14. | Manufacturer's joint | : | Should be on the inner side. |

SPECIAL PRINTING INSTRUCTIONS

- | | | | |
|-----|------------------|---|----------------------------|
| 15. | Scuff Resistance | : | 60 Revolutions with 2 lbs. |
|-----|------------------|---|----------------------------|

**APPENDIX 'E' TO SPECIFICATION
NO 425 FOR REFINED MUSTARD OIL-2023
(para 12 (a) refers)**

SPECIFICATION FOR 10 KG POLY BAG

- | | | |
|----|------------------------|--|
| 1. | Purpose | - 10 Kg edible Oil. |
| 2. | Material Specification | - Inner ply - LLD - 50 Micron.
Outer Ply - LLDPE / Copolymer/
Nylon/Copolymer/LLDPE-100-
Micron |
| 3. | Seal Width | - Min 5 mm. |
| 4. | Outer Dimension | - 435 x 520 mm. |
| 5. | Inner Dimension | - 410 x 495 mm. |
| 6. | Spout Location | - 205 x 67.5 mm. |
| 7. | Spout | - Pourer. |
| 8. | Cap | - Pourer. |
| 9. | Special Instructions | - (a) Air Burst Test - 5 PSI.
(b) Spout Pull Test - 35 PSI.
(c) Hot Oil Test 165 ⁰ F 2 hrs. |

APPENDIX 'F' TO SPECIFICATION
NO 425 FOR REFINED MUSTARD OIL-2023
(para 12 (b) refers)

SPECIFICATION FOR 10 KG BOX

1. Product : Edible oil.
2. Box Internal Dimensions : 205 x 205 x 290 mm.
(Closed Box)
3. Box Design : As per unit drawing.
4. No of plies : 7 ply.
5. Unit size : 876 x 529 mm.
6. Sheet Size : 895 x 535 mm.
7. Substance Specification : 180 GSM Virgin Kraft (Top & Bottom)
120 GSM Virgin Kraft (Balance).
8. Bursting Strength (Min) : 16 - 17 Kg/sq cm.
9. Compression Strength (Min): 300 Kg.
10. Moisture content of box : 8%
material
11. Puncture Resistance(Min): 300 Ounce Inch/Tear Inch.

Special Fluting Instructions

12. Flute Type : Narrow (B Type).
13. Peel Strength : Delamination should be with
Fibre Breaks.
14. Adhesive - Starch Based : 16%
Solid Content (Min)
15. Pasting of Kraft Tape on : Should be stuck properly.
stitching Ends
16. Cutting & Creasing : Cracking on the edges should be avoided.
17. Manufacturer's Joint : Should be on the inner side.
18. No of staples & Distance : 10 Nos ie, 5 pairs of staples
at a distance of 2"(5 cm).

APPENDIX 'G' TO SPN NO 425
FOR REFINED MUSTARD OIL-2023
(Para 9 (a) refers)

PACKING FOR REFINED OIL IN ONE LITRE POLYPOUCHES

Material

1. White Opaque Co-extruded nylon barrier 5 layer film conforming to BIS Specification No IS: 9845-1986 (first revision).
2. The Polymer used for the manufacture of the film shall conform to BIS Spn No IS: 11705-1985 and IS: 11352-1990.
3. The raw material and pigments used for the manufacture of film shall be virgin and of food grade quality.
4. Thickness - 110 +/- 5% microns.
5. Width - 324 mm with a tolerance of + 2 mm.

Filled Poly pouches

1. The filled pouches shall conform to storage test & stack load test as per BIS Spn No IS: 12724-1989.
2. The Water Vapour Transmission Rate (WVTR) shall conform to BIS Spn No IS: 1060 (Part - 2) 1960 at 38°C and 90% RH.
3. The Oxygen Transmission Rate (OTR) shall conform to BIS Spn No IS: 4006 (Part-1) 1985 at 27°C and 65% RH.

APPENDIX `K' TO SPN NO 425
FOR REFINED MUSTARD OIL-2023
(para 9 (b) refers)

SPECIFICATION FOR 1 LITRE POUCH CARTON (10/12x1 LTR POUCH)

1. Functional Requirement

The Corrugated paper cartons shall be used for packing 10/12x1 litre pouch for long distance transportation.

2. Design

Ply 5NF Type

3. Bursting strength (Carton)

10Kg/Sq cm (Min)

4. Compression Strength

135 Kg/Sq cm (Min)

5. Carton Weight

300 Gms (+/- 10 Gms)

6. Printing

One colour printing as per the art work

7. Strappings

(a) Material : Plastic/Nylon/PVC, virgin and strong strap having width not less than 1.25 cm and thickness not less than 0.45 mm shall be used.

(b) Method : There shall be at least four rounds of strappings, two in longitudinal direction and the remaining two at right angles duly secured at junctions either by rust proof metal stapples of appropriate size duly crimped or by heat welding.

8. End Plates - Two months.

9. CFCs will be closed with PVC adhesive tape, having width not less than 5 cm on both flaps opening (i.e. top and bottom).

APPENDIX 'L' TO SPN NO 425
FOR REFINED MUSTARD OIL-2023
(Para 9 (b) refers)

CORRUGATED FIBREBOARD CARTONS: SPECIFICATION
FOR PACKING EDIBLE OIL FOR 2/5 LTR HDPE CANS

1. Type of pack : 2/5 Ltr HDPE Cans.
2. Maximum Mass contents per carton in Kg : 20 Kg
3. Packing unit per carton : 10 for 2 Ltr/4 for 5 Ltr HDPE Cans.
4. Internal Dimensions: The carton shall have the internal dimensions of appropriate/ suitable size provided the integrity of the product is not disturbed/ broken/ crushed.
5. Number of Partitions : One Number
6. Centre Plates : Nil
7. Gap fillers : (a) Eight for 2 Ltrs
(b) Two for 5 Ltrs
8. Type of board : 7 Ply CFC
9. Weight of empty carton : 800 gm minimum
10. End Plates : Two numbers
11. Strappings
 - (a) Material : Plastic/Nylon/PVC, virgin and strong strap having width not less than 1.25 cm and thickness not less than 0.45 mm shall be used.
 - (b) Method : There shall be at least four rounds of strappings, two in longitudinal direction and the remaining two at right angles duly secured at junctions either by rust proof metal staples of appropriate size duly crimped or by heat welding.
12. CFCs will be closed with PVC adhesive tape, having width not less than 5 cm on both flaps opening (i.e. top and bottom).

APPENDIX 'H' TO SPN NO 425
FOR REFINED MUSTARD OIL-2023
(Para 18 refers)

STANDARD MINIMUM REQUIREMENTS OF HYGIENE IN FOOD FACTORIES

1. To ensure the standard of hygiene in a factory the following minimum requirements shall apply:-

- (a) **Floors.** The floors should be impervious and kept clean all times.
- (b) **Lighting and Ventilation.** Adequate standards of lighting (natural and artificial) in working parts of the factory together with adequate ventilation and sufficient space for and protection from machinery.
- (c) **Fly / Rodent / Pest / Bird Proofing.** Fly / rodent / pest / bird proofing of factory premises to the extent necessary to protect raw material during storage and processing and the manufactured products until it has been packed and the containers sealed.
- (d) **Water-Supply.** An adequate supply of potable water in the factory and drinking water for the employees will be provided which shall be periodically tested and certified as free from injurious bacteria and other substances by a public health laboratory.
- (e) **Disposal of Wastes.** An efficient drainage system must be provided with proper methods of disposal of waste water and other effluents. Provision must exist to eliminate dusts/fumes if any.
- (f) **Conservancy.** A proper conservancy system adequately serviced with approved methods of disposal of human excreta.
- (g) Additional special hygiene precautions are necessary when waste products which are dangerous or likely to create conditions which are dangerous to health are produced at any stage during handling of raw materials or its manufacture.
- (h) **Safety.** Adequate fencing of machinery shall be secured in the case of all types of machinery and its moving parts and the moving machinery shall be kept in a position which provides sufficient safeguard against any accident. Each factory must have first aid box with necessary minimum items.

2. **Workers.**

- (a) So far as the health of the employees is concerned, they shall be periodically examined by Medical Officer and it should be ensured that no individual suffering from any communicable disease or any disability likely to result in contamination of the raw materials, implements, equipments or finished products, is employed.
- (b) All the employees should be protected against communicable diseases with preventive inoculation / vaccination.
- (c) Provisions for personal hygiene of employees will include potable drinking water, washing facilities (Soap, basin or taps, nail brushes and towels) sanitary annexes and at least two sets of clean clothing for each employee for use only in the factory and Masks / hand gloves, where necessary. There should be a separate room for keeping the personal belongings and to change the clothes and for drying of wet clothes.

APPENDIX 'J' TO SPN NO 425
FOR REFINED MUSTARD OIL-2023
(Para 16 refers)

STANDARD WARRANTY CLAUSE

1. The contractor warrants the supplies delivered to be sound, wholesome, and meeting the quality parameters as per DFS for a specified number of months from the last day of the month of manufacture, in any climate and under all conditions of storage and movement in India.
2. In the event of the supplies or a part thereof having been declared during the period of warranty as being not meeting the quality parameters as per DFS by the Director General of Supplies and Transport, or any officer acting on his behalf, (whose opinion as to whether or NOT the particular consignment is meeting the quality parameters as per DFS will be final), the purchaser will have the right to dispose of the condemned stock in any way he considers necessary after giving due notice to the contractor and also, at his discretion, either to allow the contractor to replace the condemned stock within a specified period, or to recover from the contractor the contract price thereof together with all incidental and freight charges incurred from the place of delivery to the place where the supplies were ultimately condemned. The opinion of the Brigadier Procurement or an officer acting on his behalf, in regard to these charges will be final.
3. The declaration by the Brigadier Procurement or an officer acting on his behalf, communicated to the contractor in writing that a particular consignment has been condemned will be taken by the Contractor as the conclusive evidence of the proper condemnation of that consignment.

SECRETARIAT
OF
THE TECHNICAL STANDARDISATION COMMITTEE (FOOD STUFFS)(DIRECTORATE
GENERAL OF SUPPLIES AND TRANSPORT) DEFENCE FOOD SPECIFICATIONS-
2021 SPECIFICATION NO 311 : PACKING TINNED AND PROCESSED FOODSTUFFS
IN CORRUGATED
FIBREBOARD BOXES/CARTONS (CFCs)

General

1. All clauses in this specification shall be complied with in every respect irrespective of the source of supply of the materials and/or components.
2. Should any discrepancy be found between this specification and any sample, this specification and/or other connected specifications shall be taken as correct. Any deviation or relaxation to this specification will not be made without prior permission of the Director General of supplies and Transport, Army Headquarters.
3. This specification is applicable as exterior containers for packing items as stipulated in Appendices `A' to G, G-1 to G-4, H to `Z', 'AA' and 'BB' to this specification separately. (Index attached).
4. The board/cartons shall have the general workmanship and finish of a high standard. If, on examination of any sample from any portion of the consignment, the material is found not to be fully in accordance with this specification, the whole consignment may be rejected.
5. The boards/cartons shall have good bending qualities; good resistance to water penetration and the outer surface should have good printability. The type of board used shall be seven ply, triple wall corrugated fibreboard having narrow `B' flutes. Wherever 5 ply cartons can be used it has been stipulated in the Appendices `A' to G, G-1 to G-4, H to `Z', 'AA' and 'BB' to this specification.
6. The outer surface of the assembled box shall be reasonably free from stains and spots of glue used.

Material And Manufacture

7. The corrugated fibreboard cartons shall be manufactured in the shape of cubical/rectangular parallelepiped. The blanks shall be properly creased or slotted so that after assembly no holes shall be left at the corners. The flaps of the boxes shall be capable of being folded at an angle of 180° along the line of creasing without fracture of board or facing.

Technical

8. **Lap Joints.** The manufacturer's joint shall be made by a lap. The width of lap shall not be less than 30 mm. The joints shall be stappled with 12 stapples with six doubles. The stapples shall be centrally located along with the lap and may be either straight or at an angle of 45°. The staple shall be placed in such a way that they do not fall more than 50 mm apart from each other in each row and first and last not farther than 25 mm from beginning and end of joint respectively. The stapples shall be made of mild steel, galvanised 24 BG x 13mm crown x 13 mm width and shall be of good quality.


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ले कर्नल / Lt Col
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9. **Flutes:** - The type of flutes shall be Narrow (B) with a height of minimum 2.1 mm and maximum 2.9 mm. The number of flutes per 30 cm shall be minimum 52 and maximum 56.

10. **Adhesive:** - Adhesive used should be starch based or Dextrine capable of firmly adhering the various plies together. Suitable synthetic adhesives may also be used. Silicates or highly alkaline adhesives will not be used. The adhesive used shall be adequately resistant to moisture at all climatic conditions in the country. The minimum quantity of Glue shall be 20 gm on dry Wt basis.

Tolerance Limits In Dimension Of Cartons And Grammage Of Kraft Paper

11. A tolerance of + 3mm and -1mm in case of dimension and \pm 7% in case of grammage of paper is permissible.

12. **Paper Substance:** - The outer surface shall be wax coated or chemically treated to render it water proof. The liner shall be laminated with water resistant glue as moisture barrier material. The rest shall be 150 GSM virgin Kraft paper.

13. **Partitions**: - The CFCs shall be vertically and horizontally partitioned, so that, each can is cushioned from all sides i.e. criss cross support. The size of the partition will be 10 mm less than the internal dimension of the cartons. These partitions will be of 3/5 ply and 100 GSM (Semi Kraft). The horizontal partitioning will also include "End Plates" at the top and bottom of the contents for additional strengthening.

14. **Centre Plates:** - The centre plates shall have the dimensions 10 mm less than the internal dimension of the carton. It shall be of 3/5 ply and 100 GSM (Semi Kraft).

15. **Gap Fillers** :- The specification for gap fillers shall be the same as for partitions and centre plates and size shall be as per the gaps found in the top and bottom of the carton.

Test

16. **Bursting Strength**: - When tested in accordance with the method given in BIS specification No IS: 1060 (Part-I) - 1966 the average bursting strength of 7 ply triple wall corrugated fibreboard shall not be less than 16 Kg/sq cm and in case of double wall 5 ply corrugated fibreboard, the bursting strength shall not be less than 12 Kg/sq cm. The average shall be based on at least five determinations on each face.

17. **Compression Strength**: - When tested by standard ASTM method but conditioned at a temperature of $27 \pm 2^{\circ} \text{C}$ and $65 \pm 2\% \text{ RH}$, the average compression strength of the 7 ply triple walled fibreboard box (top to bottom) shall not be less than 400 Kg and in case of double wall 5 ply box it shall not be less than 200 Kg at a deflection of not more than 15 mm.

18. **Water Absorption**: - The increase in mass of the board after water absorption test when tested in accordance with BIS specification No IS: 4006 (Part-I) - 1985 shall not be more than 155 gm per square metre.

19. The following BIS specifications shall be referred to:-

- (a) IS: 1060 (Part-I) - 1966 (Revised) First reprint September 1982
- (b) IS: 4006 (Part-I) - 1985
- (c) IS: 2771 (Part-I) - 1990

Kranti
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SECRETARIAT

OF

THE TECHNICAL STANDARDISATION COMMITTEE (FOOD STUFFS)
(DIRECTORATE GENERAL OF SUPPLIES AND TRANSPORT)

DRAFT DEFENCE FOOD SPECIFICATIONS-2023

SPECIFICATION NO 426 : POLYETHYLENE TEREPHTHALATE (PET) BOTTLES FOR
PACKING OF REFINED OIL

Packing

1. Packing of oil in 1 litre PET bottles. The oil shall be packed in clear, hygienic, colourless, odourless, transparent, food grade, tamperproof bottles conforming to IS 12887 for PET bottles. For the manufacture of bottles, one or more of the virgin material covered in following Indian Standards shall be used :-

<u>IS No</u>	<u>Title</u>
10142 : 1999	Polystyrene (crystal and high impact) for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
10146 : 1982	Polyethylene for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
10151 : 1982	Polyvinylchloride (PVC) and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
10910 : 1984	Polypropylene and its copolymers for its safe use in contract with foodstuffs, pharmaceuticals and drinking water
11434 : 1985	Ionomers resins for its safe use in contract with foodstuffs, pharmaceuticals and drinking water
11704 : 1986	Ethylene/acrylic acid (EAA) copolymers for its safe use in contract with foodstuffs, pharmaceuticals and drinking water
12247 : 1988	Nylon-6 polymer for its safe use in contract with foodstuffs, pharmaceuticals and drinking water
12252 : 1987	Polyalkylene terephthalates (PET & PBT) for their safe use in contract with foodstuffs, pharmaceuticals and drinking water

2. The bottles shall be made by blow molding process from polyethylene terethalate material conforming to the requirements laid down in IS 12229 : 1987. The bottles shall be provided with a Ring pull type press fit cap with seal. Each Bottle shall be shrink wrapped (cling film) with polypropylene/PVC shrink film of minimum 30 microns thickness. The material for cap plug shall be food grade HDPE injection molding grade 45MA or 55MA (IS 7328 – 1974) or any other foodgrade suitable material.


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VETTED ON 19 SEP 2024

The tolerance on the specific mass of the bottle with the cap shall be ± 05 Percent with the minimum wt of bottle being Not Less Than 30 gms. The wall thickness will be assessed, and in line with IS : 12887 and amendments thereto. Mean of three readings at any locations shall be taken as wall thickness at that point.

3. Brimful capacity of bottles shall be as per IS No 12887.
4. Bottles shall conform to tests laid down in IS 12887 (as amended).
5. **CFCs.**

(a) The PET bottles shall be further packed in 7 ply CFC of suitable size made from virgin craft paper having moisture barrier capacity & provided with 6 pairs of rust proof metal staples at flap joints and two end plates. The bottles shall be packed in 1 layer (4 x 3) ie. Total bottle shall be 12. The bottom flap of CFC shall be closed with PVC adhesive tape after forming whereas top flaps shall be closed with PVC adhesive tape having width not less than 5 cm and shall be provided with two rounds of polypropylene strapping at right angles to PVC adhesive tape with ends secured with rust proof metal staples or heat welding.

(b) **Test :**

(i) **Bursting Strength.** When tested in accordance with the method given in BIS specification No IS: 1060 (Part-I) - 1966 the average bursting strength of 7 ply triple wall corrugated fiberboard shall not be less than 16 Kg/sq cm and in case of double wall 5 ply corrugated fiberboard, the bursting strength shall not be less than 12 Kg/sq cm. The average shall be based on at least five determinations on each face.

(ii) **Compression Strength.** When tested by standard ASTM method but conditioned at a temperature of $27 \pm 2^\circ \text{C}$ and $65 \pm 2\% \text{RH}$, the average compression strength of the 7 ply triple walled fiberboard box (top to bottom) shall not be less than 400 Kg and in case of double wall 5 ply box it shall not be less than 200 Kg at a deflection of not more than 15 mm.

(iii) **Water Absorption.** The increase in mass of the board after water absorption test when tested in accordance with BIS specification No IS: 4006 (Part-I) - 1985 shall not be more than 155 gm per square meter.

(iv) The following BIS specifications shall be referred to:-

- (aa) IS: 1060 (Part-I) - 1966 (Revised) First reprint September 1982.
- (ab) IS: 4006 (Part-I) – 1985.
- (ac) IS: 2771 (Part-I) – 1990.


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VETTED ON 19 SEP 2024

6. **Shape and Design.** The PET bottles shall be elongated and cylindrical with minimum 6 ribs. The size of the bottles shall be as per trade availability.

7. **Marking**

(a) **On PET bottles.** The following particulars shall be marked legibly and indelibly on the multi coloured, decorative, chromoart, LDPE heavy duty adhesive label/Lithographed on the bottle :-

- (i) Description of contents.
- (ii) Name of manufacture.
- (iii) Nett Weight (in Kg)/Litre.
- (iv) Batch/Lot No.
- (v) AT No & date.
- (vi) Warranty expiry date.
- (vii) For Defence Services only.
- (viii) Vegetarian symbol.
- (ix) Commercial Brand Name.

(b) The following details will be printed with a food grade ink jet print on the neck of each bottle :-

- (i) Date of manufacture.
- (ii) Batch No/Lot No.
- (iii) Best before date.


(c) **On CFCs.** The following particulars shall be stenciled or printed on each CFC:-

- (i) Description of contents (7.5 cm characters).
- (ii) No of packs X Nett wt (in gms).
- (iii) Gross wt (in kgs).
- (iv) Green logo (veg).
- (v) Name of manufacturer.
- (vi) Warranty expiry.
- (vii) AT No & Date.
- (viii) This side up (In 2.5 cm characters in black ink with an arrow mark showing the side).
- (ix) FOR DEFENCE SERVICES ONLY.

8. **Hygiene.** Adequate standards of hygiene shall be maintained at all times and plant operators and store men shall be trained in proper hygiene practices.

Note : (i) The ink and colour used for marking/printing shall be of approved quality conforming to PFA act and also Food and Drug Authority Rules.

(ii) The ink and colour used shall be non toxic and non poisonous. It shall not peel off or melt before or after impulse sealing operation. It shall not get dissolved with oil under any hot or cold operation conditions.


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