



Technical Specifications for PACKAGING - HDPE AND PET CONTAINERS

Version: 6
Replacing: v4, 2022
Date of issue: Oct 5, 2024
FOSTER Reference: PS00018

Key update
 - Addition of carton style to be used as secondary packaging.
 - Material composition of label included.

1. GENERAL REQUIREMENTS

Unit of Entry Codes:

| Packaging Unit of Entry Codes |
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| CC2: 12 x 1L - PET bottles |
| CC5: 15 x 1L - PET bottles |
| CC6: 20 x 1L - PET bottles |
| CC3: 12 x 1.5L - PET bottles |
| CCC: 2 x 2L - PET bottles |
| CQ0: 3 x 2L - PET bottles |
| CC7: 6 x 2L - PET bottles |
| CC8: 8 x 2L - PET bottles |
| CC4: 12 x 2L - PET bottles |
| CJB: 6 x 3L - HDPE Jerrycan |
| CN7: 6 x 3L - PET bottles |
| CP0: 2 x 4L - PET bottles |
| CP6: 4 x 4L - PET bottles |
| CC1: 4 x 5L - HDPE Jerrycan |
| CL9: 2 x 5L - HDPE Jerrycan |
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Purpose of the Specification:

The specification provides the packaging requirements to pack 1 to 5 liters Refined Fortified Vegetable Oil in PET and HDPE containers that are transported in carton boxes.

Generic Requirement:

The product covered by the provision of this specification must be packed in appropriate packaging which safeguard the hygienic, nutritional, technological, and organoleptic qualities of the product. The packaging material shall be made of substances which are safe and suitable for their intended use. There should not be any impact of toxic substance or undesirable odour or flavour to the product.

- It is the responsibility of the manufacturer to select a packaging material that will protect the food product from spoilage and deterioration.

- The packaging material shall be robust enough to withstand different types of handlings and transport while protecting the product throughout its shelf life.

2. PRIMARY PACKAGING - PET and HDPE oil container

Food Grade Requirement

All materials in direct contact with food products (packaging materials and inks) must be food grade and compliant with:

- The EU law Regulation (EC) No 1935/2004, (EU) No 10/2011 and (EU) No 2023/1442, regarding food contact.
- AND/OR the last version of the FDA law Regulation included in the 21 CFR regarding food contact.

WFP must be consulted if certificate of compliance for food contact material is provided against a local regulation.

Food Product Net Weight

1 to 5L as per contract.

- Weight and quantity tolerance must meet The International Organization of Legal Metrology International Recommendation OIML R 87.

Material Composition

- Virgin material should be used to be in contact with the food.
- All packaging materials must be free of Phthalates (such as Butyl Benzyl Phthalate, Dibutyl Phthalate, Diethyl Hexyl Phthalate, Diisodecyl phthalate, di-n-octyl phthalate), PVC, PVdC, and be manufactured with materials which do not contain BPA as an intended component of the plastic formulation.
- The plastic resin used should be suitable for usage up to 45°C (considering that oil isn't filled to a temperature superior to 40°C).

PET (Poly Ethylene Terephthalate)

- Additives allowed:

- Colorants as specified are allowed to an opacity level that allows a user to view the product fill level.
- Preferable color is white or transparent. Any other color must be agreed with WFP.

- Recycled material could be used following the below conditions:

- The use of recycled content must adhere to Regulation (EU) No 2022/1616.
- In direct food contact if a close loop regrind system is in place and that the material is coming from the same container production to maintain the food grade compliance.
- In the external layers as long as the food grade compliance is respected.
- Post-Consumer Recycle (PCR) can be used up to 30% only if from suppliers who have certified clearances for use in

food contact applications and is of equal or greater physical properties of the primary PET source.

- No other material additives are allowed.
- Regrind generated from this container using a closed loop system for manufacturing and handling is allowed up to 5% (Additional regrind is allowable with notification to WFP). This self-generated regrind must be kept clean and free from foreign materials. Regrind from other sources is not allowed unless the material has been processed under the PCR allowances.

*HDPE (High Density Polyethylene) *

- Opacity at a level that allows a user to view the product fill level
- Preferable color is white translucent. Any other color must be agreed with WFP
- No other additives are allowed except the one to color the container
- Recycled material could be used following the below conditions:
 - The use of recycled content must adhere to Regulation (EU) No 2022/1616.
 - In the external layers, not in direct contact with the food and as long as the food grade compliance is respected.
 - Outside regrind sources are not allowed.
 - In-house (from the same manufacturing plant) regrind materials are allowed up to 30%, with regrind generated from the containers own trim operation while using a closed loop system for manufacturing and handling.
- This self-generated regrind must be kept clean and free from foreign materials.

Label

- Composed of OPP laminated self-adhesive paper with release liner or OPP material.

Packaging suppliers shall indicate shelf life and storage condition on certificate of analysis of materials.

Material Qualities

| Material Quality | Value | Unit | Standard | Comment |
|------------------|-------|----------------|----------|---------------|
| Relative density | 1 | Not applicable | | HDPE Jerrycan |
| Relative density | 0.75 | Not applicable | | PET Bottle |
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Shape of packaging

| Parameter | Details |
|-----------|---|
| Shape | Square or rectangular to avoid space loss. |
| Headspace | The container headspace must be a minimum of 2.5% of the volume of oil contained in the bottle. |
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Typical physical properties

| Parameter | Min | Max | Target | Unit | Standard | Additional Comments |
|--------------------|-----|-----|--------|------|--------------|------------------------------------|
| Wall thickness max | 0.2 | 4 | | mm | not provided | PET bottle (middle of side panels) |

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| Wall thickness min | 0.1 | | | mm | not provided | PET bottle (on the corners) |
| Wall thickness max | | | 1 | mm | not provided | HDPE Jerrycan (middle of side panel). |
| Wall thickness min | 0.6 | | | mm | not provided | HDPE Jerrycan (on the corners). |
| Drop test on filled and closed container | | | | | ASTM D2463, SPI AU-135 or equivalent on the flat bottom from a 1.9m height - Certificate of compliance to be provided. | Pass without loss of content |
| Minimum top load | | | 59 | N | ASTM D2659 or equivalent- Certificate of compliance to be provided. | <p>eq. 6 kg (1L container)</p> <p>*Value given for a top load measurement performed on containers after at least 10 days on manufacturing - best conditions</p> <p>Test parameters (addition to the standard process):</p> <ul style="list-style-type: none"> - Peak measurement through 7mm of travel (alternative: Peak measurement over 10% of force drop off) - Speed: 50mm/min - Load points: handle and top neck for jerrycan and top neck for PET bottles - Vented test: provide a vent to allow equalization of air pressure during test |
| Minimum top load | | | 88 | N | ASTM D2659 or equivalent- Certificate of compliance to be provided | <p>eq. 9 kg (1.5L container)</p> <ul style="list-style-type: none"> - Please refer to test conditions mentioned in minimum top load for 1L bottle. |

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| Minimum top load | | | 118 | N | ASTM D2659 or equivalent- Certificate of compliance to be provided | eq. 12 kg (2L container) - Please refer to test conditions mentioned in minimum top load for 1L bottle. |
| Minimum top load | | | 147 | N | ASTM D2659 or equivalent- Certificate of compliance to be provided | eq. 15 kg (2.5L container) - Please refer to test conditions mentioned in minimum top load for 1L bottle. |
| Minimum top load | | | 206 | N | ASTM D2659 or equivalent- Certificate of compliance to be provided | eq. 21 kg (3L container) - Please refer to test conditions mentioned in minimum top load for 1L bottle. |
| Minimum top load | | | 265 | N | ASTM D2659 or equivalent- Certificate of compliance to be provided | eq. 27 kg (4L container) - Please refer to test conditions mentioned in minimum top load for 1L bottle. |
| Minimum top load | Minimum top load | | 295 | N | ASTM D2659 or equivalent- Certificate of compliance to be provided | eq. 30 kg (5L container) - Please refer to test conditions mentioned in minimum top load for 1L bottle. |
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Certificates of compliance to be provided for physical properties parameters.

Features

| Feature | Yes/No | Additional feature comments |
|--|--------|--|
| Easy Opening | Yes | |
| Handle for > 5L containers | Yes | |
| At least a grabbing feature (2.5 to 4L containers) | Yes | |
| Reclosable | Yes | - The product must be properly sealed with no leakages. - The closure must resist with no cracking and when applied to the same top load as the container. - The product must be re-closable whilst remaining leakage proof. |
| Tamper evident | Yes | - The closure system (inner wad seal and cap) must be spill/leak proof |

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| | | and have a visible tamper evident system showing that the product has not been opened. |
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Marking Information:

| Product Name | Marking Information |
|---------------------|---|
| Refined "xxx" Oil | <p>Fortified Refined Oil shall be labelled in an appropriate language as per contract agreement.</p> <ul style="list-style-type: none"> - Name of the product: Product name in relevant food specification - Fortified food - Net content: as per contractual requirement - Ingredient list: Ingredient list, Vitamins and additives (e.g., antioxidants) to be indicated including allergens in bold. "May contain..." - Nutrient table: Comply with Food Specification section, Nutritional Requirements - Production date: DD/MM/YYYY - Best Before End: MM/YYYY - Batch/lot number** - Manufactured by: Name and address - Supplied by*: Name and address - Manufactured in: XX - Storage instructions: "Store under dry and hygienic conditions and away from direct sunlight." - Other instructions: "Not for sale or Exchange", "Do not litter logo" - Donor and WFP logo: as per contractual requirement - Beneficiary feedback hotline: if required in the contractual agreement <p>xxx: to be replaced by the actual type of oil, e.g. Sunflower</p> <p>*if different from the manufacturer</p> <p>** supplier need to clearly describe the batch/lot size for the traceability of the product</p> |
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Templates for artwork available on: <https://foodsafetyqualitypublic.manuals.wfp.org/docs/specifications-index>

3. SECONDARY PACKAGING - CARTONS

Product Description

Cartons suitable for humanitarian supply shall contain: 12x1L, 15x1L, 20x1L, 12x1.5L, 2x2L, 3x2L, 6x2L, 8x2L, 12x2L, 6x3L, 2x4L, 4x4L, 2x5L, 4x5L as per contract.

Material Composition

Unbleached double wall corrugated board.

Dimensions

- Fully filled for maximum strength and dimensions adjusted to the load.

Construction

- Carton style: Regular slotted container (RSC) or American box is required
- Minimum recommended grammage: 700 grams per square meter.
- The fluting must be vertical, supporting the load. B+C fluting is recommended.
- The carton should be plain brown with virgin fibres and paper from sustainably managed forest if possible. Please consult WFP to approve the use of recycled fibres.
- No stapling will be accepted.
- Storage condition must be included in certificate of analysis of material.

Shape of Packaging

| Parameter | Details |
|------------------|--|
| Headspace | The dimensions must be adjusted to fit maximum products in the containers with a highly recommended 5mm headspace between the top of the bottle and the box, but a minimum side space. |
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Typical physical properties

| Parameter | Value | Unit | Standard | Additional Comments |
|---|--------------|----------------|--|---|
| ECT (edge crush test) | 7.5 | kN/m | ISO 3037 or equivalent | eq. 45 lbs/in Note: Looking at the harsh handling, humid conditions, storage time and total stacking (PET bottles: 10 cartons height, HDPE jerrycans: 8 cartons height). |
| Drop test (primary packaging in carton) | | Not applicable | ISTA 3A standard test (Only the first drop test sequence as per ISTA 3A should be performed by the supplier. Tests parameters are found in the ISTA 3A procedure (Annex II - first drop test sequence (9 consecutives drop test) - https://docs.wfp.org/api/documents/WFP-0000150365/download/ After each drop, there shall be no rupture or loss of contents - Certificate of compliance to be provided. | |

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| Top load resistance for finished product | 3,100 | N | ISO 12048 or equivalent - The final product (filled containers + cartons) working together need to support a minimum of static compression load of (ISO 12048 or eq. - certificate of compliance to be provided): Note: If the finished product combination isn't included in the table above, please consult WFP | eq. 316 kg - 1L x 12 |
| Top load resistance for finished product | 3,850 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 400 kg - 1L x 15 |
| Top load resistance for finished product | 4,900 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 500 kg - 1L x 20 |
| Top load resistance for finished product | 4,500 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 460 kg - 1.5L x 12 |
| Top load resistance for finished product | 1,800 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 185 kg - 2L x 3 |
| Top load resistance for finished product | 3,100 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 316 kg - 2L x 6 |
| Top load resistance for finished product | 4,860 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 600 kg - 2L x 12 |
| Top load resistance for finished product | 4,200 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 430 kg - 3L x 6 |
| Top load resistance for finished product | 2,060 | N | Please refer to test conditions mentioned in | eq. 210 kg - 4L x 2 |

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| | | | top load resistance for finished product for 316 kg. | |
| Top load resistance for finished product | 4,100 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 420 kg - 4L x 4 |
| Top load resistance for finished product | 2,500 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 255 kg - 5L x 2 |
| Top load resistance for finished product | 4,415 | N | Please refer to test conditions mentioned in top load resistance for finished product for 316 kg. | eq. 450 kg - 5L x 4 |

Certificates of compliance to be provided for physical properties parameters.

Marking Information:

| Product Name | Marking Information |
|-----------------------------|---|
| Fortified Refined "xxx" Oil | <p>Fortified Refined Oil shall be labelled in an appropriate language as per contract agreement</p> <ul style="list-style-type: none"> - Name of the product: Product name in relevant food specification - Fortified food - Net content XXL (XX x XL) - Production date: DD/MM/YYYY - Best Before End: MM/YYYY - Batch/lot number** - Manufactured by: Name and address - Supplied by*: Name and address - Manufactured in: XX - Storage instructions: "This side up". Symbol to use → ISO 7000 N°0623 / "Keep away from Rain" Symbol to use → ISO 7000 N°0626 / "This packaging has been design to be stacked X boxes high". Symbol to use → ISO 7000 No.2403 / "Keep away from sunlight". Symbol to use → ISO 7000 N°0624. - Donor and WFP logo: as per contractual requirement. - Other requirements: "Not for sale or Exchange" - Beneficiary feedback hotline: if required in the contractual agreement. - Two (2%) percent marked cartons (included in the price) must be sent with the lot or as per contract requirement. <p>xxx: to be replaced by the actual type of oil, e.g.</p> |

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|--|---|
| | Sunflower. *if different from the manufacturer. **supplier need to clearly describe the batch/lot size for the traceability of the product. |
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Templates for artwork available on: <https://foodsafetyqualitypublic.manuals.wfp.org/docs/specifications-index>

Instructions

Refer to: "<https://docs.wfp.org/api/documents/WFP-0000150361/download/>" for list of documents to be provided for every delivery

4. TERTIARY PACKAGING

Palletizing

If pallets are used inside containers: it is highly recommended to have 3 first bottom layers placed as column stacking, the rest can be interlocked (cross-stacking) for load stability. Pallet shall be wrapped in a suitable manner (locked to the pallet, enough containment force) and the cartons should be banded when necessary. The cartons shall be secured to pallets to prevent any damage to the contents or packaging during shipment. Pallet used should be strong enough to support the charge during transportation. The pallets are recommended to be heat treated as per ISPM 15 standards (methyl bromide fumigation is not allowed).

Stuffing without pallets

If no pallets are used inside container: dunnage (of strong sheets such as carton, plywood...) should be placed inside each container at every three layers of cartons to provide the required stacking strength. In addition, protecting material like air bag, carton, polystyrene, can be used. Also, kraft paper shall be adhered to all internal sides, door, and floor of container. Kraft paper also need to be placed on the top of packaging.

- Ensure proper stowage so that there is minimum free movement of commodities during transit (max 20cm between top of cargo stow and container roof).

Desiccant

For shipping containers, unless fully shrink-wrapped pallets are used, and unless otherwise specified in the contract, it is highly recommended to place desiccant in container at appropriate location to absorb moisture.

Supplier needs to use high quality desiccant and calculate the quantity of desiccant based on:

- Efficiency of desiccant
- Length of time in transit in container
- Container capacity

Supplier needs to provide in the offer the type of desiccant and quantity to be used for the consignment.

| Estimated days in container | 20 ft container | 40 ft container |
|-----------------------------|-----------------|-----------------|
| 15-59 days | 9.00 kg | 17.50 kg |
| 60-89 days | 11.25 kg | 22.50 kg |

90-120 days

13.50 kg

25.00 kg

Better alternative material can be used upon agreement with WFP.

Additional Information on Tertiary Packaging

Cargo shall be of uniform quality, clean (no deposits of dust, dead insects, droppings on primary/secondary packaging) and stacked/stored in a way to facilitate easy identification and traceability. Products that are visibly non-conforming are not acceptable and shall be removed (leaky packages, damaged, moldy, off smell/color/taste, smudged/unclear marking, water damaged etc.).

5. ANNEX

Annexes to this specification can be found on the links below.

EULawRegulation-https://ec.europa.eu/food/safety/chemical_safety/food_contact_materials/legislation_en

FDALawRegulation-<https://www.fda.gov/food/ingredientspackaginglabeling/packagingfcs/default.htm>

DeclarationofCompliance(DoC)-<https://docs.wfp.org/api/documents/WFP-0000150358/download/>

Documentationrequiredfromsuppliersforeverydeliveries-<https://docs.wfp.org/api/documents/WFP-0000150361/download/>