Specifications for natural high density polyethylene (HDPE) flake for food grade applications

These generic specifications have been prepared to assist Australian secondary plastics treatment facilities produce natural food grade HDPE washed flake for use in compounding and manufacturing in Australia and overseas. These specifications are geared to using food grade HDPE to make food grade recycled HDPE (rHDPE) for use in food packaging applications. These specifications are voluntary.

There is diversity in plastics processing plant capacity in Australia. Some include sorting, hot wash or cold wash, flake and compounding, whereas some specialise in compounding and pelletising for customers making packaging and products. All companies should seek details from their customers on their specific requirements. The test methods in the table below are included for reference and other test methods can be used.

These specifications have been developed in consultation with experts in the sector based on national and international trends on markets, price, quality, equipment and processes. We acknowledge Plastics Recyclers Europe for the generic template, specifications from The Netherlands, and the contribution of MRF operators, plastics processors and other industry experts in helping prepare this generic specification.

Rigid HDPE natural and colour

HDPE is best separated into two streams:

1. Natural food grade, prior -food-use bottles (milk, cream, juice and water).
2. All other colours and formats (including natural non-food use bottles).

Only natural HDPE prior-food-use bottles should be reprocessed back into high value food grade HDPE. Coloured HDPE and natural non-food-use bottle HDPE should not be reprocessed for food applications, and are generally processed to make non-food products such as pipe and similar robust products. Sorters and processors are encouraged to keep the two streams separate to achieve higher quality and value.

These specifications are for food grade natural HDPE bottles. Use the other HDPE specifications within this series for [coloured and mixed HDPE](https://anzpacplasticspact.org.au/wp-content/uploads/2021/11/Specifications-for-coloured-HDPE-flake.docx).

HDPE packaging design

For HDPE packaging design, the following resources are available:

* [Quickstart Guide to Designing for Recyclability: Rigid HDPE Packaging](https://documents.packagingcovenant.org.au/public-documents/Quickstart%20Guide%20-%20Designing%20for%20Recyclability;%20HDPE%20Packaging)
* [Action Plan for Problematic and Unnecessary Single-Use Plastic Packaging](https://documents.packagingcovenant.org.au/public-documents/Action%20Plan%20for%20Problematic%20and%20Unnecessary%20Single-Use%20Plastic%20Packaging)
* [Sustainable Packaging Guidelines](https://documents.packagingcovenant.org.au/public-documents/Sustainable%20Packaging%20Guidelines%20%28SPGs%29)

Specifications for natural (unpigmented) high density polyethylene (HDPE) flake for food grade applications

Instruction: Enter responses into the relevant fields as appropriate to your operations, outputs and customers. Some parts of these specifications are more important than others for entry of data for compliance, for example contamination and colour are more important than density of flake in the bag. Testing methods are suggested (from EU templates); specify if using alternative test methods particularly for export. Testing may not be a required element for Australian customers and may be required for export licences.

|  |
| --- |
| Supplier information |
| Company name |  |
| Company address |  |
| Additional sorting information |  |
| Date |  |

|  |
| --- |
| Specifications for natural (unpigmented) high density polyethylene (HDPE) flake for food grade applications |
|  | Enter data in this column | Good practice / description of options for responses |
| Characteristics |  |
| Product name  |  | HDPE hot caustic wash flake. |
| Product reference |  | Number xxx. |
| Suitable applications for treated material |  | Food grade packaging and products (only with a Letter of No Objection (LNO) from EFSA or USFDA or the use of a functional barrier). |
| Origin of the materials |  | Post-consumer kerbside (no chemical storage containers).Post-industrial (no chemical storage containers).Pre-consumer industrial. |
| Colour |  | Describe flake colour (100% natural, transparent). |
| Technical Properties | Values | Optional test methods |
| Material density |  | 0.950 – 0.965 g/cm3 | ISO 60 |
| Melting temperature range |  | 135°C | ISO 113547-3:2016 |
| Melt flow rate |  |  0.5- 0.7 g/10min at 2.16 kg and 190C  | EN ISO 1133-1:2011 |
| Fines |  | ≤ 1.00 weight % | Annex A of EN 15348:2007 |
| Flake size (average) |  | 98% 8-12 mm | EN 15345:2007 |
| Flake distribution (min – max) | \_\_\_\_\_ % < 1mm\_\_\_\_\_ % ≥ 12mm | <1mm = 0.5 wt% max.≥ 12mm = 0.1 wt%  | EN 15345:2007 |
| Moisture |  | ≤ 1.00 % or lower ie ≤ 0.7 weight % | Moisture Analyser / infrared heater or TGA EN ISO 11358-1:2014 |
| Impurities | impurities visible in flake | Visual inspection |
| Total impurities |  | ≤ 80 ppm |  |
| PP content |  | <1% | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Other plastics (PVC, PET, PS)  |  | ≤ 20 ppm (excl. PP) | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Metal content |  | ≤ 10 ppm | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Paper content |  | <20 ppm | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Wood content |  | <20 ppm | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Other contaminants |  | ≤ 10 ppm | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Appearance |  | <0.2% coloured HDPE and LDPE | Visual inspection |
| Food contact | Material suitable for food grade applications if >99% (by mass) natural milk, juice and drinking water bottles in origin. |
| Transport |  |
| Packaging | Packed in new PP bulk bags, with labelling that includes information that covers:* Product code and name.
* Batch number.
* Date of manufacture.
* Name of manufacturer and production factory.
* Gross and tare weight.
* Special handling requirements.
 |
| Transport/contract documents | The documents will be provided upon delivery stating quantity, supplier, source, bag IDs. |
| Truck load | Tautliner (preferred) or tarpaulin truck 17-20 tonne load.. |

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