Specifications for polyethylene terephthalate (PET) hot washed flake

These generic specifications have been prepared to assist Australian secondary plastics recycling facilities produce food grade recycled PET (rPET) hot washed flake to US FDA and EU food-contact standards for use in compounding and manufacturing in Australia and overseas. These specifications are voluntary.

There is diversity in the capacity of plastics processing facilities. Some include sorting, hot wash, flake and compounding, and some specialise in compounding and pelletising for manufacturers of packaging and product. All companies should seek specific details from their customers on specific requirements. The test methods in the table below are included for reference.

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 these specifications.

Two streams of rigid PET

There are two common streams of rigid PET packaging that have different physical properties and hence different value in Australian and global markets. These specifications are geared to the highest value and most consistent PET waste stream: clear uncoloured PET bottles used for beverages such as water, juice, milk and carbonated soft drinks.

There are separate specifications within this series for [coloured, thermoformed and non-food PET bottle flake](https://anzpacplasticspact.org.au/wp-content/uploads/2021/11/Specifications-for-coloured-PET-cold-washed-flake.docx).

PET packaging design

For PET packaging design the following resources are available:

* [Quickstart Guide to Designing for Recyclability: PET Packaging](https://documents.packagingcovenant.org.au/public-documents/Quickstart%20Guide%20-%20Designing%20for%20Recyclability;%20PET%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(SPGs))

Specifications for polyethylene terephthalate (PET) hot washed flake

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, but may be required for export licences.

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

|  |  |  |  |
| --- | --- | --- | --- |
| Specifications for polyethylene terephthalate (PET) hot washed flake | | | |
|  | Enter data in this column | Good practice / description of options for responses | |
| Characteristics | |  | |
| Product name |  | Hot caustic wash flake PET suitable for making bottle food grade rPET. | |
| Product reference |  | Number xxx | |
| Origin of the materials |  | Post-Consumer kerbside (no chemical storage containers).  Container Deposit Scheme (CDS).  Post-industrial (no chemical storage containers).  Pre-consumer industrial. | |
| Suitable applications for treated materials |  | Food grade packaging and products (only with a Letter of No Objection (LNO) from EFSA or USFDA or the use of a functional barrier). | |
| Colour |  | Describe flake colour (natural, blue, no opaque white or brown colours) and % blue. | |
| Technical Properties | | Values | Test method options |
| Bulk density |  | 250-500 kg/m3 | Annex B ISO 12418-2 or ISO 60 |
| Intrinsic Viscosity (IV) |  | 0.73-0.84 dl/g | ISO 1628-5 or EN ISO 1133 |
| Melting temperature range |  | 245 – 255 °C | ISO 113547-3:2016 |
| Flake size  (average) |  | 98% 3-12mm | Annex A of EN 15348:2007 |
| Flake distribution  (min – max) | \_\_\_\_\_ % < 1mm  \_\_\_\_\_ % ≥ 12mm | <1mm = 0.5 wt% max.  ≥ 12mm = 0.1 wt% | Annex A of EN 15348:2007 |
| Fines |  | ≤ 1.00 weight % | Annex A of EN 15348:2007 |
| Moisture |  | ≤ 1.00 % or lower ie ≤ 0.7 weight % | Moisture Analyser, Muffle oven or TGA weight loss at 105°C, EN ISO 287-2009 |
| Impurities | | Impurities visible in flake | Visual inspection |
| Total impurities content (max %) |  | ≤ 80 ppm |  |
| PVC content |  | ≤ 30 ppm | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Polyolefins content (PE, PP) |  | ≤ 25 ppm | 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 |  | 100-200 ppm translucent coloured PET and <50-100 ppm opaque PET | Annex A of ISO 12418-2:2012 or Annex D of DIN EN 15348 |
| Food contact | | Material suitable for food grade applications. | |
| 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. | |

Disclaimer

APCO and the contributing authors have prepared this publication with a professional level of care. It is based on generally accepted practices and standards at the time it was prepared. The scope of the publication, the intended audience of the publication, the purpose of the publication, the methods adopted in preparing the publication and the sources of information used in the publication are stated in the publication. This publication is prepared for use only by APCO and expressly stated intended audience of the publication. APCO and the contributing authors are not liable for any loss or damage that may be occasioned directly or indirectly arising from or in connection with any use, or reliance on, the contents of this publication. It does not purport to give legal or financial advice. No other warranty, expressed or implied, is made as to the professional advice included in this publication.

Creative commons

This publication is licensed under an Attribution 4.0 International (CC BY 4.0) licence. In

** *Australian Packaging Covenant Organisation,2021*

*This publication is copyright © 2021 by the Australian Packaging Covenant Organisation and is licensed under the Creative Commons Attribution 4.0 International License.*

*To view a copy of this license, visit hiips://creativecommons.org/licenses/by/4*