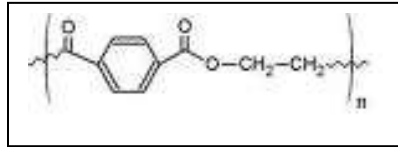


A Brief Synopsis on PET



PET (Polyethylene terephthalate) is derived from ethylene glycol and terephthalic acid:

The prime materials used by Par Pak are:

1. Amorphous PET (APET) which has:

- High gloss and clarity
- Excellent Toughness
- Excellent gas and good moisture barrier when properly sealed
- Direct food contact approvals
- Used widely for chilled and ambient food and industrial uses.
- Also extensively used in deep freeze applications, with caution.

PET is the material most commonly recommended and approved by major retailers for deep freeze use. Par Pak does not guarantee the performance of any materials for deep freeze use because of the challenging nature of the process. It is imperative that all users ensure that the PET used will suit the packing and logistics process being used by the user and approves the material for its use.

2. DPET, is the brand name for Octal's Direct PET extruded material,

Conventionally, the melt PET is cooled down and pelletized, then packed for onward distribution to extruders, who would dry and re-heat the product for extrusion.

With DPET, as part of the copolymerisation process, the melt is NOT cooled, pelletized, and solid stated for onward sale to downstream converters. The polymer melt is directly fed into the extruder and extruded into sheet. This exhibits all the excellent characteristics of APET without requiring further drying and extrusion.

As a result of this process, DPET (as independently assessed on behalf of OCTAL) exhibits a very good carbon foot print, as a result of its process.

3. RPET is available in one of two formats:

Co-extruded multi-layer sheet referred to as **a / b / a** food approved blend

The Material composition is:

'a' layer of approximately 20% using prime PET resin.

'b' layer is a mix of up to **50% SUPER CLEAN recycled PET post consumer waste (PCW) and 30 % recycled post industrial content**

Mono-layered food approved blend

This is a blend consist of a mix of food approved **super clean post-consumer recycled PET**, post-industrial regrinds and prime virgin PET resin. The post-consumer content is only from reputable sources that have approval for direct food contact use.

Implications when using PCW:

It is important to be aware of the implication of the use of post consumer waste:

The current material composition is a mix of high quality industrial waste generated during the extrusion and thermoforming processes and post consumer waste.

Post Consumer Waste re-uses PET bottles and other containers from curb side collection programs and bottle deposit programs.

Collected material is put through a rigorous sorting, flaking and washing process, which is then re-extruded into food approved sheet.

Post consumer recycled material can and will vary in quality and can have a direct impact down-stream in terms of throughput and quality. As more RPET continues to be used and re-used, its quality appears to be deteriorating. Primary factors that affect the quality and performance of the manufacturing process product and are:

- The Intrinsic Viscosity (IV)₇
- color variation (tint)
- sheet imperfection, such as gauge fluctuations
- black marks (carbon particles)
- Throughput at all levels, primarily at extrusion.

The material used by Par Pak has been developed:

- Within the Par Pak Group,
- Within Par Pak's strategic supply partners
- From reputable European sources of PCW
- All material has certification for direct food contact use.

We have observed:

- good clarity and gloss, as is associated with APET
- Higher incidence of Carbon particles embedded within the sheet. This is not a hazard to health, and is generated as a result of the further processing of the material.
- More likelihood of variations in colour (tint).
- Higher variations of consistency and quality. We ask that potential users of this material satisfy themselves as to the suitability of the material for their use.
- Pricing of RPET is subject to availability of good quality PCW. This is coming under strain, and is likely to become increasingly difficult to obtain. Availability of bottle waste is causing concern within the Thermoforming Industry; major bottle users are reducing their bottle weights, bottlers are sourcing bottle scrap for use within the bottling industry, and there is increasing demand for the product.

4. Mono RPET (with higher amount of post consumer content) :-

We are able to supply material with 100% recycled PCW. This has significant implication in terms of product quality, and would need to be fully tested.

In particular:

- There may be a visible loss in clarity in the product.
- There may be change in tint (not consistent) within the sheet and product on a batch to batch basis.
- There may be some imperfections in the performance, quality and occasional black carbon spots in the sheet.
- The physical properties may not be adequate for some applications due to lower intrinsic viscosity levels.
- Increased risk of holes in sheet and containers