



USES FOR RECYCLED PET

Since 2001 Petcore has commissioned an annual review of the European PET bottle collection figures from PCI. We duly report to the press each year how many tonnes were collected and the percentage of recycled PET used to produce fibre, sheet, and containers etc. Here we give more details about these end uses.

Fibre was the original outlet for recycled PET and it still consumes a very large tonnage. In 2001 144,000 tonnes of RPET (62% of all European supply) were used in fibre applications whereas in 2008 363,000 tonnes of RPET (45% of European supply) was used in fibre. Early uses of RPET were for fibres in the higher dTex range such as staple fibre for fillings for duvets, ski jackets etc using the insulation properties of PET fibre. Continuous development and improvement in RPET quality led to the production of polar fleece fabric and outdoor wear made from finer fibres spun from 100% RPET. Premium quality back packs, travel goods and computer cases are now made utilising recycled PET. RPET is also a major feedstock for non-wovens such as geotextiles, filters and wipes.

RPET has often been the “unsung hero” in these fibre outlets but this year it has been given full recognition. At the Winter Olympics in Vancouver, Coca Cola supplied their representatives with outdoor wear made from 100% RPET and Nike has announced that it is supplying 9 World Cup football teams in South Africa with official strips made entirely from RPET. These teams’ replica strips will also be made from the same RPET-derived fabrics. Nike estimates it will use 275,000 tonnes of RPET in this application.

177,000 tonnes of RPET were used to produce clear sheet in 2008. The majority of this sheet was thermoformed to produce blisters, collation trays, clam shells and punnets to protect soft fruits and other contents. The sheet industry has long had the ability to extrude multi-layer sheet and this enabled them to sandwich an RPET layer between two outer layers of virgin PET particularly for food outlets.

In 2001 just 16,000 tonnes of RPET were used to produce containers, almost all for non food. The passing of EU Regulation 282/2008 (on recycled plastic materials and articles intended to come into contact with foods) has meant that all EU member countries will allow RPET from approved plants to be used in food contact containers. Large and small brands used 163,000 tonnes of RPET in containers in 2008.

Strapping tape, the green bands that keep bricks and boxes firmly held on their transport pallets, has been a steady outlet for RPET. 88,000 tonnes were used in Europe in 2008.

The final category in PCI’s review of end markets is in injection moulding/other outlets. These applications account for less than 20,000 tonnes of RPET per year at present and are very varied. The RPET can be filled with eg glass fibre and injection moulded to form complex engineering components. It is also injection moulded to form the barrel of the Pilot B2P (bottle to pen). This clear cylinder is designed to look like a PET water bottle, complete with a label panel, a quality pen with the body made from 100% RPET.



A new application from Dymon Pallets Pty in Australia is a transport pallet moulded from a 25 kg preform (big enough to contain a 10 year old child). The company estimates that in 2005 over 0.5 million timber pallets were made in the USA alone and RPET pallets could absorb the world's production of RPET!

It can be seen that RPET has outlets for every quality. The clear, higher grade pellets and flakes are used by the food packaging industry and flakes that haven't been through the final purification process for food contact, or coloured flakes find a market in "hidden" and coloured applications.

This is not the end of the story. There is continual research into RPET applications and RPET recovery techniques. New and novel processes drive new applications for RPET. Some of the methods involve dissolving post consumer PET, treating post consumer and post industrial waste at high pressures and hot and cold temperatures to produce novel end products with novel properties. Although still in the early stages of development these innovations have the potential continually to improve our collection and recovery of Europe's most recycled packaging polymer. Petcore is keen to support these cutting edge developments and will help facilitate their growth.

Details of many of these end uses for RPET can be found in the Document Library by those who register with the Petcore website www.petcore.org. We have also included in this library decorative works and novel structures such as PET bottles used in the building industry in South America and also Plastiki, the ocean-going catamaran made from 12,500 2 litre PET bottles!