

By Chaz Miller

# Polyethylene Terephthalate

Polyethylene terephthalate has helped shrink the size of the waste stream.

**P**OLYETHYLENE TEREPHTHALATE (PET) is a plastic resin used to make bottles for soft drinks and other household and consumer products. PET is a relatively new packaging resin. The PET bottle was patented in 1973. Four years later, the first PET bottle was recycled.

Soft drink bottles remain the biggest user of PET resin. "Custom" bottles are used for other products such as salad dressing, peanut butter and jellies. Custom bottles accounted for more than half of PET containers by weight in 2005. PET is also used for film, oven trays, sheeting for cups and food trays, and other packaging. This profile is limited to PET containers.

Half of all polyester carpet made in the United States is made from recycled PET bottles. Exports, however, are becoming an important market for recycled PET. The rise in custom bottles and the increased consumption of water and soft drinks away from home has created challenges for increasing the PET recycling rate.

PET use has reduced the size of the waste stream because PET has replaced heavier steel and glass containers.

*Chaz Miller is state programs director for the National Solid Wastes Management Association, Washington, D.C. E-mail the author at: [cmiller@envasns.org](mailto:cmiller@envasns.org).*

**Sources:**

- "Measurement Standards and Reporting Guidelines," National Recycling Coalition, [www.nrc-recycle.org](http://www.nrc-recycle.org)
- "Municipal Solid Waste in the United States: 2005 Facts and Figures," Office of Solid Waste, Washington, [www.epa.gov/osw](http://www.epa.gov/osw)
- National Association for PET Container Resources, [www.napcor.com](http://www.napcor.com)
- Scrap Specifications Circular 2007, Institute of Scrap Recycling Industries, Washington, [www.isri.org](http://www.isri.org)

\*2005 EPA estimates.

## PET Municipal Solid Waste Facts:

**Generated:**

- 1.89 million tons, or 0.76% by weight.\*
- 12.75 pounds of PET bottles per person.\*
- 2.54 million tons according to industry data.
- 18 20-oz. soft drink bottles weigh one pound.

**Recycled:**

- 500,000 tons, or 26.4% recycling rate.\*
- 585,000 tons, or 23.1% recycling rate in 2005, according to industry data.
- Container deposit laws make soda bottles easily recyclable.

**Recycled Content:**

- Approved by FDA, use in bottles is increasing.

**Composted:**

- PET does not compost.

**Incinerated or Landfilled:**

- 1.39 million tons or 0.83% of discarded MSW by weight.\*
- Highly combustible, with a per-pound Btu value of 10,933, twice that of MSW.

**Landfill Volume:**

- 2.76 million cubic yards or 0.7% of

landfilled MSW were soft drink bottles in 1997.

**Density:**

- Landfilled bottles weigh 355 pounds per cubic yard (lbs./cu. yd.).
- Whole bottles have a density of 30-40 lbs./cu. yd.
- Baled bottles have a density of 400-500 lbs./cu. yd.
- Granulated bottles have a density of 700-750 lbs./cu. yd.

**Source Reduction:**

- The 2-liter soft drink bottle weighs 48 grams and is 20 grams, or 29%, lighter than 20 years ago.

**Recycling Markets:**

- The fiber market — which uses recycled PET bottles for carpet, clothing and other products — and exports are the primary markets for recycled PET.

**End-Market Specifications:**

- ISRI Scrap Specifications Circular 2007: Plastic Standard P-100 covers PET bottles.
- Contamination is limited to 2%.
- Do not store outside for more than six months unless covered with UV resistant materials.
- PVC is a major contaminant because its specific gravity almost equals PET's.

