

Material world

Understanding the life cycle of the products you specify

Polyethylene Terephthalate

The good: Also known as polyester, PET (or PETE) is commonly used in beverage bottles and consumer product containers, which can be refilled and reused. Recycled PET is used to produce fiberfill, geo-textiles (i.e. fleece), carpet yarn, and more beverage and food containers. It takes approximately 70% less energy to recycle plastics than to produce it from raw materials. And as plastic is lighter to transport than glass, it is a more energy efficient resource.

The bad: All plastics are made from oil – a non-renewable resource. Plastic is also the worst performer in biodegradability. If not recovered through recycling, it can take over 1,000 years for plastic to decompose. Approximately 52% of PET beverage bottles in Canada end up in the landfill.



High-density polyethylene

The good: HDPE has a variety of uses including Tupperware, milk cartons, cereal box liners, carrier bags, and bottles for water, juice, dish soap, shampoo and laundry detergent. It can be recycled into more non-food bottles, plastic lumber for outdoor decking, fencing and picnic tables and other hard plastic items.

The bad: It takes 1.75 kilograms of petroleum, in energy and raw material consumption, to produce one kilogram of HDPE.



Polyvinyl Chloride

The good: Commonly referred to as vinyl, PVC is an inexpensive, durable and versatile material.

The bad: PVC is thought to be one of the most hazardous consumer products ever created. When produced or burned, PVC releases dioxins that can cause severe health problems including cancer, reproductive and immune system damage, and birth defects. As a product, PVC can release poisonous air toxins, commonly recognized as that “new car smell.” Recycling of PVC in North America is negligible. In fact, one PVC bottle can contaminate a recycling load of 100,000 PET bottles.



Low-density polyethylene

The good: It is a flexible, yet tough material that is almost unbreakable. It is commonly used to produce food and garbage bags, shrink wrap, squeezable bottles and container lids. It can be

recycled into paneling, furniture, garbage cans and bags, floor tile and compost bins.

The bad: If contaminated with food, it is difficult to recycle. Plastic film can often fly away and cause litter.



Polypropylene

The good: PP has good chemical resistance and a high melting point, making it a good packaging material for hot liquids. It's used primarily in yogurt and margarine containers, medicine bottles and bottle caps. PP is recycled into storage bins, shipping pallets, flowerpots and automobile accessories.

The bad: PP tends to crack or split in areas with small radii. Its chemical resistance makes it difficult to decorate with paint, labels and ink.



Polystyrene

The good: PS is a versatile plastic that can be rigid or foamed (expanded). Expanded polystyrene is commonly known by its trade name Styrofoam. Its various product applications include compact disc cases, loose fill packaging peanuts, and food service items such as cups, plates, cutlery, hinged take-out containers and meat trays. Polystyrene maintains much of its integrity through the recycling process, which means it can be recycled repeatedly.

The bad: Although facilities are available, only 11 municipalities in Ontario currently offer curbside PS recycling. Its recyclability is also limited if contaminated with food.



Polylactic acid

The good: PLA is biodegradable thermoplastic polyester derived from renewable resources such as cornstarch or sugarcane.

The bad: PLA is not perfect. While its degradability is impressive, systems to handle this material are not widely available. PLA can be composted at home but it's not meant to be trashed as decomposition of any material in landfills is minor. And since PLA is not marked, it's difficult for consumers and recyclers to identify. Others worry our growing interest in cornstarch is driving up the cost of corn, potentially wreaking havoc on our food supply.



Polyhydroxyalkanoates

The good: PHA is a naturally occurring form of polyester produced through the fermentation of plant sugars and oils. It can decompose in a number of different environments including soil, backyard composts, fresh and marine water, and septic systems. PHAs can resemble stiff thermoplastics, material with high elasticity and grades suitable for adhesives and coatings.

The bad: The production of PHAs is more cost prohibitive than most synthetic plastics. It also faces similar issues as PLA, mentioned above.

Aluminum

The good: It requires very little energy to recycle. The material never wears out and can be recycled again and again. It is a very lightweight and durable material that is used in a variety of applications, making it a valuable commodity.

The bad: It takes a tremendous amount of energy to produce virgin aluminum. Also, once a can is opened, it is not refillable.



Glass

The good: Virgin glass is made from natural materials: sand and limestone, which renders it inert. It has significantly lower process-related energy requirements than new aluminum and PET. It can be recycled for sandblasting, made into new bottles and mixed with cement for road applications.

The bad: Glass is fragile and easily broken. It is also a heavier, bulkier material. More than 12 kilograms of glass is required to package 30 litres of beverage, compared to one kilogram of plastic.



Cardboard

The good: Cardboard is the most widely recycled of all packaging materials. Once recycled, CC is used to make more cardboard, chipboard, paper or boxboard (i.e. for cereal boxes), core board rolls, paper towels, tissues and writing paper. It takes 25% less energy to manufacture CC from recycled pulp than from virgin fibre.

The bad: Cardboard contains many contaminants including wax coatings, plastics and metal staples, which can increase waste, maintenance costs and risk to processing equipment.

