







PLASTICS 101: WHAT ARE PLASTICS?

Plastics are a group of materials, made from biomass and synthetic sources such as fossil-fuels like natural gas and crude oil, that can easily be formed into a desired shape when heat and pressure are applied. They are in many of the items we use every day, from cell phones to coffee cups to building insulation to automobiles. There are two broad categories of plastics: thermoplastics and thermosets. Thermoplastics use heat to take on the product shape and can be reshaped after cooling by reapplying heat, whereas thermosets' shape is locked in place as a result of a chemical reaction.

COMMONLY USED PLASTICS

NAME	DESCRIPTION	BENEFITS	USES
Polyethylene Terephthalate 	Is a thermoplastic polymer of the polyester family, with a Resin Identification Code of 1 . It is a commonly recycled plastic resin in curbside recycling and bottle return programs in Canada.	PET has excellent oxygen, water and CO ₂ barrier. High compression and tensile strength, with excellent resistance to most solvents. Clear and smooth surface for films and rigid bottles.	Soda bottles, water, mouthwash, and squeezable ketchup and mustard; fruit and salad clamshell containers; films for oven use; microwavable food trays; carpet yarn.
High Density Polyethylene 	Is a thermoplastic polymer with a Resin Identification Code of 2 . It is a commonly recycled plastic resin in curbside recycling programs in Canada.	HDPE has high-impact strength with good relative stiffness. Good moisture barrier and is easy to process. HDPE has a high melting point which makes it suitable for high temperature applications.	Rigid bottles such as shampoo, juice, laundry, dish and detergent bottles; milk jugs; cereal box liner bags; wires and cables.
Polyvinyl Chloride 	Is a thermoplastic polymer with a Resin Identification Code of 3 . It can be used in both rigid and flexible applications. PVC is technically recyclable but is not commonly accepted in curbside recycling programs in Canada.	PVC has good resistance to grease, oil, and most solvents and good weatherability properties. High compression strength, great clarity, and has self-extinguishing properties.	PVC is mostly used in building and construction applications such as water pipes, windows and doors, and wiring. It is also used in medical applications such as blood bags, tubing, pill blister-packs.
Low Density Polyethylene 	Is a thermoplastic polymer with a Resin Identification Code of 4 . It can be used in both rigid and flexible applications. LDPE is technically recyclable but is not commonly accepted in curbside recycling programs in Canada.	LDPE has excellent resistance to acids, bases, and vegetable oils. Good toughness and transparency. Good range of properties for heat sealing packaging requirements.	Coating for fibre cartons and beverage cups; squeezable bottles; shrink wrap and stretch films; grocery, bread, and household garbage bags; wires and cables.
Polypropylene 	Is a thermoplastic polymer with a Resin Identification Code of 5 . It can be used in both rigid and flexible applications. PP is technically recyclable but is not commonly accepted in curbside recycling programs in Canada, although it is growing in acceptance.	PP has excellent clarity, and low moisture vapour transmission. It is a strong polymer with good stiffness, low brittleness, and is resistant to most solvents (gas, oil, grease).	Bottles, bottle caps, and closures such as yogurt, margarine, cream cheese containers; ketchup and syrup bottles; coffee lids; rigid political lawn signs; toys; prescription drug bottles; carpet yarn; hot-fill liquids and microwave packaging.
Polystyrene 	Is sometimes incorrectly referred to as "Styrofoam," which is a trademark name. PS is a thermoplastic polymer with a Resin Identification Code of 6 . It is available in a general-purpose grade — GPPS (clear, hard, rigid) and high-impact grade — HIPS (when increased toughness is needed). PS is also available as a foam material as either an expanded PS (EPS) which is the white cups and containers used in food packaging, or extruded PS (XPS) which is used as an insulation material. PS is technically recyclable, but PS foams are not accepted in curbside recycling programs in Canada.	PS is a versatile plastic with good stiffness and excellent moisture barrier properties for short shelf-life products. GPPS has excellent clarity. XPS has excellent insulation properties and can contain flame retardant additives.	Food service packaging like meat and poultry trays; rigid and foam beverage cups; plates and cutlery; foam egg cartons; protective packaging such as CD cases.

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OTHER PLASTICS:

These include all plastics not noted above and have a Resin Identification Code of 7.



Polycarbonate (PC)

5-gallon water cooler jugs, CDs, high-end cups.



Acrylonitrile Butadiene Styrene (ABS)

rubberized component commonly used in automotive applications.



Acrylic (PMMA)

Plexiglass at arenas and permanent store signage.



Polyurethane (PU)

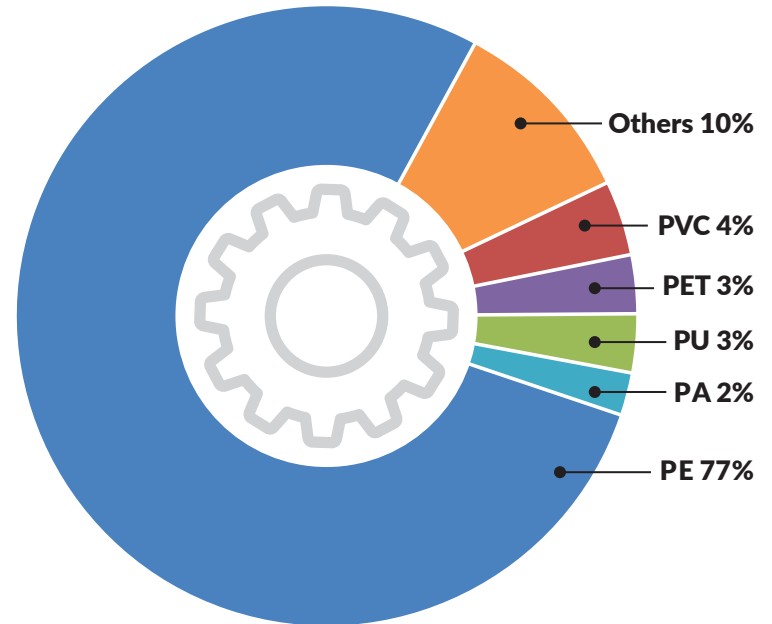
A thermoset plastic used in foam beds, pillows, and seats.



Nylon (PA)

Commonly used in automotive applications.

Plastics production in Canada 2019



Source: Economic Study of the Canadian Plastic Industry, Market and Waste by Deloitte LLP and Cheminfo Services for Environment and Climate Change Canada.

HOW ARE PLASTICS MADE? Simplified Petrochemical Process

