THE 7 TYPES OF PLASTICS

THEIR TOXICITY AND WHAT THEY ARE MOST COMMONLY USED FOR

TOXICITY CODE: ⚠ LOW ☠ HIGH

Polymer Name	POLYETHYLENE TEREPHTHALATE	HIGH-DENSITY POLYETHYLENE	POLYVINYL CHLORIDE	LOW-DENSITY POLYETHYLENE	POLYPROPYLENE	POLYSTYRENE	All other plastics, including acrylic, fiberglass, nylon, polycarbonate, and polylactic acid (a bioplastic)
Resin Identification Code	1	2	3	4	5	6	7
Abbreviation	PET or PETE	HDPE	PVC	LDPE	PP	PS	OTHER
Recyclable?	Commonly Recycled	Commonly Recycled	Sometimes Recycled	Sometimes Recycled	Occasionally Recycled	Commonly Recycled (but difficult to do)	Difficult to Recycle
Percentage Recycled Annually	36%	30-35%	<1%	6%	3%	34%	Low
How Long to Decompose Under Perfect Conditions	5-10 Years	100 Years	Never	500-1,000 Years	20-30 Years	50 Years	Majority of these plastics: **never** Polylactic acid: **6 months**
Maximum Temperature	70°C (158°F)	120°C (248°F)	70°C (158°F)	80°C (176°F)	135°C (275°F)	90°C (194°F)	Polycarbonate: **135°C** (275°F) Polylactic acid: **150°C** (302°F)
Brittleness Temperature	-40°C (-40°F)	-100°C (-148°F)	-30°C (-22°F)	-100°C (-148 °F)	0°C (32°F)	-20°C (-4°F)	Polycarbonate: **-135°C** (-211°F) Polylactic acid: **60°C** (140°F)
Toxicity Level	☠	⚠	☠	⚠	⚠	☠	☠
Most Commonly Leached Toxin(s)	Antimony Oxide, Bromine, Diazomethane, Lead Oxide, Nickel Ethylene Oxide, and Benzene	Chromium Oxide, Benzoyl Peroxide, Hexane, and Cyclohexane	Benzene, Carbon Tetrachloride, 1,2-Dichloroethane, Phthalates, Ethylene Oxide, Lead Chromate, Methyl Acrylate, Methanol, Phthalic Anhydride, Tetrahydrofuran, and Tribasic Lead Sulfate, Mercury, Cadmium, Bisphenol A (BPA)	Benzene, Chromium Oxide, Cumene Hydroperoxide, And Tert-butyl Hydroperoxide	Methanol, 2,6-di-tert-Butyl-4-Methyl Phenol, and Nickel Dibutyl Dithiocarbamate	Styrene, Ethylbenzene, Benzene, Ethylene, Carbon Tetrachloride, Polyvinyl Alcohol, Antimony Oxide, and Tert-butyl Hydroperoxide, Bensoquinone	BPA, BPS, as well as all other toxins mentioned

POLYETHYLENE TEREPHTHALATE (PET or PETE)

COMMONLY USED FOR

- Soda bottles
- Water bottles
- Beer bottles
- Salad dressing bottles
- Peanut butter jars
- Jelly jars
- Rope
- Combs
- Tote bags
- Medicine jars
- Clothing and carpet fiber
- Prepared food trays and roasting bags
- Some shampoo and mouthwash bottles

PROPERTIES

- Good gas and moisture barrier
- High heat resistance
- Tough
- Good microwave transparency
- Solvent-resistant

TOXINS/HEALTH RISKS

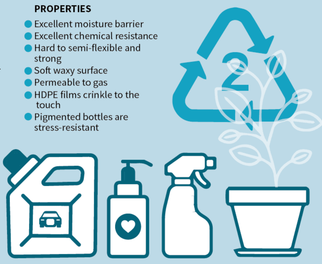
PET is the most commonly used plastic in the world, but it can leach the toxic metal antimony.
When this plastic sits on a shelf for a long time or is exposed to sunlight or higher temperatures, this can lead to a larger amount of antimony leaching into the contents.
Antimony is considered a carcinogen. Bromine is another compound found to leach out of PET bottles. It acts as a central nervous system depressant and can trigger psychological symptoms.

CAN BE RECYCLED INTO

PET is commonly recycled, although it should not be reused. It can be recycled into:

- Fleece garments
- Carpets
- Stuffing for pillows, winter jacket, sleeping bags
- Bean bags
- Storage containers
- Rope
- Car bumpers
- Tennis ball felt
- Combs
- Cassette tapes
- Sails for boats
- Furniture
- Other plastic bottles

HIGH-DENSITY POLYETHYLENE (HDPE)



COMMONLY USED FOR

- Milk jugs
- Non-carbonated drink bottles
- Motor oil containers
- Shampoos and conditioner bottles
- Soap bottles
- Detergent bottles
- Bleach bottles
- Snack food boxes
- Cereal box liners
- Toys
- Buckets
- Rigid pipes
- Crates
- Plant pots
- Garden furniture
- Refuse bins and compost containers
- Park benches
- Truck bed liners

PROPERTIES

- Excellent moisture barrier
- Excellent chemical resistance
- Hard to semi-flexible and strong
- Soft waxy surface
- Permeable to gas
- HDPE films crinkle to the touch
- Pigmented bottles are stress-resistant

TOXINS/HEALTH RISKS

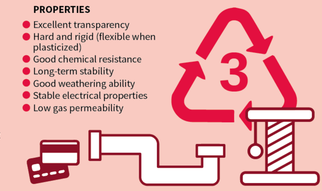
HDPE is the most commonly recycled plastic and is considered one of the safest forms of plastic.
It is a more stable form of plastic than PET, but while it is considered a safer option for food and drinks, it is never safe to reuse HDPE plastic for food or drink if it did not originally contain either.
Some studies have shown that HDPE can leach estrogen-mimicking chemicals that could disrupt your hormones and even alter the structure of human cells.

CAN BE RECYCLED INTO

HDPE is the most commonly recycled plastic and can also be reused.
It is recycled into:

- Plastic bottles and jugs
- Plastic lumber
- Outdoor furniture
- Playground equipment
- Fencing
- Rope
- Toys

POLYVINYL CHLORIDE (PVC)



COMMONLY USED FOR

- Plumbing pipes
- Credit cards
- Carpet backing
- Floor covering
- Window and door frames
- Rain gutters
- Pipes and fittings
- Wire and cable sheathing
- Synthetic leather products
- Clear plastic food wrapping
- Cooking oil bottles
- Teething rings
- Children's and pets' toys
- Garden hoses

PROPERTIES

- Excellent transparency
- Hard and rigid (flexible when plasticized)
- Good chemical resistance
- Long-term stability
- Good weathering ability
- Stable electrical properties
- Low gas permeability

TOXINS/HEALTH RISKS

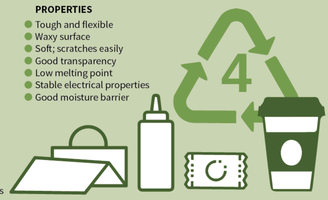
PVC is the most hazardous plastic and has been dubbed the "poison plastic" because it contains numerous toxins that it can leach throughout its entire life cycle.
It has been found to leach BPAs, phthalates, lead, mercury, and many other toxins. These chemicals can cause cancer and disrupt the hormonal system and have been linked to chronic conditions like allergies, asthma, and autism.

CAN BE RECYCLED INTO

Almost all products using PVC require virgin material for their construction; less than 1% of PVC material is recycled. Specialized programs do recycle PVC and use it for:

- Flooring
- Paneling
- Roadside gutters
- Traffic cones
- Credit cards
- Pipes

LOW-DENSITY POLYETHYLENE (LDPE)



COMMONLY USED FOR

- Plastic wrap
- Sandwich bags
- Bread bags
- Squeezable bottles
- Plastic grocery bags
- Garbage bags
- Food storage containers and lids
- Bubble wrap
- Irrigation pipes
- Thick shopping bags
- Wire and cable covering
- Coatings for paper milk cartons
- Hot and cold beverage cups

PROPERTIES

- Tough and flexible
- Waxy surface
- Soft; scratches easily
- Good transparency
- Low melting point
- Stable electrical properties
- Good moisture barrier

TOXINS/HEALTH RISKS

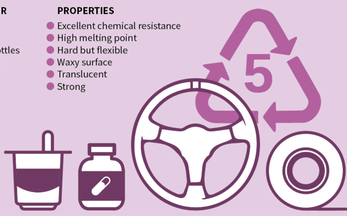
LDPE is considered to be less toxic than other plastics and relatively safe for use, although some studies have shown that LDPE could leach estrogen-mimicking chemicals, similar to those found in HDPE.
These chemicals can disrupt hormones and potentially alter the structure of human cells.

CAN BE RECYCLED INTO

LDPE is difficult to recycle, although more plastic recycling programs are gearing up to handle this material. When recycled, LDPE is used for:

- Plastic lumber
- Compost bins
- Trash cans
- Floor tiles

POLYPROPYLENE (PP)



COMMONLY USED FOR

- Prescription bottles
- Most bottle tops
- Ketchup and syrup bottles
- Yogurt and margarine containers
- Potato chip bags
- Drinking straws
- Hinged lunch boxes
- Fabric/carpet fibers
- Heavy-duty bags
- Hot food containers
- Packing tape
- Thermal vests
- Car parts
- Disposable diapers
- Sanitary pad liners

PROPERTIES

- Excellent chemical resistance
- High melting point
- Hard but flexible
- Waxy surface
- Translucent
- Strong

TOXINS/HEALTH RISKS

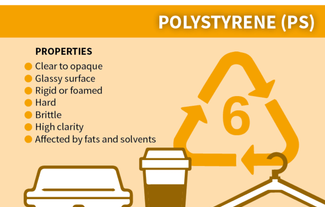
PP is considered a safer plastic option for food and drink use, as it can withstand high temperatures and thus is less likely to leach chemicals.
However, studies have found that PP could potentially leach some chemicals that could lead to asthma or hormone disruption.

CAN BE RECYCLED INTO

PP is one of the least recycled plastics and a majority of it ends up in a landfill. When recycled PP is used for:

- Shipping pallets
- Automotive battery cases
- Brooms
- Shovels
- Watering cans
- Mixing bowls
- Cutting boards
- Ice scrapers
- Storage bins

POLYSTYRENE (PS)



COMMONLY USED FOR

- Disposable foam cups
- Take-out food containers
- Plastic cutlery
- Egg cartons
- Fast-food trays
- Video cases
- Seed trays
- Coat hangers
- Low-cost, brittle toys
- Foam packaging (packing peanuts)
- Rigid foam insulation
- Underlay sheeting for laminate flooring

PROPERTIES

- Clear to opaque
- Glassy surface
- Rigid or foamed
- Hard
- Brittle
- High clarity
- Affected by fats and solvents

TOXINS/HEALTH RISKS

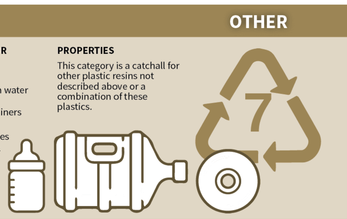
PS is commonly known as Styrofoam and is considered a highly toxic form of plastic. PS leaches many toxins, including styrene which can cause cancer and damage to the nervous system and could also affect genes, the lungs, the liver, and the immune system. Heat plays a role in the amount of styrene that is leached from PS, so it is advised to not use this form of plastic to hold hot food or drinks.

CAN BE RECYCLED INTO

Recycling is not widely available for polystyrene, and it accounts for 35% of U.S. landfill material. It can be recycled into:

- Cassette tapes
- Rigid foam insulation
- Egg cartons
- Picture frames
- Moldings
- Home décor products
- Foam protective packaging

OTHER



COMMONLY USED FOR

- Baby bottles
- Sippy cups
- Large, multiple-gallon water bottles
- Medical storage containers
- Eyeglasses
- Exterior lighting fixtures
- Metal food can linings
- CDs and DVDs
- Dental sealants

PROPERTIES

This category is a catchall for other plastic resins not described above or a combination of these plastics.

TOXINS/HEALTH RISKS

It is difficult to know exactly which toxins can be found in this category of plastics, but there is a good chance that they will leach bisphenol A (BPA) or bisphenol S (BPS). BPA and BPS are both endocrine disruptors, which can affect hormones and cause issues with growth and development, tissue function, obesity, sexual function and reproduction, brain and neurological functions, and more.

CAN BE RECYCLED INTO

Items made from #7 plastics are a combination of various plastics and are difficult to recycle, but some can be recycled into plastic lumber and specialized products. Products marked #7 with "PLA" on the bottom cannot be recycled but can be composted.

Sources:
www.iquitplastics.com | www.iwaste4change.com | www.keeptruckeegreen.org
www.qualitylogoproducts.com | www.ilearn.eartheasy.com | www.plasticsmakeitpossible.com
www.nontoxicrevolution.org | www.grainger.com | www.ryedale.gov.uk | www.worldcentric.org
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