ALL ABOUT MATERIALS

Types of Plastic and Their Recycle Codes

Other Lessons in This Course

Types of Plastic

Plastic is an essential component of many items, including water bottles, combs, and beverage containers. Knowing the difference, as well as the SPI codes, will help you make more informed decisions about recycling.

The seven types of plastic include:

- Polyethylene Terephthalate (PETE or PET)
- High-Density Polyethylene (HDPE)
- Polyvinyl Chloride (PVC)
- Miscellaneous plastics (includes: polycarbonate, polylactide, acrylic, acrylonitrile butadiene, styrene, fiberglass, and nylon)

When it comes to promotional giveaways, and even items we use around the house, there is no material more important than plastic. The same can be said for the items we use at the office. Most of our supplies contain at least a little bit of this material. In fact, humans have thus far produced 9.1 billion tons of plastic!

For the sake of the environment, it's important to know the different types of plastic and their uses, as well as the resin identification codes found on each for the sake of recycling.

Recycling Codes for Plastic

Understanding the different types of plastic can help consumers like you make more informed decisions related to your health and the environment. It's important to become familiar with an item's SPI (Society of the Plastics Industry) code, which is also known as a resin identification number and is used to classify the different types of plastic. This information will help you sort plastic materials more effectively for recycling.

See a full breakdown of each kind of plastic, along with its associated SPI resin code!

▼ SPI Code 1

Recycling Number: 1

Symbol: 

Abbreviation: PETE or PET

Polymer Name: Polyethylene Terephthalate

Uses:
Soda bottles, Water bottles, Salad dressing bottles, Medicine jars, Peanut butter jars, Jelly jars, Combs, Bean bags, Rope, Tote bags, Carpet, Fiberfill material in winter clothing

Repurposed to Make:
textiles, carpets, pillow stuffing, life jackets, storage containers, clothing, boat sails, auto parts, sleeping bags, shoes, luggage, winter coats

Recyclable: Yes

▼ SPI Code 2

Recycling Number: 2

Symbol: 

Abbreviation: HDPE

Polymer Name: High-Density Polyethylene

Uses:
Milk jugs, Juice containers, Grocery bags, Trash bags, Motor oil container, Shampoo and conditioner bottles, Soap bottles, Detergent containers, Bleach containers, Toys

Repurposed to Make:
Plastic crates, lumber, fencing

Recyclable: Yes

▼ SPI Code 3

Recycling Number: 3 

Symbol:

Abbreviation: PVC

Polymer Name: Polyvinyl Chloride

Uses:

Some tote bags, Plumbing pipes, Grocery bags, Tile, Cling films, Shoes, Gutters, Window frames, Ducts, Sewage pipes

Repurposed to Make:
Flooring, mobile home skirting

Recyclable: Yes - but call your recycler

▼ **SPI Code 4**

Recycling Number: 4 

Symbol:

Abbreviation: LDPE

Polymer Name: Low-Density Polyethylene

Uses:
Cling wrap, Sandwich bags, Squeezable bottles for condiments such as honey and mustard, Grocery bags, Frozen food bags, Flexible container lids

Repurposed to Make:
Garbage cans, lumber

Recyclable: Yes - but call your recycler

▼ **SPI Code 5**

Recycling Number: 5

Symbol: 

Abbreviation: PP

Polymer Name: Polypropylene

Uses:
Plastic diapers, Tupperware, Kitchenware, Margarine tubs, Yogurt containers, Prescription bottles, Stadium cups, Bottle caps, Take-out containers, Disposable cups and plates

Repurposed to Make:
Ice scrapers, rakes, battery cables

Recyclable: No

▼ **SPI Code 6**

Recycling Number: 6 

PS

Symbol:

Abbreviation: PS

Polymer Name: Polystyrene or Styrofoam

Uses:
Disposable coffee cups, Plastic food boxes, Plastic cutlery, Packing foam, Packing peanuts

Repurposed to Make:
Insulation, license plate frames, rulers

Recyclable: No

▼ **SPI Code 7**

Recycling Number: 7

Symbol: 

Abbreviation: N/A

Polymer Name: Miscellaneous Plastics (polycarbonate, polyctide, acrylic, acrylonitrile butadiene, styrene, fiberglass, and nylon)

Uses:
Plastic CDs and DVDs, Baby bottles, Large water bottles with multiple-gallon capacity, Medical storage containers, Eyeglasses, Exterior lighting fixtures

Repurposed to Make:
Plastic lumber (which is often used in outdoor decks, molding, and park benches

Recyclable: No

RECYCLING NUMBER	SYMBOL	ABBREVIATION	POLYMER NAME	USES	REPURPOSED TO MAKE	RECYCLA
1		PETE or PET	Polyethylene Terephthalate	• Soda bottles • Water bottles • Salad dressing bottles • Medicine jars	textiles, carpets, pillow stuffing, life jackets, storage containers, clothing, boat sails, auto parts, sleeping bags, shoes,	Yes

				• Peanut butter jars • Jelly Jars • Combs • Bean bags • Rope • Tote bags • Carpet • Fiberfill material in winter clothing	luggage, winter coats	
2		HDPE	High-Density Polyethylene	• Milk jugs • Juice containers • Grocery bags • Trash bags • Motor oil container • Shampoo and conditioner bottles • Soap bottles • Detergent containers • Bleach containers • Toys	Plastic crates, lumber, fencing	Yes
3		PVC	Polyvinyl Chloride	• Some tote bags	Flooring, mobile home skirting	Yes - but your recyc

				• Plumbing pipes • Grocery bags • Tile • Cling films • Shoes • Gutters • Window frames • Ducts • Sewage pipes		
4		LDPE	Low-Density Polyethylene	• Cling wrap • Sandwich bags • Squeezable bottles for condiments such as honey and mustard • Grocery bags • Frozen food bags • Flexible container lids	Garbage cans, lumber	Yes - but your recyc
5		PP	Polypropylene	• Plastic diapers • Tupperware • Kitchenware	Ice scrapers, rakes, battery cables	No

				• Margarine tubs • Yogurt containers • Prescription bottles • Stadium cups • Bottle caps • Take-out containers • Disposable cups and plates		
6		PS	Polystyrene or Styrofoam	• Disposable coffee cups • Plastic food boxes • Plastic cutlery • Packing foam • Packing peanuts	Insulation, license plate frames, rulers	No
7		N/A	Miscellaneous Plastics (polycarbonate, polyctide, acrylic, acrylonitrile butadiene, styrene, fiberglass, and nylon)	• Plastic CDs and DVDs • Baby bottles • Large water bottles with multiple-gallon capacity • Medical storage	Plastic lumber (which is often used in outdoor decks, molding, and park benches	No

containers

- Eyeglasses
- Exterior lighting fixtures

What Are the Different Types of Plastic?

Take a walk through your house or office and you're guaranteed to stumble across a variety of plastic products. No material is more commonly used in our everyday lives! It's easy to classify everything as simply "plastic." However, there are seven different types you should know about.

1. Polyethylene Terephthalate (PETE or PET) Introduced by J. Rex Whinfield and James T. Dickson in 1940, this plastic is one of the most commonly used on the planet. Interestingly enough, it took another 30 years before it was used for crystal-clear beverage bottles, such as the ones produced by Coca-Cola and Pepsi.

PETE plastics make up 96% of all plastic bottles and containers in the United States, yet only 25% of these products are recycled. By being mindful and making sure to recycle code 1 plastics, you're helping to ensure a cleaner environment and less landfill pollution!

2. High-Density Polyethylene (HDPE) In 1953, Karl Ziegler and Erhard Holzkamp used catalysts and low pressure to create high-density polyethylene. It was first used for pipes in storm sewers, drains, and culverts. Today, this plastic is used for a wide variety of products.

HDPE is the most commonly recycled plastic because it will not break under exposure to extreme heat or cold. According to the EPA, 12% of all HDPE products created are recycled in a year. This is a very small dent in the planet's carbon footprint.

3. Polyvinyl Chloride (PVC) PVC is one of the oldest synthetic materials in industrial production. It was actually discovered on accident twice; once in 1838 by French physicist Henri Victor Regnault and again in 1872 by German chemist Eugen Baumann. On both occasions, these men found it inside vinyl chloride flasks left exposed to sunlight.

PVC is one of the least recycled materials; generally less than 1% of PVC plastic is recycled each year. It has been called the "poison plastic" because it contains numerous toxins and is harmful to our health and the environment.

4. Low-Density Polyethylene (LDPE) LDPE was the first polyethylene to be produced, making it the godfather of the material. It has less mass than HDPE, which is why it's considered a separate material for recycling.

Packaging and containers made from LDPE make up about 56% of all plastic waste, 75% of which

comes from residential households. Fortunately, many recycling programs are evolving to handle these products. This means less LDPE will end up in landfills and negatively affect the environment!

5. Polypropylene (PP) J. Paul Hogan and Robert L. Banks of Phillips Petroleum Company discovered polypropylene in 1951. At the time, they were simply trying to convert propylene into gasoline, but instead discovered a new catalytic process for making plastic.

Only about 3% of polypropylene products are recycled in the US, but interestingly enough, 325 million pounds of non-bottle plastics were collected for recycling over a year. In other words, a lot of this plastic is created, but only a small fraction is actually recycled.

6. Polystyrene or Styrofoam (PS) In 1839, German apothecary Eduard Simon accidentally came across polystyrene while preparing medication. He isolated a substance from natural resin and didn't realize what he had discovered. It took German chemist Hermann Staudinger to research this polymer and expand on its uses.

Since polystyrene is lightweight and easy to form into plastic materials, it also breaks effortlessly, making it more harmful to the environment. Beaches all over the world are littered with pieces of polystyrene, endangering the health of marine animals. Polystyrene accounts for about 35% of US landfill materials.

7. Miscellaneous Plastics The remaining plastics include: polycarbonate, polylactide, acrylic, acrylonitrile butadiene, styrene, fiberglass, and nylon. Of course, there are many differences in the plastics classified as miscellaneous by recycling programs.

Many BPA products fall into this category, which means it's best to avoid this plastic for food products. It is not very easy to break down these plastics once they are created, unless they are exposed to high temperatures. This makes these plastics nearly impossible to recycle.

What Are SPI Codes?

In 1988, the Society of the Plastics Industry (SPI) established a classification system to help people properly recycle and dispose of their plastics. Today, manufacturers follow this coding system and place a number, or SPI code, on each product, usually molded into the bottom.

SPI Code 1 Plastic marked with an SPI code 1 is made with polyethylene terephthalate. These containers sometimes absorb odors and flavors from foods and drinks that are stored inside them. However, this is still a commonly used plastic for many household items and daily essentials.

SPI Code 2 The SPI code 2 identifies plastic made with high-density polyethylene.These products are very safe and are not known to leach any chemicals into foods or drinks. Due to the risk of contamination, however, it's not safe to reuse an HDPE bottle as a food or drink container if it didn't originally contain some kind of edible substance. In other words, keep the shampoo bottles out of your kitchen cabinet!

SPI Code 3 Plastic labeled with an SPI code 3 is made with polyvinyl chloride. This kind of plastic should not come in contact with food items as it is a dangerous, toxic chemical. PVC is in many everyday objects, but it's mostly for industrial use in the plumbing and construction sectors.

SPI Code 4 Plastic marked with an SPI code 4 is made with low-density polyethylene. This plastic tends to be both durable and flexible. It also does not release harmful chemicals into objects, making it a safe choice for food storage.

SPI Code 5 You'll find SPI code 5 on plastic items made with polypropylene. PP can be recycled, but it's not as accepted as PETE or HDPE. This type of plastic is strong and can usually withstand higher temperatures. That's why you're able to reheat your leftovers in Tupperware without worrying about it melting!

SPI Code 6 Plastic marked with an SPI code 6 is made with polystyrene. PS can be recycled, but not efficiently; recycling it takes a lot of energy, which means that few places accept it. This is why it's a good idea to invest in a reusable mug for your daily caffeine fix!

SPI Code 7 The SPI code 7 is used to designate miscellaneous types of plastic that are not defined by the other six codes. Think of these items as plastics, but ones that don't conform to society's rules by fitting into a specific SPI code.

Did You Know?

Plastic was first invented in 1907 and was developed as a completely synthetic material.

The plastic made for 3D printing uses Polylactic Acid, which means it's not safe for recycling.

Plastic bags were introduced to supermarkets in 1977, but have already been banned in Austin, Cambridge, Chicago, Los Angeles, San Francisco, Seattle, and every county in Hawaii.

Get to Know Your Plastic

What are the seven types of plastic? Why do they have different classifications? Scroll through some examples of each SPI Code in this exclusive gallery!

1/7

PET/SPI Code 1: Soda bottles and other beverage containers are often made with PETE plastic. This is an easy plastic to recycle and can be reused to create everything from storage containers to piggy banks.

Fun Fact!

The plastic used in Legos is the same plastic that is used in hard hats for construction.

Why Is This Important?

Recycling is an important way to ensure sustainability and a green planet for future generations. Being mindful with your plastics can make all the difference in the world to the health of the environment. In fact, for every ton of plastic that's recycled, an estimated 7 yards of landfill space is saved. And with 80% of Americans having easy access to plastic recycling programs, there's no excuse to be anything other than green!

While the plastic resin codes don't necessarily indicate the toxins used in the plastics, they are useful for distinguishing between the different kinds of plastics. SPI codes for plastics help you

better understand the products you're using and how they affect your health and the environment. Informed consumers like you can demand that plastic manufacturers provide better products. So keep these plastic classification numbers in mind, and don't forget to put your newfound knowledge to use—always check a product's classification code prior to recycling it or re-using it. Every small step we take ensures a better tomorrow for our planet!

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Alyssa is the super cool Copywriter at Quality Logo Products. She's a fan of diving into the history of some of the earliest promos on the planet. If you need her, you'll find her buried in research, in the middle of a phone interview, or singing way off-tune in her office.

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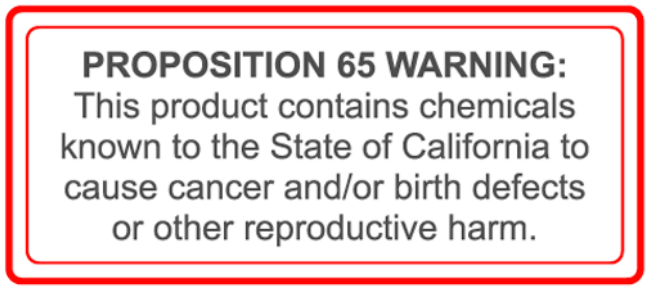
Explore These Lessons

BPA Promotional Products



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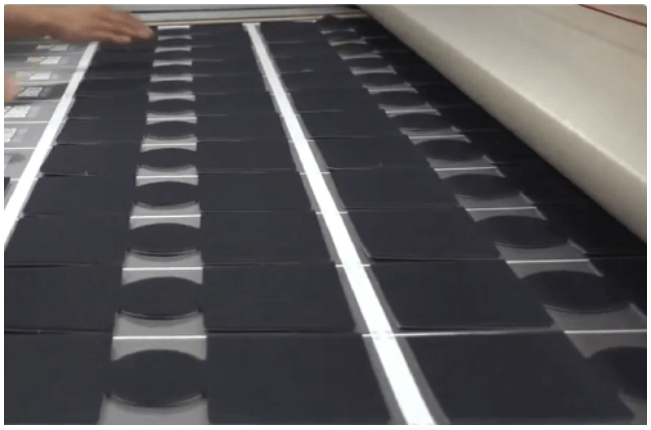

What is Neoprene?

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