Adventures in PLASTIC WORLD
Hello!

My name is Polyethylene Terephthalate.
Most people know me as PET (P-E-T).
And I’ll bet you that just about everyone has used products made from me.

If you would like to know more about me,
make sure to read my story in Volume 1: Amazing PET.

PET Properties

- Lightweight.
- See-through, clear and transparent.
- Color or colorless.
- Difficult to break.
- Difficult for oxygen and carbon dioxide to pass through.
- Very safe. Free of harmful chemicals like BPA.
- Widely used to make food and beverage packaging as well as fiber products for clothing.
- Melting temperature is 250–260°C.

I was invented in 1941 by two British chemists, Mr. John Rex Whinfield and Mr. James Tennant Dickson at a laboratory in Manchester, England.

PET in Daily Life
PET is 100% recyclable.

Did you know that…?

Indorama Ventures is the largest PET producer in the world and we have PET recycler in 3 continents: North America, Europe and Asia.

In Thailand, IVL’s PET recycling facility is located in Nakhon Pathom Province.

There are six more types of recyclable plastics besides PET. Check out the different varieties in the picture below!

Plastic Making Process

Plastic Precursor

Polymerization – the process of forming the main ingredients for different types of plastics.

Wow!

I want to be friends with all of them, it would be fun!

Then you must go on an adventure to find them. How exciting!
Where should I start?

These six recyclable plastics live in different places. I think I will look for HDPF first. He seems to live close to me.
Hi, I’m High Density Polyethylene. You can call me HDPE for short.

Oh! That looks like the guy I want to meet.

HDPE Properties
- Very strong and difficult to break.
- Not transparent.
- Difficult for gases or moisture to pass through.
- Resistant to chemicals, acids, alkalis and heat.
- Melting temperature at 130°C.

About HDPE
HDPE is used to make plastic bags for food and for non-food products. It is important to use the right type of plastic bag to store your foods.

Applications
- Milk Bottle
- Yogurt Cup
- Engine Oil Bottle
- Powder Bottle
- Shampoo Bottle

HDPE is used to make bottles which we use every day, as well as for pipe and even for plastic benches!

Hey HDPE, I’m going to find more recyclable plastics like us. Do you want to join me?

That sounds great, I would love to!
I think those guys could be who we are looking for.
Sure does, let’s go and talk to them. Hello friends!

Hello there! I am Polyvinyl Chloride. Just call me PVC.
Hi! And my name is Low Density Polyethylene. I go by LDPE. We were just about to wander outside our village. Why don’t you come and join us for a walk?

PVC & LDPE Village

PVC Properties
- Not transparent.
- Able to mix with colors.
- Resistant to acids and alkalis.
- Strong but breakable.
- Fire retardant.
- Melting temperature is 75-90°C

About PVC: Colored PVC products can be harmful due to lead and cadmium in some colors.
PVC can be recycled into: water pipes, agricultural pipes, traffic cones, plastic furniture, plastic stools, cables, and artificial wood.

Applications
Residential Water Pipes
Clear Tubes
Plastic Doors

PVC is also commonly used to make insulation for electrical cables, food wrapping film, bathroom curtains, plastic table sheets, and artificial leather.

LDPE Properties
- Transparent.
- Flexible but strong.
- Air and moisture can pass through.
- Resistant to very low temperatures. Unable to tolerate heat.
- Widely used to make food bags for freezing.
- Melting temperature is 110°C

About LDPE: LDPE bags are used to keep foods in cold temperature, as cold as -70°C. LDPE is also more flexible compared with HDPE, which is used for keeping foods hot.
LDPE can be recycled into: waste bags, handle bags, waste bins, floor tiles, furniture, and artificial wood.

Applications
Bread Bags
Zip-lock Bags
Ice Bags

LDPE is also commonly used to make diapers, and bags for frozen food as well as sanitary napkins.
Along the way, they meet two more new friends – PP and PS.

Many people do not separate their waste. The waste ends up in rivers or the sea. It’s bad for the environment.

Me too. How can we make sure people stop hurting the environment?

I agree. By the way, I’m HDPE, what are your name?

We all need to care more about planet Earth.

PET, HDPE, PVC and LDPE walked together and talks for a long time. They eventually arrived at the village of PP and PS without even knowing it. But this is how they were able to meet to new friend, PP and PS, on their journey of discovery.

Impacts of Marine Debris

Birds consume floating debris mistaking it for their food.

Marine waste is non-biodegradable.

Fish consume cigarette butts.

Plastic rings can harm sea turtles.
Hello everyone! Let me introduce myself. My name is Polypropylene, just call me PP.

**PP Properties**
- Light weight but strong
- Resistant to heat, impacts and chemicals
- Moisture and air can pass through
- Melting temperature is 160-175°C

About PP: PP is used to make bags for hot foods

PP can be recycled into: car battery cases and bumpers, oil funnels, tail lights, and plastic brooms and brushes.

**Applications**
- Food Containers
- Plastic Straws
- Electric Insulators
- Baby Bottles

PP is also used to make home appliances or bags for hot foods and snacks.

**PS Village**
Hi all! My name is Polystyrene. Please call me PS.

**PS Properties**
- Transparent
- Suitable for printing
- Fragile and breakable
- Resistant to acids and alkalis
- Moderate absorption of air and moisture
- Melting temperature is 70–115°C

About PS: PS is used to make objects that hold food and drinks.

PS can be recycled to: clothes hangers, CD cases, videos, rulers, thermometer bulbs, light switch covers, thermal insulation materials, and a variety of other equipment.

**Applications**
- Disposable Food Containers
- Disposable Water Cups
- Disposable Dishes, Spoons and Forks
- Foam Bowls
- Office Appliances

PS plastic is commonly used to make electrical and electronics parts.
They all continued on their journey to find the last plastic village. They searched for a long time but could not find anything. As they continued to search, they were surprised by a large pile of garbage!

We can do better! The easiest way is to separate your waste!
If one house has 4 family members, they will produce approximately 400 grams/day of plastic waste. Therefore, each house will produce waste of around 12 kilograms in one month.

Generally, plastics are classified into 7 types. Types 1 to 6 (which are the six of us) are recyclable, but remember – they need to be sorted properly. Why? Because they cannot be recycled together.

It’s really easy to sort plastic waste, which is then collected and sold. Count me in! Let’s sort the plastic waste and help keep an environment clean!

Wow! We can make money from sorting plastic waste? Then I should sell some and buy a couple snacks. Hahaha!

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Plastic Recycling Cycle

Examples of products made from recycled PET bottles

Fed into the production process

PET Resin

Waste Sorting

Recycling Agencies

Indorama Ventures buys post-consumer PET from sellers

Sorting and Bailing

Consumers
Sorting PET Plastic Waste
Simple steps anyone can do.

You can follow these steps with me and make a difference?

Drink up
Remove labels
Separate bottle lids
Separate bottles

Proper Plastic Sorting
The label is Type 3 or PVC.
The lid is Type 2 of HDPE.
The bottle is Type 1 or PET.
With these simple steps, we can sort plastic into 3 types.

Recycled PET plastic can be used to produce fibers which can make clothes and all kinds of different stuff, such as shirts, shoes, bags, pillows, carpets, and other kinds of products.
Besides me, other types of plastic are also recyclable. All 7 types of plastic can be recycled into many new products and materials.
While everyone is busy sorting plastic waste, someone’s voice is suddenly heard...

Uh... Who’s there?!

Please. Someone, help me...

What happened? Why were you lying unconsciously here?

Who are you, anyway?

Storms blow garbage into this place and it increases every day! Some of it flows along the river. It became bigger and bigger, and finally, my village was just piled high with garbage. It blocked everything so I couldn’t go anywhere. I was kind of like... Trapped!

He is the one we are looking for.

I am the OTHER, or, all other types of plastic.

I was born from the compilation of different types of plastic, for example, polycarbonates found in opaque water bottles and clear awning roof. OTHER plastic is often recycled into fertilizer and garbage bags.

Although I am different from you guys, I am recyclable.

You are so mysterious.

Well heck, now that we know all 7 types of plastic, let’s finish sorting waste together.
As you can see, if we carelessly throw things away or litter just one piece of plastic a day, it can accumulate and become a massive pile of garbage over time. This improper dumping will pollute the environment, affecting people, animals, our mountains, rivers, lakes and oceans – it will end up hurting everyone! For this reason, let's all pitch in and do our part. Let's make the world a cleaner - and better place to live together!

You can scan this QR CODE to read more online or to share with your friends.

Reference


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