

Types of Plastic and its Uses

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Abstract— Plastics have become an integral part of our lives, and we use and deal with them at different moments in our work, when we watch TV, use the mobile phone, work with computers, ride in the car, bus, train or plane, we always use plastic . Plastic is divided into several different types that differ in their properties and have their own names and symbols. Plastic has recently spread in many aspects of life and industry, from its uses in the manufacture of electronic chips, to the manufacture of water bottles and plastic bags, due to the multiplicity of materials for its manufacture and raw materials, it comes with different types such as polyethylene, PVC, acrylic, etc., it comes with variable properties and various uses.

Keywords— Plastic – Products – Industry – recyclers

I. INTRODUCTION

Many consumer products, such as water bottles and food storage containers, are made of different types of plastic. Therefore, the “Plastic Industry Association” SPI has established a system for classifying plastics, in order to make it easier for consumers to ascertain the type of plastic they use in terms of its suitability to achieve its purpose without inflict any damage on them and help the “plastic recyclers” to recycle it properly and dispose of the various other types in a proper manner without causing any harm to

individuals or the environment. There are many types of plastics, which can be identified as the following:

II. TYPES OF PLASTIC AND ITS USES

As plastic is one of the important industries that have emerged in recent times and are witnessing various developments.

Today, this industry has become very widespread in many countries and companies, due to the high position it occupies, due to its constant presence in the daily uses of the things and tools surrounding us.

As plastic is made from one of the chemical elements, ethylene, which is a derivative of petroleum, which is used in the manufacture of polyethylene. Transparency.

There are different types of plastic that change their effect with exposure to heat, as there is thermal plastic, which after exposure to heat can be formed and re-manufactured again, such as plastic bottles.

There is also a non-thermal plastic, and this type turns after its formation into a type that you cannot melt or re-change again, such as the handle of the pot.

There are some countries that dominate the plastics industries, such as the United States of America and Japan, because of the abundance of petroleum they have.

III. TYPES OF PLASTIC AND THEIR USES

Polyethylene Terephthalate

Polyethylene terephthalate is one of the most important types of plastic with pictures and its uses, and it is one of the plastic materials that are used in the manufacture of many things that we use in our daily lives, and it exists in several different forms depending on the method of manufacture, of course it can come in a solid form or a flexible form.

In addition, Polyethylene terephthalate is able to resist bad and cold weather conditions, water and various gases, due to its unique molecular and chemical composition.

The plastic material, Polyethylene terephthalate, is used in the manufacture of the following:

It is used in the manufacture of edible oil bottles that help to preserve the oil for a long period of time.

It is used in the manufacture of bottles of mineral water, bottles of soft drinks and various juices.

It is used in the manufacture of ready-made and fast food packages, in addition to its manufacture of packages that help preserve frozen foods.

Polyethylene terephthalate is a one-time use plastic material due to the potential for bacterial growth and activity inside.



High density polyethylene

High-density polyethylene is one of the strongest and most important types of plastic materials, which is characterized by strong rigidity, because it is able to withstand many different harsh conditions, the most important of which is high or low temperature.

High Density Polyethylene (HDPE) is used in many different tools, cases, and industries because it is easy to recycle again, and is made into many different things.

Uses of High-density polyethylene

The plastic, High-density polyethylene, is used to make the following:

- It is used in the manufacture of soap bottles that are used to wash various household items.

- It is used in the manufacture of canned milk and juice packages.
- It is used in the manufacture of freezer bags, packages and various bottle caps.
- It is used in the manufacture of protective helmets, and the fuel tanks that are found inside cars.
- It is directly involved in the gas pipeline industry.
- It is directly involved in the manufacture of water bottles, banners and tapes for medicines.
- Poly Vinyl Chloride is used only once, because it may result in many different damages that may come with repeated use, and it also affects the body's hormones directly due to the production of many carcinogens in the event that it is exposed to a high temperature.

High-density polyethylene can be used more than once because it does not cause the growth of bacteria or the transfer of harmful chemical elements that are affected by different natural temperatures.

Poly Vinyl Chloride

Polyvinyl chloride is characterized by its excellent ability to form and withstand many high chemical and biological damages, making it one of the most important plastic materials used for storage purposes.

Poly Vinyl Chloride is characterized by its diversity of uses and its entry into many different industries and fields, because it is mainly used in the work of hard and lightweight plastic sheets at the same time, in addition to that it is used in the manufacture of artificial leather.

Uses of Poly Vinyl Chloride

The plastic material, Poly Vinyl Chloride, is used in the manufacture of the following:

- It is directly involved in the manufacture of furniture tools, in addition to pipes and water pipes.
- Polyvinyl is used in the manufacture of floors, cables and coverings that are made of plastic.

Low Density Polyethylene (LDPE)

Low Density Polyethylene (LDPE) is one of the most commonly used plastics, as it can withstand extreme heat conditions of up to 100°C.

Although it is not as strong as HDPE, it is very flexible and can be used in many different industries as follows:

It is directly used in the manufacture of garbage bags, laundry bags, and rubber food preservation bags.

Low-density polyethylene is used in the manufacture of some parts inside computers and laptops, in addition to being used in the manufacture of various protective covers.

Low-density polyethylene can be used more than once, because it has the advantage of not transferring harmful chemicals, or the various elements that reside inside, while only being at natural temperatures.

Polypropylene

Polypropylene is a synthetic glue that belongs to an important family in the manufacture of polyolefin glues. It is a material that can be converted into many plastic products that require a high degree of rigidity, flexibility and

light weight, in addition to its high ability to withstand different temperatures.

Live hinges are made of polypropylene, a group of very thin pieces of plastic material that can be folded without breaking.

Building uses are especially useful, and uses that cannot bear a large load, such as “making the cap of the ketchup or shampoo bottle.”

Polypropylene uses

The plastic material, Polypropylene, is used to make the following:

- It is used in the manufacture of industrial and domestic applications, due to its properties that make it able to adapt too many different materials.
- It is used to make surgical instruments and bottle caps, as well as food safe containers.
- It is used in the manufacture of packaging tapes, in addition to plastic water boilers, and various plastic bags.
- Polypropylene can be used more than once and repeatedly, because it does not help transfer chemicals to the elements inside, while it is only at normal temperatures.

Polystyrene (PS)

It is one of the most transparent and easy-to-manufacture types of plastic that are used in the manufacture of many different things, including the following:

- Polystyrene is used in the manufacture of white cardboard.

- It is used in the manufacture of trays and plastic kitchen utensils.
- Polystyrene is used in the manufacture of plastic cups that are used in cafes and restaurants.
- Polystyrene (PS) is not used more than once because it is one of the materials that helps transfer carcinogens from plastic tools to various foods and drinks.



Polycarbonate

Polycarbonate is the most dangerous type of plastic used because it contains a toxic substance called “Bisphenol”, which causes an imbalance in some hormones inside the body, which causes many different problems, including the following:

- It causes the body to develop breast and uterine cancers in women.
- Polycarbonate reduces the level of testosterone in men.
- It is not recommended for children to use toys that are made of polycarbonate, because they cause many devastating risks to children's health.

IV. TIPS FOR USING PLASTIC

- You should not eat any hot food or hot drinks in plastic containers or plastic cups, because they interact with heat and lead to the formation of a carcinogenic chemical in the product.
- Dispose of drinking water bottles immediately and not refill them again, because they are made from one of the strongest poisonous elements.
- Meat and cheese are not kept in plastic dishes for long periods.
- Pregnant women and children should also be kept away from eating foods that are in plastic containers to avoid problems that could result from them.
- Be careful not to expose the plastic to high temperatures in the microwave when heating food in it.
- It is possible not to use plastic containers and to resort to the use of glassware and other safe types.

V. DISADVANTAGES OF USING PLASTIC

It is one of the difficult elements to decompose, and this leads to its accumulation and formation of harmful chemicals as a result of reactions.

It may lead to the death of marine organisms if thrown into the sea, as it leads to suffocation.

Also, its interaction leads to the formation of toxic substances, and when it leaks, it leads to poisoning and pollution.

It is one of the easy elements with which toxic metal elements such as lead, mercury and cadmium react with it.

At high temperatures, plastic materials interact and lead to the formation of cancerous substances that threaten human health.

It leads to endocrine problems, obesity and infertility.

It is also one of the non-degradable elements, and when thrown into the soil, it leads to problems.

VI. CONCLUSION

Currently, non-recyclable plastics are used in the manufacture of CDs, sausage containers, squeezable containers such as toothpastes or sauces, and dishes made specifically for use in the microwave oven, among other things.

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