

# Understanding PET bottles and how it is better than glass, metal or aluminium containers

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**We undermine the reusability factor of PET bottles and throw them into dustbins which end up in landfills or, worse, the ocean – Pic by Shehan Gunasekara**

**By Anirban Halder**

No matter how hard you try, you simply cannot underplay the role of plastic in our lives. From food containers to the interiors of our cars to products like laptops and smartphones – plastic can be found everywhere in our lives. But, while plastic has its pros, our distasteful dependency and inexcusable habit of using plastic has made it an environmental threat!

As per UN Environment, one million plastic bottles are purchased every minute, while up to five trillion single-use plastic bags are used worldwide every year. In total, half of all plastic produced is designed to be used only once – and then thrown away. While the trend is troublesome, the only way to deal with this is to make changes in our lifestyle and increase efforts to recycle plastic.

Yes, plastic can be recycled. And here are some of the forms that can be easily recycled.

PETE – Polyethylene Terephthalate (used in water bottles)

HDPE – High-density Polyethylene (used in oil cans, shampoo bottles)

PVC – Polyvinyl Chloride (used in intravenous drips in hospitals)

LDPE Low-density Polyethylene (used in carry bags)

PP – Polypropylene (used in cars)

PS – Polystyrene (used in tool manufacturing)

PET or PETE or Polyethylene terephthalate is a strong, stiff synthetic fibre that hails from the family of polymers made with ethylene glycol and terephthalic acid. Almost every plastic water bottle on the planet Earth is made of PET. But what are the properties that make it such a great packaging material, especially for food? In addition to being lightweight, PET containers biologically don't react with food. Apart from this, PET is a strong, non-reactive, economical, and shatterproof product, probably here to save the day. PET's safety for food, beverage, personal care, pharmaceutical and medical applications, are recognised by health authorities around the world.

One of the biggest reasons why PET is preferred by many manufacturers is that it is 100% recyclable and highly sustainable. It can be

recovered and recycled again and again – back into containers for personal care products – or into carpet and clothing fibres, automotive parts, construction materials, industrial strapping or other packaging materials.

#### PET bottles vs. glass bottles

Is glass a better alternative for food and beverage packaging than PET? The short answer is no! But when you put plastic against the glass, the favour tips more towards plastic. It has become more widely used for food and beverage products over the past few decades, it has provided some benefits that glass does not. While glass bottles may be viewed as more sustainable than plastic, mainly because it can be reused, in the long run, it may not be as sustainable as PET. Yes, glass bottles can be easily cleaned and sterilised in boiling water, but the same goes for PET bottles – you can re-use them n-number of times just by washing them with warm water.

What makes glass containers unsafe to store food, in the long run, is the growth of biofilms. Biofilms are a relatively indefinable microbial community. This means they are basically a collective of one or more types of microorganisms that can grow on many different surfaces. Microorganisms that form biofilms include bacteria, fungi and protists. Biofilms producing bacteria is a serious threat for public health globally but due to poor sanitary conditions and low economic resources chances of infections is high in developing countries. Effective control measures should be developed for the treatment and prevention of biofilm to get rid of serious problems. Another area where glass bottles fall short is the durability factor – PET bottles are way more durable whereas glass bottles can easily break. Glass is 20 times heavier and five times costlier than a pet bottle.

Moreover, when we talk about the manufacturing process between glass and PET – the manufacturing of PET bottles is far less intense on the environment than glass. Glass manufacturing industry emits CO2 creating air pollution.

#### PET bottles vs. stainless steel bottles

Sure, stainless steel bottles have several pros working for them. They last longer than glass or plastic, mainly because they are corrosion resistant. And when exposed to sun/heat they do not leach chemicals. In fact, stainless steel is 100% recyclable. Stainless steel water bottles are food grade #316 or, which means there are made up of 18% chromium and 8% nickel. So, what's the catch? Well, manufacturing them is a task and so the retail price of stainless steel bottles is remarkably higher as compared with PET bottles. And of course, with more resources needed to produce stainless steel bottles, it leaves more carbon in the air. Another huge factor that plays in PET's favour is that stainless steel bottles are heavy to carry around. Made from iron ore that's a natural resource. Even steel bottles form biofilm layers and since it is not opaque, it is much more difficult to see it.

#### PET bottles vs. aluminium cans

Aluminium as a container is excellent. It is lighter than stainless steel and high on recyclability – 75% of all the aluminium till date, is still in use. Well, it all depends on the carbon footprint – manufacturing aluminium is no easy task as it is extracted from a rock called bauxite, the mining of which can devastate ecosystems. When it's made, aluminium generates air and water pollution of severe proportions and causes health issues for the surrounding communities. But you simply cannot compare the carbon footprints of aluminium and PET, as it is very complex. Aluminium cans account for about double the greenhouse gases of plastic bottles, said Martin Barrow, director of footprinting at UK-based non-profit consultancy the Carbon Trust to Reuters citing figures for Europe.

So, what's the problem?

The problem with PET is our attitude. Specifically, the way we dispose of it and lack of complete knowledge among the consumers. With small changes in our lifestyle, we can reuse 100% of PET containers. As of now, we undermine the reusability factor of PET bottles and throw them into dustbins which end up in landfills or, worse, the ocean. Given the longevity of such products, they dawdle in the atmosphere for many centuries and can potentially disrupt ecosystems and infiltrate food chains. However, if we find ways to recycle PET bottles, like this, then such problems will evaporate instantly.

When compared to its competition – PET surely comes off as better than its alternative. It leaves less carbon footprint during its manufacturing, is easy to carry, is extremely affordable and when you are conscious enough to recycle, it can beat its contemporaries with its versatility.

**(Source: The Times of India.)**

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## COMMENTS