



## PET Frequently Asked Questions 2022

### Introduction

PETCO (the PET Recycling Company NPC) is South Africa's national body accountable for managing the PET plastic industry's Extended Producer Responsibility (EPR). Incorporated in 2004, our mission is to grow the collection and recycling of PET bottles, after consumer use, on behalf of our members. Our efforts are largely financed by a mandatory EPR fee paid by Producers for the PET plastic packaging that they place onto the market. We work with the whole PET value chain – from resin producers through to converters, bottlers, brand owners, retailers and consumers.

This document seeks to answer some of the questions we are frequently asked about PET.

### What is PET? And what other kinds of PET are there?

PET forms the basis for synthetic fibres like polyester and is also recognised in the packaging industry as the rigid plastic commonly used as beverage bottles for carbonated soft drinks, bottled water, milk, juice, sports and energy drinks, jars, punnets, tubs and trays for food items, bottles for household, personal care and pharmaceutical products, and sheet and film for general packaging.

Other forms of PET include:

- REFPET – Refillable PET;
- NRPET – Non-returnable PET;
- Bio PET – PET resin manufactured from the same petro-sourced element – terephthalic acid – but this time from bio-sourced ethylene glycol i.e. the ethylene glycol is obtained from plants (e.g. sugar cane and sugar beet) by different thermo-chemical processes (also called 'bio-sourced PET');
- Biodegradable PET – PET that will degrade under certain conditions i.e. in biologically-active environments;
- rPET – Recycled PET;
- vPET – Virgin PET.

## What is PET Plastic Recycling?

PET bottles are made of one of the few polymers that can be recycled into the same form – a new beverage bottle – again and again. This closes the recycling loop and enables ‘cradle to cradle’ packaging solutions.

## PET Plastic Recycling in South Africa.

We can be proud that to date, South Africa has one of the highest audited PET bottle recycling rates in the world.

PET plastic bottle recycling in South Africa, which PETCO is responsible for, is doing well. In 2021, we reached a 63% recycling rate, which means we are collecting more PET bottles than those going to landfill. This means that 90 402 tonnes of post-consumer PET plastic bottles were recycled last year alone, which is an increase of 14% from 2020. A total of 2.1 billion bottles were collected for recycling in 2021, equating to 5.7 million bottles collected every day, which created many income opportunities for waste-preneurs in South Africa. Through the recycling of PET bottles, more than 1.3 million tonnes of carbon and more than 5.4 million m<sup>3</sup> of landfill space has been saved to date.

In South Africa, recycled PET (rPET) can be used to make many new products, such as polyester staple fibre for apparel (clothing), home textiles (duvets, pillows, carpeting), automotive parts (carpets, sound insulation, boot linings, seat covers), industrial end-use items (geotextiles and roof insulation), strapping, fruit carton corner pieces, and new PET packaging and bottles for both food and non-food products. It is generally blended in a ratio of virgin to recycled PET, depending on the application required.

From PETCO’s perspective, the production and use of both food grade and non-food grade rPET resin remains the major growth opportunity for PET recycling in South Africa. The use of rPET in food-grade PET packaging entails compliance with extremely stringent standards for health, safety and product quality. It represents the most sustainable use of the raw material by ‘closing the loop’ where the recycled resin can be used repeatedly in new bottles, using less resources, saving forex, and maximising the use of resources already extracted.

Regarding specific end-uses for rPET, clear and light blue bottles can be used for any end-use (food-grade, fibre, geotextile and strapping). Food-grade recycling can only use clear bottles at the moment. Green and brown bottles can be used for fibre, geotextiles or strapping. Luminous or opaque are not readily recycled as there are no end-use markets for them (they also cause blockages at the recycling plant).

## What is Bottle-2-Bottle Recycling, and why is it so important?

Bottle-2-Bottle capacity for carbonated soft drink (CSD) grade resin represents the most sustainable use of the raw material by “closing the loop” where the recycled resin can be used repeatedly in new bottles. Two Bottle-2-Bottle PET recycling plants – Kronos and Starlinger, both Coca-Cola-approved – are now in operation.

PETCO has financially supported bottle-to-bottle recycling, meaning that food-grade rPET is now the end destination for one-third of PETCO's total collection. Through this support, we have enabled a 17% increase in the availability of rPET (in 2021) in comparison to 2020. Since its introduction in 2012, demand for rPET has grown gradually. The increased availability of food-grade rPET to PETCO members and the broader packaging sector is another significant achievement facilitated by PETCO.

Extrupet's expansion of its food-grade line was completed at the end of 2020 and became fully operational in 2021, thereby increasing the bottle-to-bottle recycling capacity by 20 000 tonnes. We are excited to report that Extrupet will again be expanding their bottle-to-bottle plant in 2023 with the long-term goal of further growing their recycling capacity to 65 000 tonnes of post-consumer recycle (PCR) per annum.

PETCO's contracted financial assistance, based on the volume of bottles recycled, contributed to making these projects possible, and PETCO's on-going support will ensure that these projects do not fail, where other such initiatives have in the past. We are closing an important PET recycling loop and are proud to be the first African country to do so.

## Why choose PET?

Manufacturers use PET to package products because of its strength, thermo-stability, and transparency. PET is light (up to 3.5 x lighter than alternatives, which reduces costs and carbon emissions relating to transportation), hygienic, shatterproof, resealable and 100% recyclable when basic design guidelines are followed (see [PETCO design for recycling guidelines](#) for more detail).

From an environmental perspective, two points are key:

- PET is the most recycled packaging polymer on the shelves;
- The weight of PET packaging has reduced by more than 30% over the past 10 years.

PET is a widely used and its use is growing.

Retailers use PET because it promotes high product visibility; its lightweight facilitates shelf stacking and its shatterproof quality ensures safety, product integrity and a reduction in breakages.

Consumers choose PET because it is portable, lightweight, re-sealable for efficient on-the-go hydration, 100% safe and 100% recyclable.

## Is PET safe?

There has been much confusion about the safety of PET after concerns were raised about the safety of a different kind of plastic, namely the polycarbonate products containing bisphenol A (BPA) which are most often used to make reusable rigid containers and electronic devices. There is no connection between PET plastic and BPA.

BPA is not used in the production of PET material, nor is it used as a chemical building block for any of the materials used in the manufacture of PET.

Phthalates (pronounced tha-lates) are a class of chemicals that include three subsets, each with different properties. Polyethylene terephthalate (PET) belongs to one of these phthalate subsets, but not the one most commonly associated with the term. Orthophthalate is the phthalate subset most commonly referenced and discussed in popular literature and on internet sites, and which has been the subject of some negative press. Often used to make various plastics more flexible, this type of phthalate is also called a plasticiser. PET does not contain plasticisers or orthophthalates. Plasticisers are never substituted for terephthalates used in the manufacturer of PET, nor are the two ever mixed. Current research shows that PET does not contain or leach oestrogen-like chemicals such as BPA or other endocrine disrupters.

## Why Plastic Bottles are not Trash.

### **1. Because they can be recycled and used again and again**

PET packaging can be made from up to 100% recycled PET, recapturing both the material and the inherent energy of the original package. PET can also be recycled multiple times. In 2021, 2.1 billion bottles of PET were collected and recycled in South Africa through hundreds of community recycling programmes, which equates to 5.7 million bottles recycled per day.

### **2. Because they can be made into new useful products**

Collected PET is processed and re-manufactured into a variety of new materials including fibre and new PET packaging. In 2020, our partners placed new end-use products containing recycled PET (rPET) markets worth approximately R895 million into local and international markets.

### **3. Because collecting them creates jobs**

Plastic bottles are valuable and create income opportunities for informal collectors. If one person collects 200 bottles for 240 days of the year, it amounts to 1 450 kilograms per year. The 90 402 tonnes of post-consumer PET collected during 2021 translates into the creation of many income opportunities for small and micro-collectors, changing the lives of these collectors and those of their families in immeasurable ways. In 2021, PETCO spent 4.8% of its budget in support of collectors for equipment and training.

### **4. Because collecting them is good for the environment**

Recycling PET bottles has saved over 1.2 million tonnes of carbon and avoided using over 5.1 million m<sup>3</sup> of landfill space to date. Recycling plastic bottles decreases the need for raw materials and saves energy.

## What about Deposit Return Schemes?

In some cases, Deposit Return Schemes (DRS), or Deposit Refunds Schemes, whereby consumers pay a deposit on packaging and return packaging to receive a deposit back for them, can lead to high recycling rates.

Where such schemes exist, they are applied to a very narrow range of packaging, usually beverage containers. We believe it is critical that all packaging waste be dealt with. Even within the PET sector, beverages are just one product sector of many.

The administration costs of DRSs are quite high, and likely unaffordable for the population at large outside of developed economies.

A DRS may even harm the overall packaging recycling rate. This appears to have happened in Germany, when a RS on single trip packaging was introduced ([www.europa.eu](http://www.europa.eu)).

For the time being, we believe that we can continue to make good progress on improving recycling rates for PET bottles in a way that is at the lowest cost to and convenient for consumers, better and cheaper than a DRS could. Rather than implementing an expensive DRS system to deal with a few products, it would be a better use of scarce resources to focus on further improving the current collection systems for all products, increase kerb-side recycling and improve the working conditions and incomes of the informal sector, on which much of the recycling industry relies.

## What is the industry doing about plastics in the environment?

The plastics industry has taken many initiatives to combat plastics in the environment.

PETCO ([www.petco.co.za](http://www.petco.co.za)) was incorporated in 2004 to minimize the environmental impact of plastic bottles in the environment, and has been steadily increasing recycling rates from just 16% in 2005, to 63% in 2021.

Plastics SA ([www.plasticsinfo.co.za](http://www.plasticsinfo.co.za)) run many programmes over many years, including numerous beach and river clean-ups. The latest industry-focused programme is called Operation Clean Sweep which deals with the off-runs of plastic production factories to eliminate small plastic pellets entering waste water systems.

The African Marine Waste Network ([africanwastenetwork.org.za](http://africanwastenetwork.org.za)) was established as a pan-African platform to co-ordinate efforts and drive action regarding marine waste specifically. Although broader than just plastic waste, Plastics SA is a key champion of this network.

Other PROs have also been established in South Africa by their represented plastic manufacturers to fulfil functions such as product stewardship and reducing environmental impacts of their sectors.

### **September 2022**

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