

BP's new technology to enable circularity for unrecyclable PET plastic waste

24 October 2019

- Innovative enhanced recycling technology capable of processing PET plastic waste which currently goes unrecycled
- BP to complete pilot plant in US in 2020 to prove the technology
- At scale, it may offer potential to divert billions of coloured PET bottles and food trays from landfill and incineration

BP has developed an enhanced recycling technology, BP Infinia, that enables currently unrecyclable polyethylene terephthalate (PET) plastic waste to be diverted from landfill or incineration and instead transformed back into new, virgin-quality feedstocks.

BP plans to construct a \$25 million pilot plant in the US to prove the technology, before progressing to full-scale commercialization.

Tufan Erginbilgic, BP's Downstream chief executive, said: "We see our Infinia technology as a game-changer for the recycling of PET plastics. It is an important stepping stone in enabling a stronger circular economy in the polyester industry and helping to reduce unmanaged plastic waste."

PET is the most commonly used plastic for beverage and rigid food packaging. Around 27 million tonnes of PET a year are used in these applications globally, with the majority – around 23 million tonnes – used in bottles(1).

Although PET is one of the most widely recycled types of plastic, less than 60 per cent of the PET used for bottles is collected for recycling and only 6 per cent of the total makes it back into new bottles(2). The rest is either 'downcycled', where products are recycled and re-used once before turning into waste, or destined for landfill and incineration.

BP Infinia technology is designed to turn difficult-to-recycle PET plastic waste – such as black food trays and coloured bottles – into recycled feedstocks that are interchangeable with those made from traditional hydrocarbon sources.

These recycled feedstocks can then be used to make new PET packaging that may be recycled again and again. This could reduce the need for downcycling and divert plastic waste from landfill and incineration.

Charles Damianides, vice president of petrochemicals technology, licensing and business development, continued: "BP is committed to fully developing and commercializing this technology. We have long experience and a proven track record of scaling technology and we firmly believe that this innovation can ultimately contribute to making all types of polyester waste infinitely recyclable."

BP's new pilot plant is planned to be located at its research and development hub in Naperville, Illinois. It is expected to be operational in late 2020 to prove the technology on a continuous basis.

BP sees the potential to develop multiple full-scale commercial plants using this technology around the world. If deployed at scale in a number of facilities, BP estimates that the technology has the potential to prevent billions of PET bottles and trays from ending up in landfill or incineration every year. (3)

Further information:

BP press office, bppress@bp.com, +44 (0)20 7496 4076

About BP Petrochemicals:

- BP's experience with purified terephthalic acid (PTA) dates back to 1956 when heritage company Amoco acquired the mid-century technology. In the early 1960s, Amoco invented the purification process and filed key patents.
- Over the past five decades, BP has built and operated PTA units globally. BP has continually reduced the conversion costs of its existing PTA assets since the early 2000s by applying enhanced technology and lessons learned across its global PTA network. It has licensed its proprietary technology, which has gone through multiple generational upgrades, since 2012.
- BP's enhanced recycling technology involves chemically converting complex PET plastic waste back to original monomer feedstocks through a depolymerization process.
- The technology also aims to purify these 'building blocks' monomers into recycled purified terephthalic acid (rPTA) and recycled monoethylene glycol (rMEG) which would then be interchangeable with those produced from traditional hydrocarbon feedstocks. The recycled feedstocks could then be used to manufacture high-performance polyester for packaging, clothing and industrial fibre products and applications.
- Through more than five decades of PTA experience, BP has continued to improve its manufacturing process, which is now substantially more energy efficient, uses less water and produces less solid waste, meaning it emits fewer greenhouse gas emissions than the manufacturing process for conventional PTA technology of the 1990s (4). The purification process is a critical step in PTA manufacturing and it is essential in ensuring recycled PTA can be produced at the quantity and quality required for PET rigid food and drink packaging applications.

Notes:

1. Source: Wood MacKenzie Chemicals Data, based on 2019 estimates.
2. Source: Wood MacKenzie Chemicals Data. PET collection rates are based on bottle consumption alone; of the 27 million tonnes of PET produced annually for food and drinks

packaging, 23 million tonnes is consumed as bottles and 4 million as thermoformed products, such as food trays.

3. Production of recycled PTA from multiple facilities – amounting to a scale equivalent to a typical virgin PTA plant of around 1 million tonnes – would require total feedstock of many millions of tonnes of opaque and difficult-to-recycle PET packaging. Based on the average weight of specific packaging types suitable for this technology (from 10 to 30 grammes), this feedstock would equate to billions of packaging items.
4. Derived from BP internal analysis conducted in 2016, using data from BP's PTA manufacturing facilities.

Cautionary statement:

In order to utilize the 'safe harbor' provisions of the United States Private Securities Litigation Reform Act of 1995 (the 'PSLRA'), BP is providing the following cautionary statement. This press release contains certain forward-looking statements – that is, statements related to future, not past events and circumstances – which may relate to one or more of the financial condition, results of operations and businesses of BP and certain of the plans and objectives of BP with respect to these items. These statements are generally, but not always, identified by the use of words such as 'will', 'expects', 'is expected to', 'aims', 'should', 'may', 'objective', 'is likely to', 'intends', 'believes', 'anticipates', 'plans', 'we see' or similar expressions. Actual results may differ from those expressed in such statements, depending on a variety of factors including the risk factors set forth in our most recent Annual Report and Form 20-F under "Risk factors" and in any of our more recent public reports.

Our most recent Annual Report and Form 20-F and other period filings are available on our website at www.bp.com, or can be obtained from the SEC by calling 1-800-SEC-0330 or on its website at www.sec.gov.