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Advanced recycling of Luminy poly lactic acid (PLA)

Abstract:

Luminy PLA is a versatile biobased and biodegradable polymer made from annually renewable resources, offering a reduced carbon footprint versus many traditional plastics. It is an innovative material that is used in a wide range of markets from packaging to consumer goods, fibers and automotive applications. It provides a valuable contribution towards the circular economy by being biobased and biodegradable and offering multiple environmentally-friendly end-of-life solutions. At the end of their useful life, PLA products can be mechanically or chemically recycled, or organic recycled by composting and returned to the soil as fertilizer.

Presentation will examine various recycling routes of Luminy PLA. It will show case example of performance of PLA in a plastics sorting facility where PLA can efficiently be sorted. There are already several companies that recycle PLA waste, mainly from post-industrial or closed-loop environments. Pelletized PLA is used by converters to replace virgin resin and to produce new items. Chemical recycling of PLA process and its economic attractiveness will be explained in detail. Waste PLA that has been sorted and cleaned may be broken down using hydrolysis under mild and selective conditions. The resultant lactic acid, can then be used as new feedstock to make again PLA for food contact applications. Case study of closed loop for PLA water bottles recycling, established in South Korea, will be presented. Chemical recycling has been commercialized by TotalEnergies Corbion and adopted in our Luminy® PLA recycling plant, where the company recycles both internal and external PLA waste streams. Luminy® PLA with recycled content is now commercially available on the market.