Engineering plastics

Supporting the sustainable development of society by offering plastics with special features such as mechanical strength and resistance to heat and chemicals.

Business Overview

Polyplastics Co., Ltd. is a leading engineering plastics company with 32 locations in 11 countries. It manufactures polyoxymethylene (POM), with the top worldwide market share, and liquid crystal polymer (LCP), and its technical solution capabilities, based on sample data and many years of expertise, are one of its greatest strengths. Polyplastics solutions have contributed to lighter automobiles with more electric components and higher performance electric devices.

Daicel Miraizu Ltd.* handles high-performance products such as polymer alloys, created by blending multiple resins with different properties, and high functional plastics reinforced with special fillers. It is also in the plastics compound business, which is responding to increasingly sophisticated user needs, and in the plastic processing business, which supplies barrier films for food packaging.

*As of July 1, 2020, the sales divisions of Daicel FineChem Ltd., Daicel Polymer Ltd. and Daicel Value Coating Ltd. were integrated into Daicel Miraizu Ltd., a new company, which succeeded Daicel FineChem Ltd.

Business Environment

- Worldwide slowdown of car production
- Ongoing development of next-generation mobility using self-driving and energy-saving technologies
- Changes in infrastructure, devices, and services due to the introduction of 5G

Strategies

- Creating new products for sustainable growth
- Stabilizing product supply and innovating techniques to prepare for growth in market scale
- Developing high-quality, high-value added materials to increase market share in premium markets
- Strengthening global technical solutions and supply chains

SDGs Relevant to these Segments

Performance Highlights (Consolidated)

Net sales (FY2020/3)	Operating income (FY2020/3)
¥176.1 billion	¥20.9 billion

TOPICS

Contribution to Circular Economy with PET Bottle labels that float on water

While plastics are highly convenient and essential for modern society, they also become a cause of marine litter and global warming. To solve these issues, the easily recyclable material for plastic beverage bottle labels was developed by Polyplastics.

Since the raw materials used for plastic bottle bodies, caps, and labels differ, recycling plastic beverage bottles requires separating by resin type. In Europe, recycling plants are equipped with a machine that removes labels from the bodies, and consumers must peel off the labels before disposal. Still, such approaches are rather ineffective in terms of both cost and results. As the search for a more efficient solution continues, a spotlight has been cast on a method for separately collecting plastic bottles and labels by making labels that are buoyant in water. The method had been unfeasible since conventional labels, which have a higher specific gravity than water, do not float. Labels using TOPAS® COC (cyclic olefin copolymer), a material developed by Polyplastics, fit this strategy because they do float in water, enabling bottles and labels to be collected separately, simply by placing bottle flakes in water and thereby accelerating the recycling process, while at the same time retaining the printability, shrinkability, and adhesiveness of conventional labels. Moreover, although TOPAS® is different from polypropylene (PP) or polyethylene terephthalate (PET), labels made of TOPAS® can be recycled as an olefin material.

As the demand for TOPAS® COC rapidly grows, it has become necessary to enhance our supply system for the product. To realize the stable supply of high-quality products, we plan to boost current production capacity by 50% in early FY2022/3 and introduce new facilities in FY2023/3.

■ Method for separating labels from bottles by floating them in water

Recycling plastic beverage bottles a growing concern in Europe

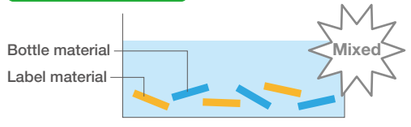
Bottle PET resin
Label PET-G, PVC resin

Although removing labels from bottles is necessary for recycling into high-purity plastics, there had been no cost-effective method for separation.

Efficient separation achieved using TOPAS® COC for labels

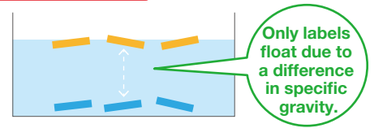
The COC resin makes labels buoyant while retaining their conventional characteristics, enabling for separate collection of bottles and labels.

Conventional label PET-G/PVC resin



- Conventional labels have all the functions required for a label but do not float.
- Conventional labels sink to the bottom of a tank, mixed along with bottles.

Label developed by Polyplastics Olefin resin + TOPAS® COC



- Olefin resin such as PE and PP, having a lower specific gravity than water, enables labels to float.
- TOPAS® COC enables labels to retain necessary label characteristics.

Business Overview of FY2020/3

The engineering plastics segment provides a variety of synthetic resin products, from high-performance engineering plastics for cars and electronics to barrier films for packaging. Sales by this segment declined overall year-on-year due to China's economic slowdown and the COVID-19 pandemic, which also constrained demand for engineering plastics, our main products, in the car parts market and markets for smartphones and other high-value added goods. Nevertheless, the sales volume of our engineering plastics remained at the same level as the previous year thanks to the growth in sales of general-purpose grade products and expanded applications.