NEWS RELEASE

FP CORPORATION

April 30, 2024

FP CORPORATION

Successful Development of the World's First Ultra-High-Rigidity Biaxially Oriented Polypropylene Sheet

FP Corporation (headquartered in Fukuyama-shi, Hiroshima; Chairman and Representative Director: Morimasa Sato; hereinafter, the "Company") is pleased to announce its success in developing the world's first ultra-high-rigidity biaxially oriented polypropylene sheet (hereinafter, "new OPP sheet") in the 150–300 micron range, offering excellent formability; and in developing a laminated OPP sheet (hereinafter, "new OPP laminated sheet") with a thickness of 1–3 mm, created by thermal fusion of the new OPP sheet.

The Company reports that it has now begun considerations for the commercialization of these technologies and products, with the aim of developing not only new food container applications, but also a wide range of industrial applications such as automobile and home furnishing / equipment-related applications in the future.

FP Corporation had already succeeded in the manufacture of biaxially oriented polyethylene terephthalate sheet (OPET®*1) and development of OPET molded products for the first time in the world in 2012, based on its proprietary technology for manufacturing biaxially oriented plastic sheets that retain their formability. Through the addition of PET recycling technology to OPET, the Company is now selling ECO OPET®*2, which offers excellent transparency and heat resistance. Now the Company has succeeded in developing a new OPP sheet, which represents a further advancement of this biaxial orientation technology.

Typically, biaxially oriented PP film is used mainly in flexible food packaging materials with a thickness of 30–50 microns. The new OPP sheet developed by the Company has a thickness of 150–300 microns. This new OPP sheet not only exhibits excellent transparency, heat resistance, cold resistance, and oil resistance characteristics, but also a balance of physical properties with high rigidity and high impact resistance over a wide range of temperatures, from very low to high temperatures. By leveraging these characteristics, it is possible to develop food containers unlike any seen before.

Comparison of transparent container materials

		New OPP (biaxially oriented PP)	OPS (biaxially oriented PS)	OPET (biaxially oriented PET)	APET (non-oriented PET)	Transparent PP (non-oriented PP)
Transparency		**O**	○	○	○	△
Heat resistance		**110℃**	80℃	80℃	60℃	110℃
Cold resistance	-18℃	**O**	△	○	×	×
	-30℃	**O**	△	○	×	×
Container weight at same strength	○ Light × Heavy	**O**	△	△	×	×
Oil resistance		**O**	×	○	○	○

New OPP sheet transparent food container sample

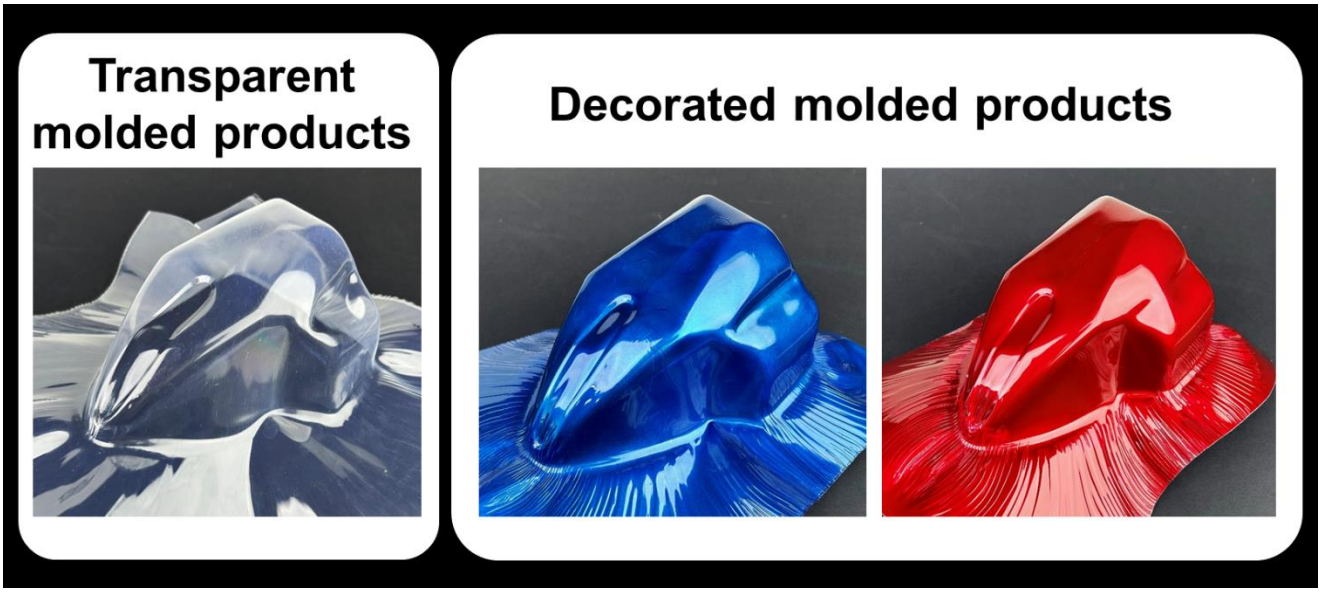
The new OPP sheet also has the potential to be used in various industrial fields, aside from food containers, by leveraging its characteristics.

For example, laminating injection molded products with the sheet increases the strength of the injection molded product itself, resulting in a reduction in the amount of plastic used and contributing to a reduction in the weight of molded products. Since it is more transparent than conventional PP sheets, the new OPP sheet can also be decorated by printing, and can contribute to the elimination of painting / coating processes.

The Company has also succeeded in developing a technology for making laminated sheets with a

thickness of around 1-3 mm through thermal fusion of the new OPP sheet with a thickness of around 1–3mm. The new OPP laminated sheet has high rigidity, impact resistance, and high ductility, and has excellent decorative properties because it maintains higher transparency than conventional PP sheets. It also has low coefficient of linear expansion comparable to that of aluminum, and is expected to find a wide range of application possibilities in areas such as mobility, home furnishings / equipment, and various other fields, as a partial replacement for steel sheet, aluminum steel sheet, FRP*3, polycarbonate sheet, and CFRP*4.

Since PP is the main material, it is also highly recyclable, and the elimination of painting and coating processes makes it a product with good environmental suitability that can comply with VOC regulations.



The products have already been met with positive recognition in a wide range of industrial fields, including the automotive, home furnishings / equipment, solar cells, and logistics materials fields, and the Company is currently in the process of designing a new plant, with the aim of starting production of the new OPP sheet in early 2027.

In launching these products, the Company will consider marketing, including alliances with related industries, and will seek to drive future business development.

Specific details of business plans and investments are currently under consideration, and will be announced as soon as they are finalized.

*1 OPET is a registered trademark of FP Corporation.

*2 ECO OPET is a registered trademark of FP Corporation.

*3 FRP: Fiber-reinforced plastic

*4 CFRP: Carbon-fiber-reinforced plastic

[Contact information for this release]

■ Project Surrey, FP Corporation　Mail：surrey@fpco-net.co.jp