

2023.07.27

Mitsui Chemicals, Inc.

Mitsui Chemicals to Begin Manufacturing and Marketing Recycled Chemical Products Made With Pyrolysis Oil From Plastic Waste

Pyrolysis oil from plastic waste will be introduced into the Osaka Works cracker

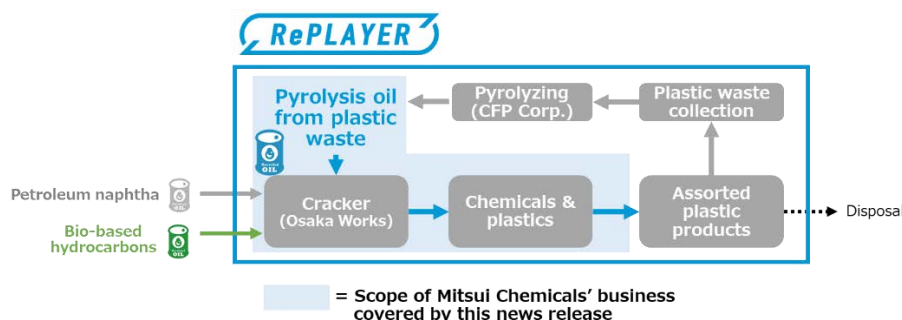
Mitsui Chemicals, Inc. (Tokyo: 4183; President & CEO: HASHIMOTO Osamu) today announced plans to become the first company in Japan to begin manufacturing and marketing chemical products and plastics derived from chemical recycling based on the mass balance approach, in an effort to help create a circular economy. CFP Corp. (Fukuyama, Hiroshima; CEO: FUKUDA Namie) will supply pyrolysis oil produced from plastic waste, which Mitsui Chemicals plans to start using as a feedstock for the cracker at the Osaka Works in the fourth quarter of fiscal 2023. As with bio-based hydrocarbon derivatives, the chemical and plastic derivatives from the recycling process will be supplied using the mass balance approach. Mitsui Chemicals intends to continue rolling out recycled chemical products in various derivatives going forward same as the bio-based hydrocarbons

■ Aiming to create a circular economy

Recent years have seen plastic recycling take on mounting importance both within Japan and overseas, with social demand also growing. Amid this situation, Mitsui Chemicals is moving forward with recycling efforts focused not only on the materials themselves, but also on the construction of frameworks and systems for the creation of a circular economy. Examples include improving recyclability through mechanical recycling and the adoption of monomaterial designs, as well as using blockchain for greater traceability of recycled products.

This latest chemical recycling initiative will make it possible to adapt materials derived from recycling processes in applications where such materials could not conventionally be used due to quality or hygiene considerations. The move could potentially result in a substantial increase in the recycling rate of plastics, which has been low to date. This initiative forms part of Mitsui Chemicals' RePLAYER™ concept, under which wasted plastic is regarded as a resource to be reused. Just like the bio-based hydrocarbons that Mitsui Chemicals first introduced in December 2021, this is an endeavor to achieve transformation starting with the materials from which materials are made. Mitsui Chemicals will strive to make industrial complexes more sustainable through cracker transformation, which will be achieved by transitioning to sustainable biomass-based and recycled feedstocks, switching to ammonia and other alternative fuels, and pursuing co-creation based on community partnerships.

[Diagram illustrating the flow of cracker-related processes]



■ **Pyrolyzed into hydrocarbon oil to be fed into the cracker, the most upstream part of Mitsui Chemicals' operations, ensures derivatives have the same physical properties as items made from virgin materials**

Just like petroleum naphtha and bio-based hydrocarbons, pyrolysis oil from plastic waste is a hydrocarbon oil, which can be used as a cracker feedstock to manufacture the basic chemical materials ethylene, propylene, C4 and C5 fractions, and benzene. As these same basic materials are then used to manufacture phenols, other basic chemicals, and polyolefins such as polyethylene and polypropylene, the physical properties of the chemical and polymer derivatives are identical to those of more conventional products made from virgin materials.

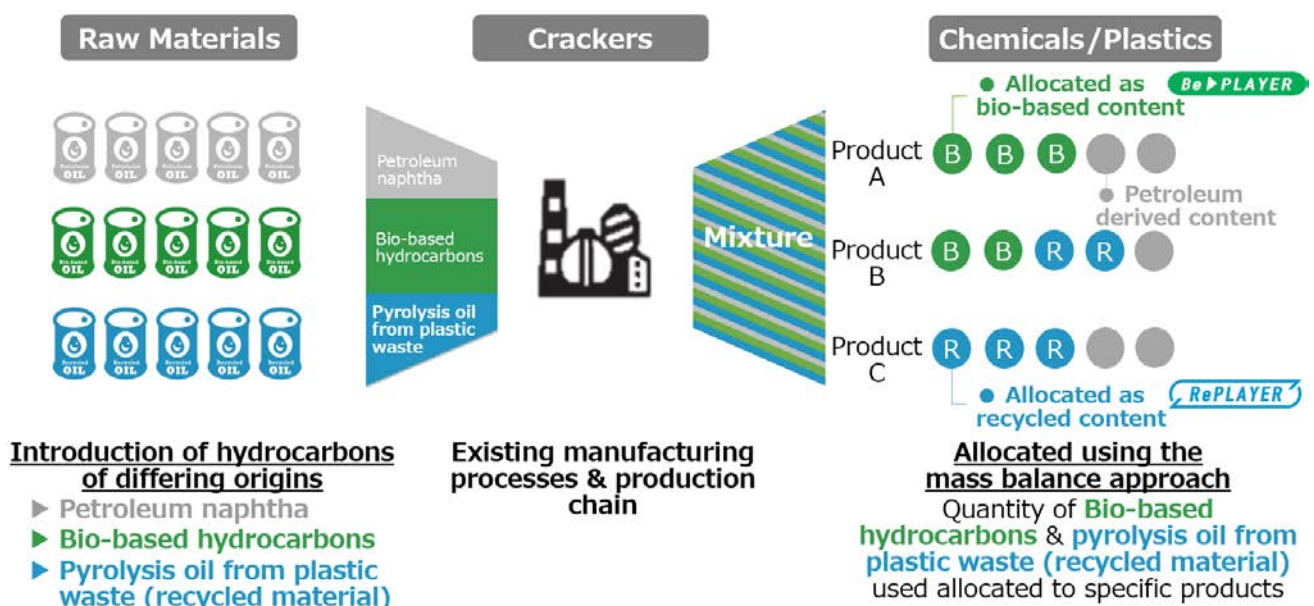
■ **The mass balance approach**

The mass balance approach is a method in which, during the process of turning raw materials into final products and the distribution process, raw materials with certain properties (e.g., bio-based raw materials and recycled materials) are mixed with raw materials that do not have these properties (e.g., petroleum-based raw materials); thus, the properties are assigned to a portion of the product according to the amount of input of the raw materials with those properties (edited version of the definition provided in the Ministry of the Environment's Roadmap for Bioplastics Introduction). Mitsui Chemicals believes the mass balance approach will play an important role in the creation of a society based on biomass and recycling.

Going forward, Mitsui Chemicals plans to obtain the ISCC PLUS certification and additional certified products in the Circular category which are widely adopted in Europe, with a view to bringing to market recycled chemical products based on the mass balance approach.

* The Mitsui Chemicals Group pledges its commitment to complying with the ISCC PLUS requirements, in accordance with the latest ISCC regulations, and to avoiding the practice of double counting the Group's environmental contributions.

【Explanatory diagram: The mass balance approach】



■ RePLAYER™

This brand was set up by Mitsui Chemicals to propose Group-wide solutions throughout the value chain that will contribute to delivering a circular economy for society. RePLAYER™ is an effort to create a circular economy through recycling that makes effective use of plastic waste and other waste products as resources.

Mitsui Chemicals offers biomass solutions under the BePLAYER™ brand. Further details are available [here](#).