

## **Construction of Verification Facilities and Implementation of Verification Testing to Commercialize Acrylic Resin Molecular Recycling Operations**

Mitsubishi Chemical Corporation  
Mitsubishi Chemical Methacrylates Japan Co., Ltd.

Mitsubishi Chemical Corporation (MCC; Head office: Chiyoda-ku, Tokyo; President: Masayuki Waga) and its consolidated subsidiary Mitsubishi Chemical Methacrylates Japan Co., Ltd. (MCM; Head office: Chiyoda-ku, Tokyo; CEO: Hitoshi Sasaki) has decided to construct verification facilities in Japan in June 2021 to implement verification testing with the goal of commercializing molecular recycling operations for PMMA (polymethyl methacrylate; acrylic resin).

Acrylic resin is a plastic product that possesses excellent transparency and light resistance, and boasts a wide range of applications, including automotive light covers, signs, aquarium tanks, coatings and construction materials. Global demand for acrylic resin exceeds 3 million tons. In addition, demand has been increasing recently in regions around the world for acrylic plates used to prevent infection due to exhaled droplets/particles.

At MCC and MCM, examinations have been conducted for some time on the recycling of acrylic resin. In Europe, which is a global leader in environmental awareness and is seeking speedier actions, considerations are being carried out regarding the construction of acrylic resin recycling facilities which introduce current recycling technologies. A decision is expected to be reached in the near term. Meanwhile, in Japan, MCC and MCM are cooperating with Microwave Chemical Co., Ltd. (Head office: Suita, Osaka; CEO: Iwao Yoshino), a partner looking into recycling technologies for acrylic resin, and have decided to construct new verification facilities on its site of Osaka Factory. Construction is slated to be completed in June 2021. In Europe and Japan, using respective approaches that take into account the traits of each region, full-fledged consideration for the construction of an acrylic resin recycling plant is expected to be undertaken with an eye on operations starting from 2024.

Acrylic resin waste recycling is not only to the waste materials from MCC and MCM acrylic resin manufacturing plants, but also focus on collecting acrylic resin waste from the broader market in the future. In conjunction with the Honda Motor Company (Head office: Minato-ku, Tokyo; President: Toshihiro Mibe), MCC are examining a scheme for the collection of acrylic resins, mainly from the taillights of scrapped cars, their molecular recycling and reuse. The companies are also jointly conducting verification testing of recycling systems that use new verification facilities.

Using MCC acrylic resin recycling technologies, manufactured MMA (methyl methacrylate) and acrylic resins produced using MMA as a raw material retain the same level of performance, including transparency, as regular products. Moreover, it is estimated that CO<sub>2</sub> emissions during the manufacturing process can be cut by over 70% of conventional levels. There is a possibility this will contribute a great deal to a reduction in environmental impact. As world's No. 1 manufacturer of MMA and acrylic resins, MCC is actively taking the lead in implementing initiatives to realize a circular economy for this business.



(Comparison of an ordinary acrylic plate (left) and a recycled acrylic plate (right))



(Rendering image of verification facilities)

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