



TOYODA GOSEI

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Toyoda Gosei Develops CNF-Reinforced Plastic for Automotive Parts

Utilizes biomaterials and reduces CO₂ over the product lifecycle

Kiyosu, Japan, April 13, 2022: Toyoda Gosei Co., Ltd. has developed* a cellulose nanofiber (CNF)-reinforced plastic with the aim of reducing CO₂ over the lifecycle of automotive components, from raw material procurement and production to recycling and disposal.

In moving toward decarbonization and a circular economy, Toyoda Gosei is developing materials that raise the environmental performance of its products by leveraging the following features of CNF. First, CNF has one-fifth the weight and five times the strength of steel. When used as a reinforcing material in plastic or rubber, the product can be made thinner and foam molding becomes easier. This reduces weight and contributes to lower CO₂ emissions during vehicle driving. Second, when the material is reused after vehicles are scrapped, little strength is lost from heating and melting, making recycling in automotive components possible. Third, it is a material that does not increase the total amount of CO₂. Even when CNF is incinerated, the only CO₂ emitted is that which was absorbed by the plant during its growth.

The newly developed CNF-reinforced plastic combines 20% CNF in a general purpose plastic (polypropylene) used in automobile interior and exterior components. For practical application, reduced impact resistance from the inclusion of CNF was initially an issue. Toyoda Gosei overcame this with its material mix design and kneading expertise to raise impact resistance to a level suitable for automotive components. The company will continue to lower costs in cooperation with CNF material manufacturers.

*Part of the Ministry of the Environment Nano Cellulose Promotion project, which promotes efforts for the early social implementation of CNF-reinforced plastics that are the basis of various products, with the aim of reducing CO₂.

The developed reinforced plastic has a 20% mix of CNF



Trial automotive products



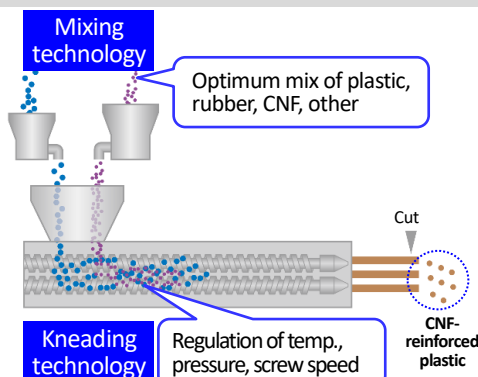
Glove box



Front pillar garnish

Key point in development

Uniform dispersion of CNF in polypropylene improves impact resistance and fluidity (moldability)



Reducing CO₂ over the entire product lifecycle

