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Mitsubishi Chemical Develops Ceramic Matrix Composite Material With High Molding Workability

Mitsubishi Chemical Corporation

Mitsubishi Chemical Corporation (MCC; Head office: Chiyoda-ku, Tokyo; President: Masayuki Waga) has announced the development of a new ceramic matrix composite (CMC) material that is both lightweight and rigid and has high molding workability.

Carbon fiber-related materials that have both lightness and rigidity are being adopted for mobility applications where weight reduction is required to reduce environmental load, and for industrial machinery applications where process efficiency is required in addition to weight reduction. On the other hand, with regard to the requirement for heat resistance, these materials are not in widespread use due to issues of workability and cost, and therefore, relatively expensive ceramic materials are primarily used.

Our CMC material, which is a combination of carbon fiber and metal material, offers features such as high rigidity, high heat resistance, high thermal conductivity, light weight, wear resistance, and low dust generation, and is used as a brake material for mobility and industrial machine parts. The product has achieved high molding workability and associated cost reduction while retaining the aforementioned features. We have already commenced sample work for multiple customers, and in the future, we aim to develop new applications such as brake materials and heat-resistant materials for industrial machinery, in addition to conventional materials.

We are developing multiple new carbon fiber-related products that can meet the diversified and sophisticated needs of our customers, and will continue to actively develop our business by providing optimal solutions in a timely manner.

[Physical characteristics comparison]

	Reinforcement material	Matrix material	Bulk density (g/cm^3)	Heat-resistant temperature (℃)
Our CMC (This product)	Pitch-based carbon fiber	Ceramic	2.3	1,000≦
Our phenolic CFRP	Pitch-based/PAN-based carbon fiber	Phenolic resin	1.7	300≦
Aluminum (A6061)			2.7	150
Steel (SS400)			7.9	600

[Example of a member using the CMC material]

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