

News Release

October 19, 2023
Proterial, Ltd.

Our new mold material for plastic molding which combines rust resistance with thermal conductivity receives the Shimane Institute of Invention and Innovation Chairperson's Award in the Chugoku Region Invention Honors for FY 2023.

Proterial, Ltd. (hereinafter referred to as "Proterial") has been awarded the "Shimane Institute of Invention and Innovation Chairperson's Award" in the Chugoku Region Invention Honors for FY 2023, which are sponsored by the Japan Institute of Invention and Innovation, for their new mold material for plastic molding (Invented by Takaaki Sekiyama, Yasuhiro Hosoda, Hitoshi Kataoka, and Ryuichiro Sugano). The award ceremony was conducted at Hotel Granvia Okayama on Tuesday, October 17.

1. Invention

Steel for molds and its method of manufacture (Patent No. 5648947)

2. Awardees

Shimane Institute of Invention and Innovation Chairperson's Award

Takaaki Sekiyama, Proterial, Ltd.

Yasuhiro Hosoda, Proterial, Ltd.

Hitoshi Kataoka, Proterial, Ltd.

Ryuichiro Sugano, formerly of Hitachi Metals, Ltd. (now Proterial, Ltd.)

3. Invention overview

Injection molding is a method in which resin material is melted and poured into a mold to form a shape. It is widely used in the manufacture of a diverse range of plastic products, including for home appliances, IT equipment, and both interior and exterior parts for automobiles. Molds used in injection molding require a variety of performance requirements, such as strength, wear resistance, and surface finish precision. In recent years, improved rust resistance and thermal conductivity have also become increasingly important.

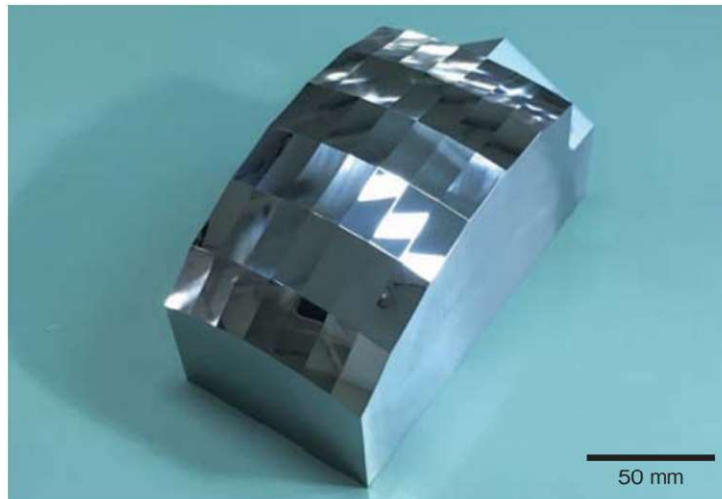
Molds used to manufacture plastic products must provide high smoothness and precision, since these products are often used in settings where people can directly see and touch them. Rust is caused by condensation that forms on the mold's surface between production runs when it is not in use, and adversely affects the shape of the molded product. To address this issue, maintenance such as polishing the mold to remove rust is required before use, and this reduces productivity. In addition, molds undergo repeated heating and cooling during molding, so they must have high thermal conductivity. While stainless steel—widely used traditionally for molds—provides excellent rust resistance, it has drawbacks in that its thermal conductivity is low and it is expensive.

We studied the characteristics that contribute to better productivity in plastics production. With respect to improving rust resistance, we found that it was important to not only reduce the amount of rust, but also to delay the onset of rusting. This would thereby reduce the time required for mold maintenance. In this invention, we studied approaches to delay the onset of rusting, and discovered that it could be achieved by adjusting the composition of the mold material, such as carbon, silicon, and manganese. As a result, we were able to obtain both rust resistance and high thermal conductivity at a low cost, which was difficult to achieve in the past.

With this invention, Proterial was able to develop mold materials that consistently reproduce high smoothness on mold surfaces. These include CENATM-G, a mold material designed for general-purpose products, and CENATM-V, a mold material suitable for transparent exterior parts, etc. As they feature both rust resistance and thermal conductivity, they can improve productivity in the manufacture of plastic products with high design quality. They are being used in a wide range of applications, such as molds for housing equipment, home appliances, and parts for lights in automobiles.

Proterial, Ltd.

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Example of a mold made using the CENA™-V mold material for plastic molding

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CENA is trademark of Proterial, Ltd.

■ About PROTERIAL

PROTERIAL

“Proterial” reflects the essence of our corporate philosophy, which consists of three elements: Mission: “Make the best quality available to everyone;” Vision: “Leading sustainability by high performance;” and Values: “Unflinching integrity” and “United by respect.” It combines “pro-” with the word “material.”

“Pro-” represents our “three pros”:

- Professional — work that exceeds expectations
- Progressive — a spirit that keeps challenging
- Proactive — an enterprising attitude

“Material” refers to the high-performance materials that our original technologies produce and underpinned by the three pros. With our focus on solving customer issues and bringing new levels of value, we promise to contribute to the realization of a sustainable society through the products and services that embody our philosophy.

■ Proterial, Ltd. — Company Overview

Established: April 1956

Head office: Toyosu Prime Square, 5-6-36 Toyosu, Koto-ku, Tokyo 135-0061, Japan

Capital: 310 million yen (as of March 31, 2023)

Representative: Representative Director, Chairman, President and Chief Executive Officer (CEO)
Sean M. Stack

Sales revenue: 1,118.9 billion yen (Term ended March 2023)

History: 1910: Founded as Tobata Foundry Co.

1937: Merged with Hitachi, Ltd.

1956: Established separately as Hitachi Metals Industries, Ltd.

2023: Company separated from the Hitachi Group, and renamed from Hitachi Metals, Ltd. to Proterial, Ltd.

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