News Release

April 25, 2024
Proterial Metals, Ltd.
Proterial, Ltd.

Sales Start of Titanium Alloy Foil for Flexible Displays

Proterial Metals, Ltd. (Location: Suita, Osaka, President: Koichi Gondai, 100% owned by Proterial, Ltd., hereinafter “Proterial Metals”) has developed a titanium alloy foil for the back panel of flexible displays. The foil is attracting attention because it can be applied when using a method that is being used to increase the display size of smartphones. After obtaining favorable evaluations from display manufacturers to which samples were provided, Proterial, Ltd. (headquarters: Koto-ku, Tokyo, Chairman, President, & CEO: Sean M. Stack, hereinafter “Proterial”) has commenced sales of the alloy. Efforts will be made with a focus on applications for foldable smartphones.

1. Background

Demand for foldable smartphones, which become compact when folded and enable the users to use a large display when unfolded, is expected to grow although their penetration rate is still low.

Foldable smartphones incorporate a bendable display. Therefore, the evolution of this technology is important from the perspective of development. To increase the sophistication of smartphones in terms of their design or make them thinner, the bending radius of the folding area needs to be reduced, which requires more durable materials, and the bend portion structure needs to be improved. In particular, the back panel, which is placed on the back of a display to improve heat dissipation and mechanical durability, must be able to endure repeated bending because it is bent with the display.

Against this backdrop, Proterial Metals has decided to develop a back panel material leveraging its advanced technological metal material development capabilities, including the development of the clad materials used in display heat spreader and lithium-ion battery leads.

2. Outline

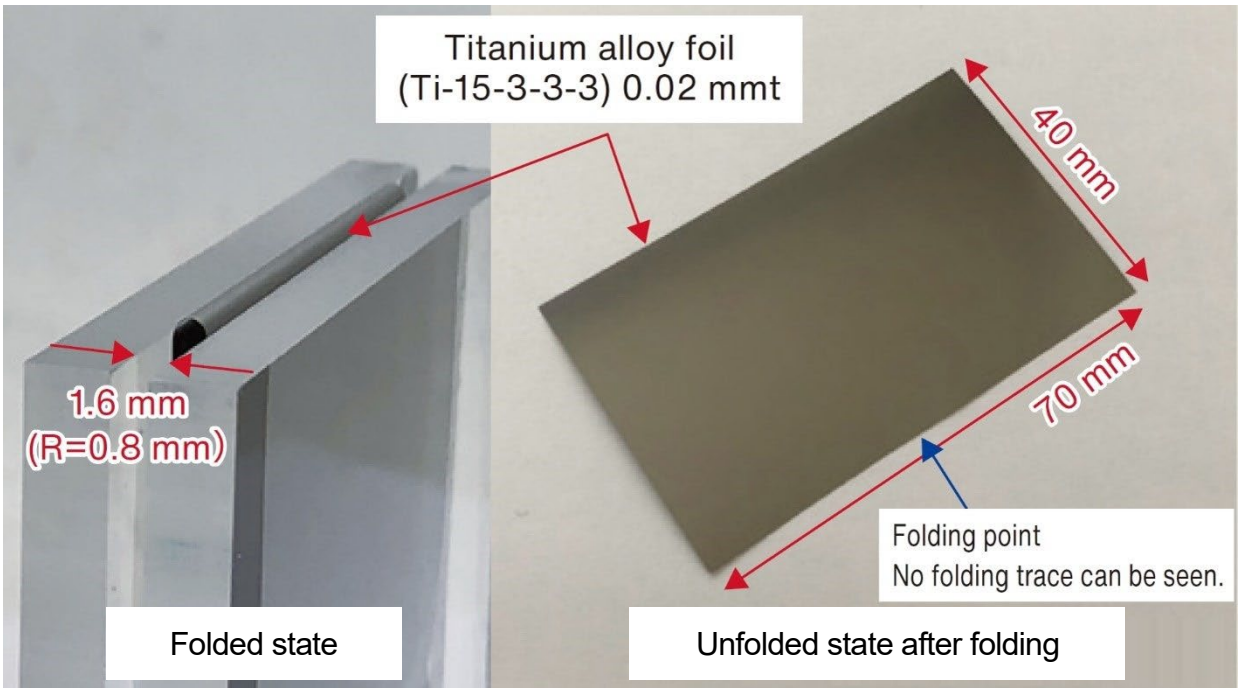
Currently, stainless steel plates or foils are used for the back panels. To enhance durability against bending stress (the force applied to the inside of an object due to bending), efforts have been made to increase the strength of materials by cold working the materials or applying mesh processing in the folding area. However, cold working causes back panel magnetization due to the characteristics of stainless steel, resulting in difficulties regarding the use of styluses, etc. Meanwhile, when mesh processing is used, the displays become nubby, causing appearance defects.

To overcome these issues, Proterial Metals sought to develop a material with improved durability by focusing on titanium alloy (Ti-15-3-3-3), a material that is more flexible compared to stainless steel, non-magnetic and lightweight, even after the cold working process.

As a result, it has succeeded in developing a titanium alloy that is more resistant to repeating bending than stainless steel and that enables the bending radius to be reduced to approximately to two-thirds that of stainless steel (see figure). It is expected that the use of this titanium alloy foil in display panels will not only improve the durability of foldable smartphones in terms of their opening and closing but also simultaneously contribute to improving their design and reducing their weight.

After obtaining very favorable evaluations from several display manufacturers to which samples were provided, Proterial decided to begin full-scale sales.

Proterial, Ltd.
Toyosu Prime Square, 5-6-36 Toyosu, Koto-ku, Tokyo 135-0061, Japan
www.proterial.com/e



(Fig.) Titanium alloy foil

3. Development and production

Engineering & Development Department, North Japan Works, Proterial Metals, Ltd.

Media Inquiries: Corporate Communications Dept.
https://www.cntct.proterial.com/contact/publish/inquiry_eng? g=01&c=001-01
Customer Inquiries: https://www.cntct.proterial.com/contact/publish/inquiry_eng? g=01&c=005

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