

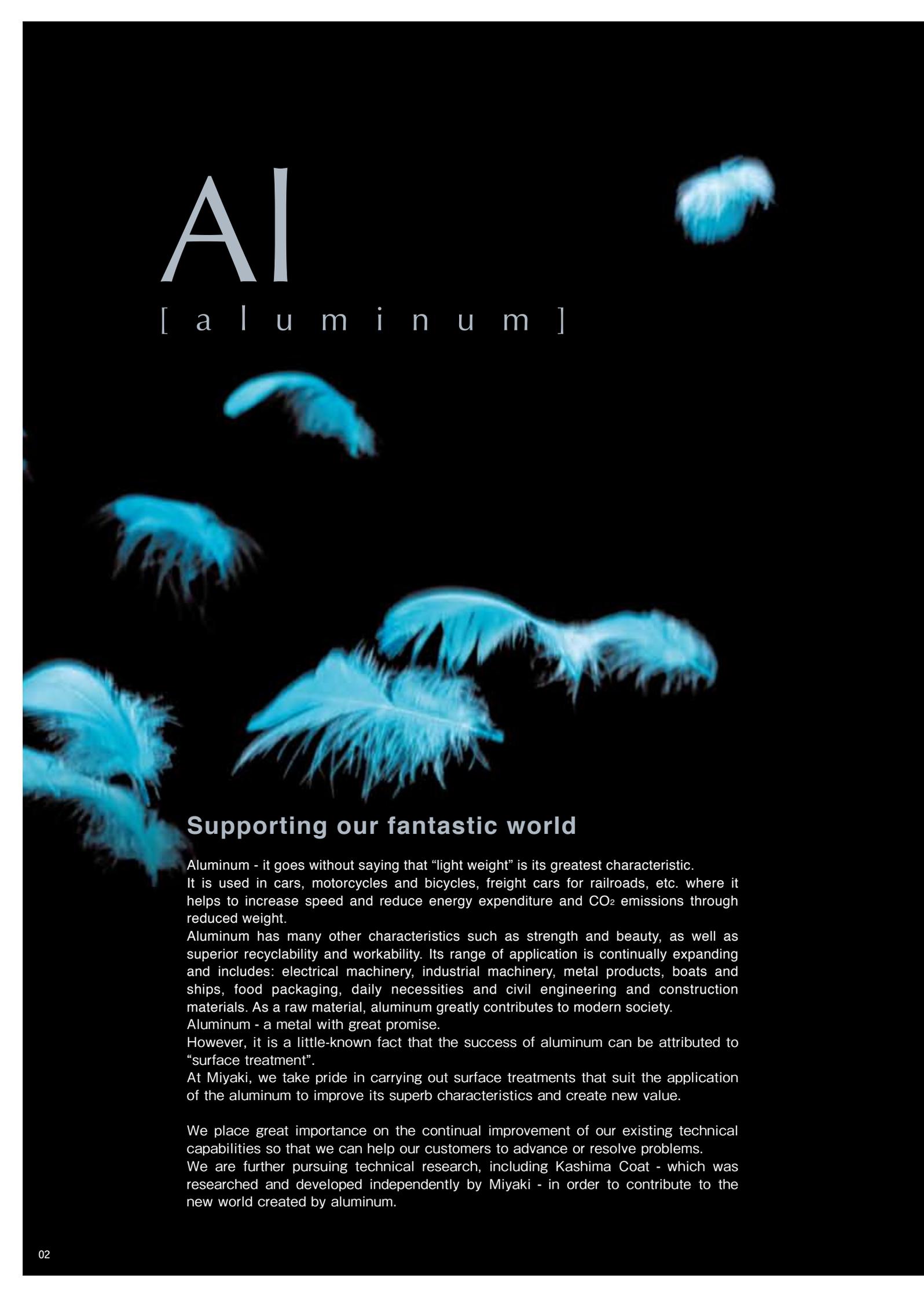


MIYAKI  
COMPANY  
GUIDE



For a new tomorrow

# KASHIMA COAT



# Al

[ a l u m i n u m ]

## Supporting our fantastic world

Aluminum - it goes without saying that "light weight" is its greatest characteristic. It is used in cars, motorcycles and bicycles, freight cars for railroads, etc. where it helps to increase speed and reduce energy expenditure and CO<sub>2</sub> emissions through reduced weight.

Aluminum has many other characteristics such as strength and beauty, as well as superior recyclability and workability. Its range of application is continually expanding and includes: electrical machinery, industrial machinery, metal products, boats and ships, food packaging, daily necessities and civil engineering and construction materials. As a raw material, aluminum greatly contributes to modern society.

Aluminum - a metal with great promise.

However, it is a little-known fact that the success of aluminum can be attributed to "surface treatment".

At Miyaki, we take pride in carrying out surface treatments that suit the application of the aluminum to improve its superb characteristics and create new value.

We place great importance on the continual improvement of our existing technical capabilities so that we can help our customers to advance or resolve problems.

We are further pursuing technical research, including Kashima Coat - which was researched and developed independently by Miyaki - in order to contribute to the new world created by aluminum.



**KASHIMA COAT**

# KASHIMA COAT

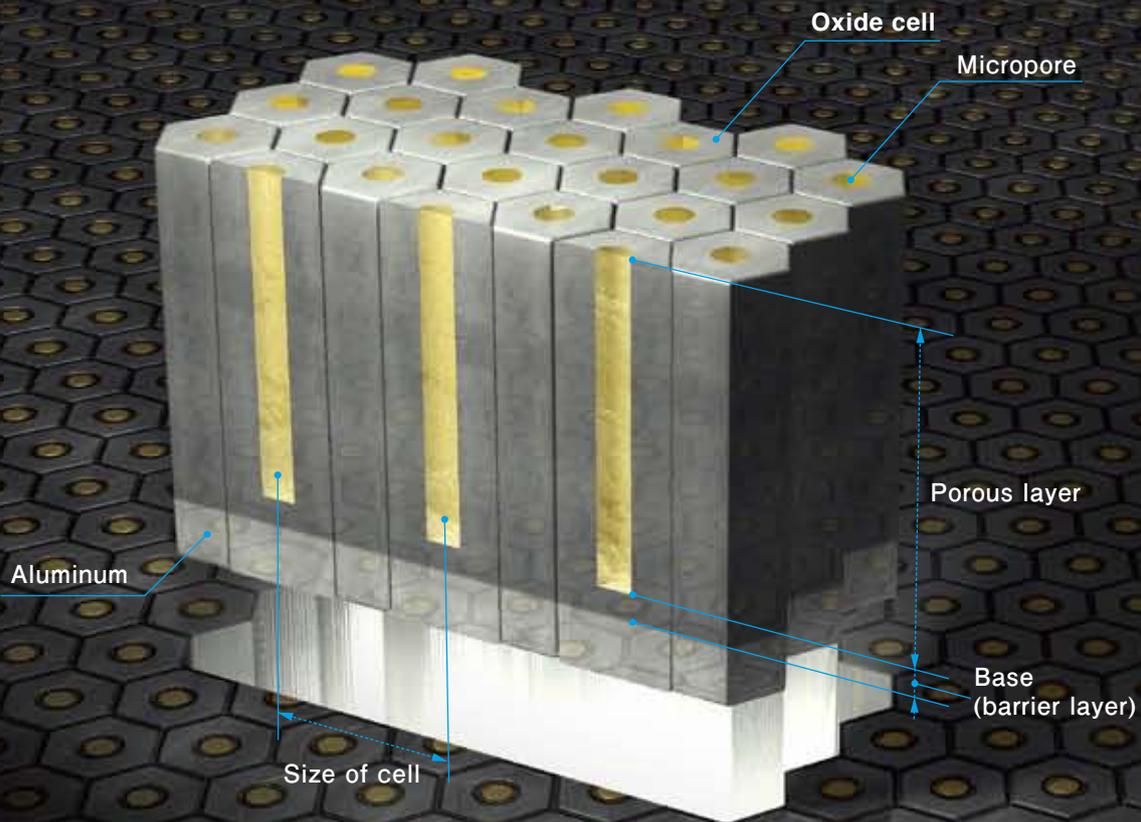
## Original technology that combines the expertise of Miyaki

Kashima Coat is a lubricating anodized aluminum researched and developed by Miyaki.

The tough film of hard anodized aluminum is enough to create high pressure at contact surfaces, and when used in places where small vibrations or rubbing occur, “scuffing” and “seizing” result.

Kashima Coat was created to provide lubrication for hard anodized aluminum as well as improve its abrasion resistance.

### ◆ Characteristics and structure of Kashima Coat



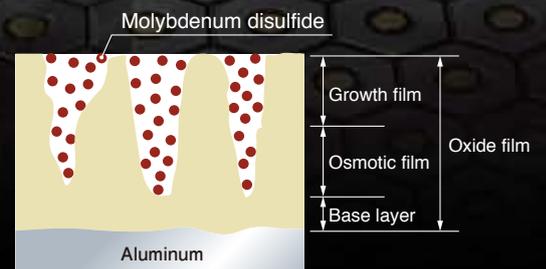
Molybdenum disulfide, a lubricating material, is deposited by electrical induction inside countless pores in the formed anodized aluminum (anodic oxide) film.

The molybdenum accumulates in the micropores of the anodized aluminum to fill them in.

A combination of “hardness + lubrication” can be achieved with approximately 70 billion pores per 1 cm<sup>2</sup>.

As a result, the abrasion resistance of Kashima Coat is drastically improved and significantly higher than that of hard anodized aluminum.

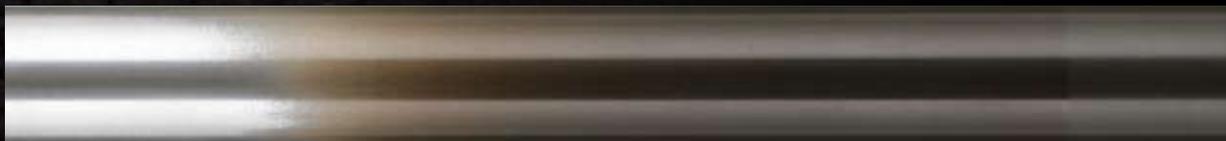
There are high expectations for Kashima Coat as a revolutionary new material, and it is being adopted across a wide range of fields.





### ◆Product characteristics

Appearance of molybdenum packed in from base of film (taper-ground product)



▲ Material surface (A6061)    ▲ 5μm Base    ▲ 10μm    ▲ 20μm    ▲ 30μm    ▲ 40μm    ▲ 50μm Before grinding

### ◆Lubricating ability

Molybdenum disulfide permeates all the micropores of the anodized aluminum due to electrolytic deposition, greatly increasing the friction coefficient of the hard anodic oxide film. The lubricating ability of Kashima Coat allows it to be used in sliding parts without oiling.

### ◆Corrosion resistance

A disadvantage of aluminum is that it corrodes easily. However, a corrosion resistance of 4 - 5 times that of conventional chrome plating was achieved using Miyaki's anodized aluminum treatment. For example, in salt spray testing (5%, 35°C), Material 5052 has a corrosion resistance of 1,000 hours or more. This means that Kashima Coat can also be used on yacht masts exposed to high salinity at sea.

### ◆Weight reduction

The specific gravity of aluminum is approximately one third that of iron. Kashima Coat answers the need for weight reduction demanded in this day and age.

### ◆High precision

The surface processing technology boasted by the Miyaki Group creates a uniform film. A superior characteristic of Kashima Coat is its ability to withstand grinding and lapping processes, enabling you can to use it with peace of mind on parts that require high precision.

### ◆High hardness / Abrasion resistance

Aluminum has the image of being soft, but aluminum treated with Kashima Coat reaches a hardness of Hv 400. In abrasion resistance tests, data shows that it performs approximately 4 times better than hard anodized aluminum. As such, it is expected to be used as a new functional material in parts that demand the hardness of steel or stainless steel.

# total support

## Place your trust in the Miyaki Group

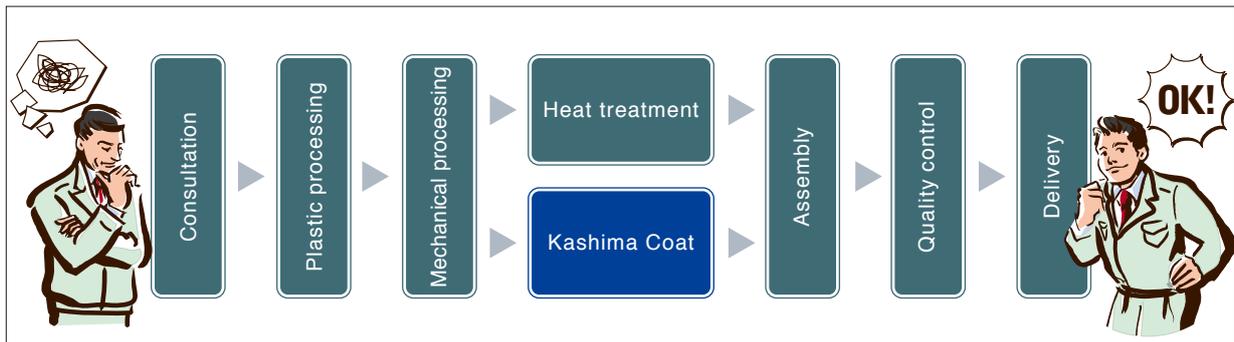
The Miyaki Group consists of three companies: Miyaki Co., Ltd., Japan Miyaki Co., Ltd., and Hamamatsu Koshuha Co., Ltd.

With the combined power of these three companies we provide comprehensive support, from design and processing to surface treatment and assembly.

You can entrust us with your needs, including sophisticated requests for any product and materials other than aluminum.

Please feel free to contact us with your request.

We would like to help your company to grow.



### Miyaki Co., Ltd.

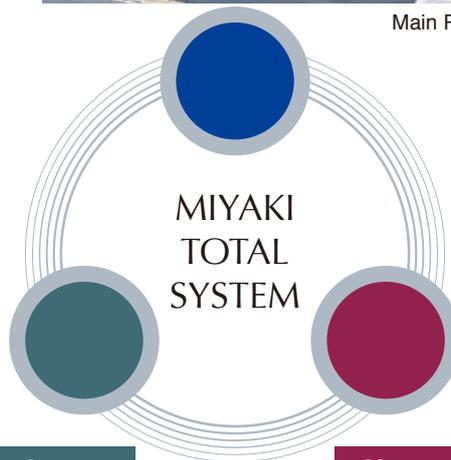
We conduct research and development specializing in surface processing technologies for aluminum, such as Kashima Coat, hard anodized aluminum and ordinary anodized aluminum. We have earned a reputation in various fields for making high-quality products with a homogenous film.



Main Plant



No.2 Plant



### Japan Miyaki Co., Ltd.

We are involved in design, mold making, manufacturing and assembly, and use friction welding technology and sophisticated grinding technology to deliver precision processed products at micron level.

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<http://www.japan-miyaki.co.jp/>

### Hamamatsu Koshuha Co., Ltd.

Hamamatsu Koshuha Co., Ltd. specializes in high-frequency heat treatment of steel. We have a wealth of experience, including engine parts for motorcycles and bicycles. You can also entrust us with surface treatment for materials other than aluminum.

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Playing an active role in your company.

Let us support you.

In case you have any Question

Please Connect to us.

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