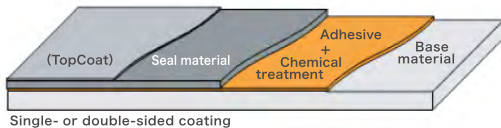


## Technological research & development / Research & development of materials

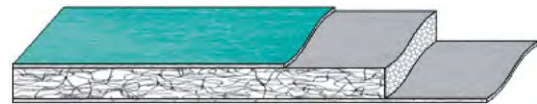
By considering the environment where the final product is to be used and the prescribed properties, we research and develop materials used for gaskets and packings, and technology used for mass production.

### Main current mass-production materials



#### Rubber Coated Metal (RCM)

Gasket materials made of stainless steel or steel plate coated with rubber



#### Joint sheet

Composite sheet containing rubber reinforced with organic fiber

### Equipment to develop and research materials



#### Surface analysis

The surface and components of materials are analyzed by using SEM/EDX.

SEM : Scanning Electron Microscope

EDX : Energy Dispersive X-ray spectroscopy



Microhardness test



Rubber churner



Curelasterometer

## Academic literature

### Presentation at the Japan Institute of Metals and Materials

Posted in the "Materia" (Vol. 50, No. 3) bulletin issued by the Japan Institute of Metals and Materials: "Development of fine precipitation dispersion stainless steel plate for high-pressure combustion cylinder head gasket (NAR-301L HSX)"

### Patents

- 53 patents in Japan (14 patents of materials and 39 patents of products)
- 65 patents overseas (36 patents of materials and 29 patents of products) in 17 countries

### Presentation at the Society of Automotive Engineers (SAE)

"Method of evaluating the durability of metal head gaskets as a single unit"  
"Development of Compound Coating to Reduce Permeation of Chloride Ions in Salt Water for Hexavalent-Chromium-Free Metal Gaskets for PWC Engines" 2008-32-0047 (SAE) / 20084747 (JSAE)

※As a parts manufacturer, we cooperate with automobile manufacturers and employ the evaluation method for the development of technology and products.