

# ACM-io

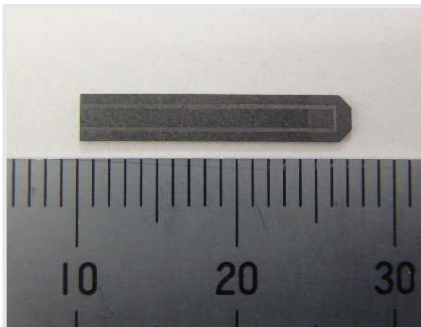
## Overview

- A new material that carries heat with little deformation at high temperatures
- Composite material of **graphite (CIP)** and **aluminum**, which was considered difficult
- Its specific gravity is as light as graphite, and its coefficient of thermal expansion is as high as that of ceramics.
- In addition, the strength is improved compared to graphite, enabling finer machining and reducing dust generation.

## Feature

- High thermal conductivity
  - Low coefficient of linear expansion/thermal deformation
  - Heat cycle resistance performance
  - Lightweight as graphite
  - Stronger than graphite
- Optimal material for components that require high thermal conductivity and high dimensional accuracy at high temperatures.
  - It is resistant to heat cycles and has a longer life than graphite by suppressing deterioration.
  - Since ACM-io can be surface-treated, dust generation during use can be greatly reduced compared to graphite.

## Application



Materials for medical equipment



Reflow positioning jig

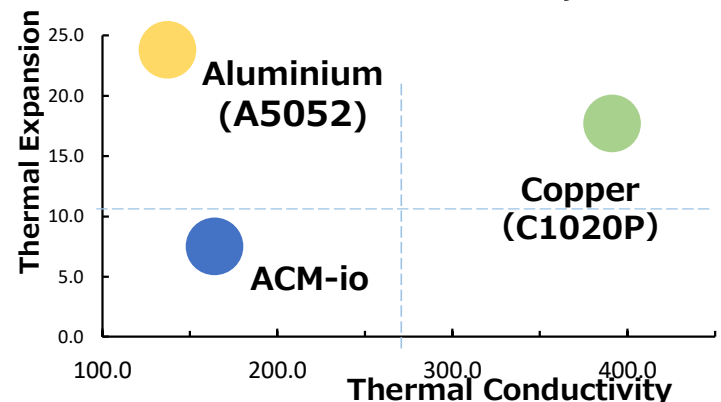


Radiation detector member

## Data

	ACM-io	Copper C1020	Aluminium A5052
Tensile strength (MPa)	70	195	75
Bending strength (MPa)	93	-	-
Young's modulus (GPa)	16	117	71
Coefficient of thermal expansion (ppm/K)	7~8	17	20
Thermal conductivity (W/m·K)	164	390	220
Specific heat (J/g·K)	0.75	0.39	0.92
Density (g/cm <sup>3</sup> )	2.1	8.9	2.7

Comparison of coefficient of thermal expansion and thermal conductivity



# ACM-io surface treatment (XDP coat)

## ■ Overview

Compared to conventional trivalent chromium plating, it has improved the glueing power of the plating, making it possible to handle parts with more complicated shapes.

## ■ Feature

- Environmentally friendly plating that does not use harmful hexavalent chromium compounds in the plating solution.
- You can get a high-class color tone from pale silver gray to dark tone.
- Compared to conventional trivalent chromium plating, plating coverage is improved by approximately 20%, making it possible to handle parts with complex shapes.
- Since it is a thin film of 0.1  $\mu\text{m}$  to 0.3  $\mu\text{m}$ , it can be applied to parts that require strict dimensional control by using electroless Ni-P for the base plating.

## ■ Application

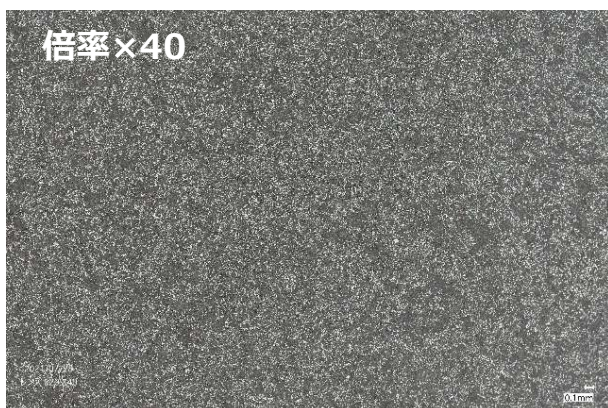
- Parts requiring appearance decoration
- Parts that require adhesion prevention such as solder and paint film
- Parts requiring general corrosion resistance

\* Materials to be plated: Steel (including SUS), Copper and copper alloys, aluminum and aluminum alloys, etc. Ni or electroless Ni-P is applied as a base.

## ■ Main plating coating specifications

Coating composition	Cr: about 60% others: about 40%
Hardness (Hv:)	about 800
Crystal structure	amorphous

## ■ Structure photograph (by metallurgical microscope)



Patent pending

