



ACM-H4 / H5

Overview

- Unprecedented new materials: Aluminum and graphite composite material
- New materials with a balance of properties not found in conventional materials: **high thermal conductivity** comparable to ceramic/aluminum substrates, and **low thermal expansion** comparable to ceramics
- New materials with **high strength and high Young's modulus** have potential for further applications beyond just heat dissipation materials.
- New materials with excellent machinability: Machinable with regular cutting tools.

Features

- High thermal conductivity equivalent to ceramics / Al substrate
- High thermal expansion equivalent to ceramics / Al substrate
- Bending strength : more than twice that of graphite
- Excellent machinability: Machinable with high speed steel and carbide tools
- Physical properties such as heat conduction, thermal expansion, and strength can be designed to suit your needs.



Application

- Alternative to aluminum and copper (Heat spreaders)
- Heat diffusion material for substrates, placed under ceramic substrates to replace AlSiC
- Alternative to graphite, single piece heat dissipation low thermal expansion jig, available for large parts.

Data

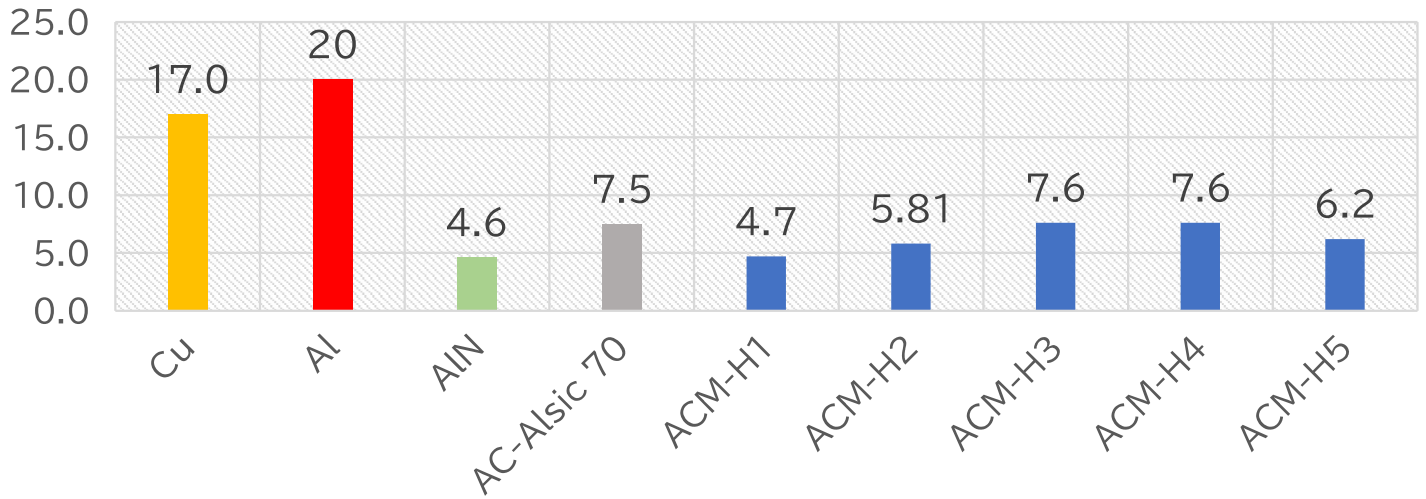
Update: 2023/11/10	当社 高熱伝導 低熱膨張を有する材料 Our material w/ high thermal conductivity and low thermal expansion							一般比較材料 / General material			
Name	ACM-io	ACM-a	NEW ACM-H1	NEW ACM-H2	NEW ACM-H3	NEW ACM-H4	NEW ACM-H5	Cu	Al	グラファイト (CIP)	Alsic
	Isotropic	Anisotropic	Anisotropic	Anisotropic	Anisotropic	Anisotropic	Anisotropic			Isotropic	
Density (g/cm3)	2.10	2.10	2.34	2.56	2.77	2.37	2.39	8.90	2.7	1.80	2.95
Young's modulus (GPa) XYZ	16.0	1.5 / 3.6	27.0 / 34.0	36.0 / 42.0	123.0 / 111.0	39/46	89/89	117	71	10.8	220
Specific stiffness (GPa-g/cm3)	8	1	13	15	42	18	37	13	26	6	75
Bending strength (MPa)	93	34	68	67	151	62	126	-	-	27	425
Thermal expansion coefficient (ppm/K) XYZ	7.0~8.0	6.8 / 7.4	4.7 / 17.1	5.8 / 17.1	7.6 / 8.8	7.6/15.8	6.2/6.8	17.0	20	4.5	8.0
Thermal conductivity (W/m-K) XYZ	164	188 / 361	470 / 106	466 / 159	256 / 217	193/132	170/160	390	220	128	175
Thermal diffusivity (ml/S) XYZ	-	127/ 244	203 / 45	189 / 64	93 / 80	81/56	72/67	112	90	-	-
Specific heat (J/g-K) XYZ	-	0.70	1.09	0.99	0.96	1.11	0.95	0.39	1	0.70	0.70
Machinability	◎	◎	◎	○	△	◎	◎	◎	◎	◎	△
Standard size (mm)	150 x 200 x 250	150 x 200 x 250	400sq x 60t	400sq x 60t	400sq x 60t	400sq x 60t	400sq x 60t	-	-	-	400sq x 40t

※The data in the table are reference values and are not guaranteed values.

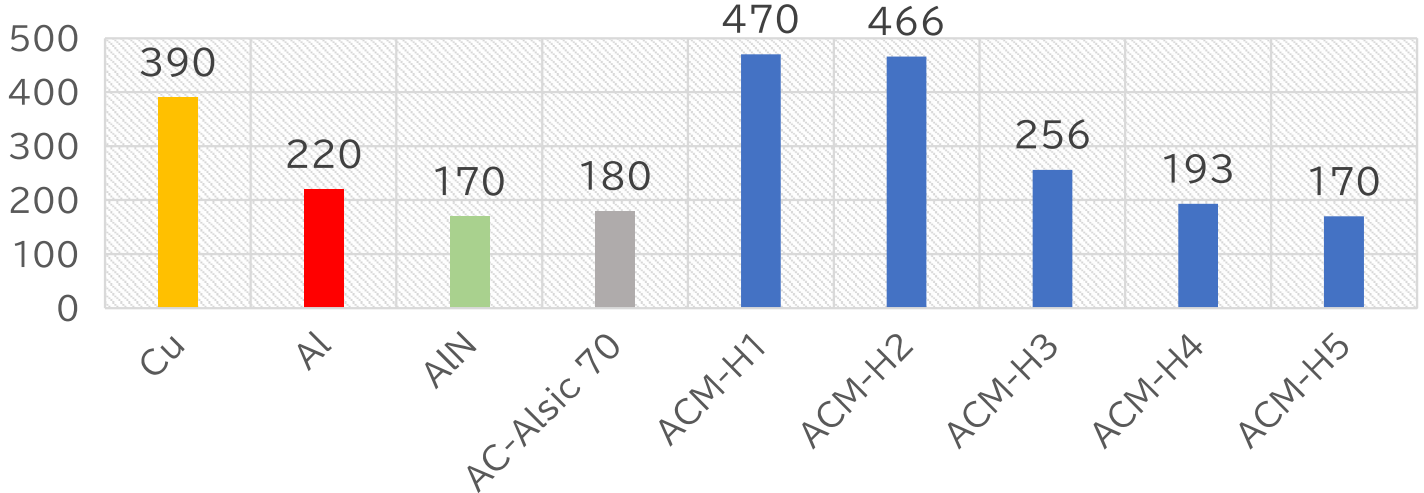


Comparison of thermal properties between ACM-H series and general materials

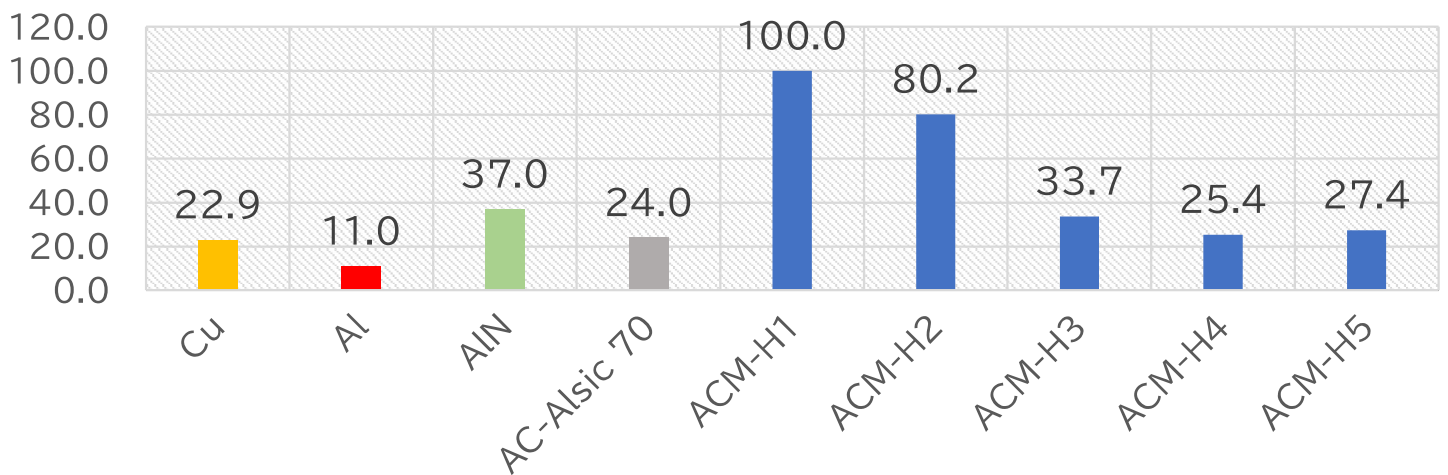
Thermal expansion coefficient



Thermal conductivity



Thermal stability (thermal conduction/thermal expansion)



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