

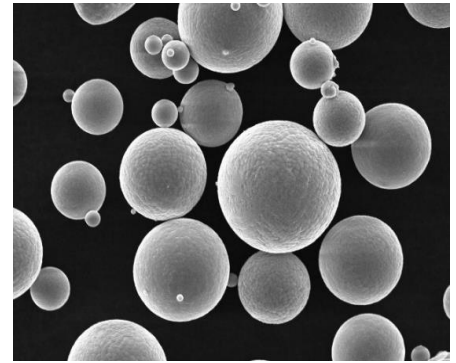
TC series : High Thermal Conductivity

## General Properties

Composition: Al-1.2wt%Fe  
Density: 2.73[g/cm<sup>3</sup>]

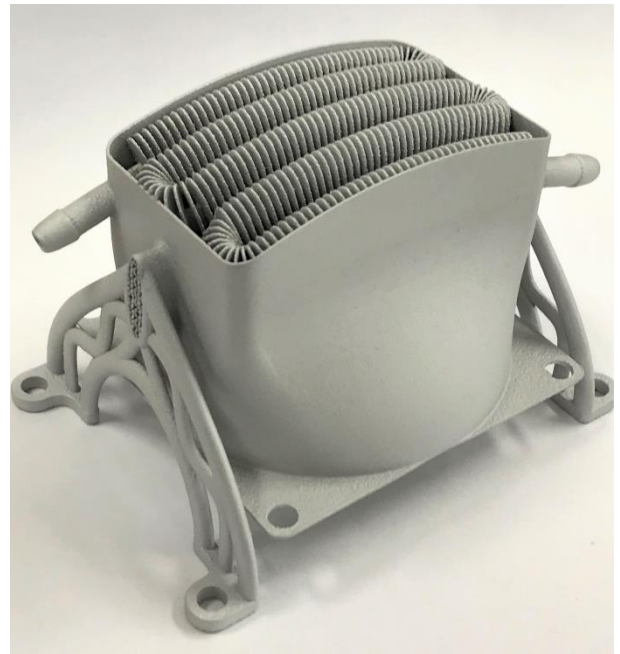
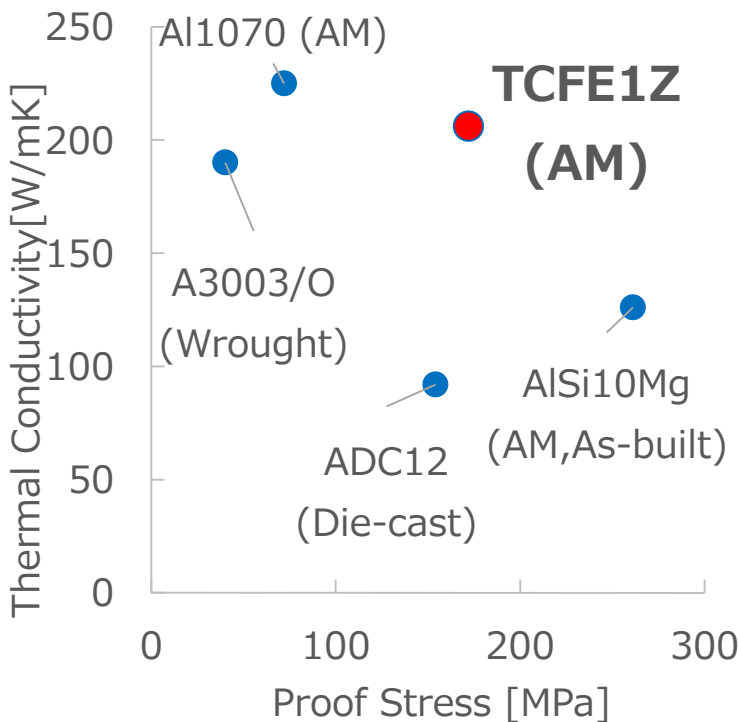
## Toyol Powders Optimized for AM

Ultra-sphericity, No satellites , Low oxygen content, PSD: 20-63μm



50μm

Featuring high thermal conductivity and high corrosion resistance, the Toyol patented alloy TCFE1Z , is designed specifically for the next generation of light weight heat exchangers, thanks to the benefits of unique geometries using 3D printing. Heat exchanger is mostly found in car engines or air conditioners.



※ Manufactured by Azuma Kinzoku Sangyo

※ Collaborative Work with Nippon Light Metal Group

## TCFE1Z Offers Excellent Material Properties

- High thermal conductivity
- The middle level of the proof stress
- Very good corrosion resistance

TCFE1Z, A1070 > Scalmalloy, A3003 > AlSi10Mg > ADC12

※ Results after salt spray test

## Chemical Composition

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
Al-1.2Fe	≤0.20	1.2	≤0.05	≤0.05	≤0.05	≤0.05	≤0.05	≤0.05	Balance

※ indicative Value

## Mechanical and Physical Properties from TCFE1Z

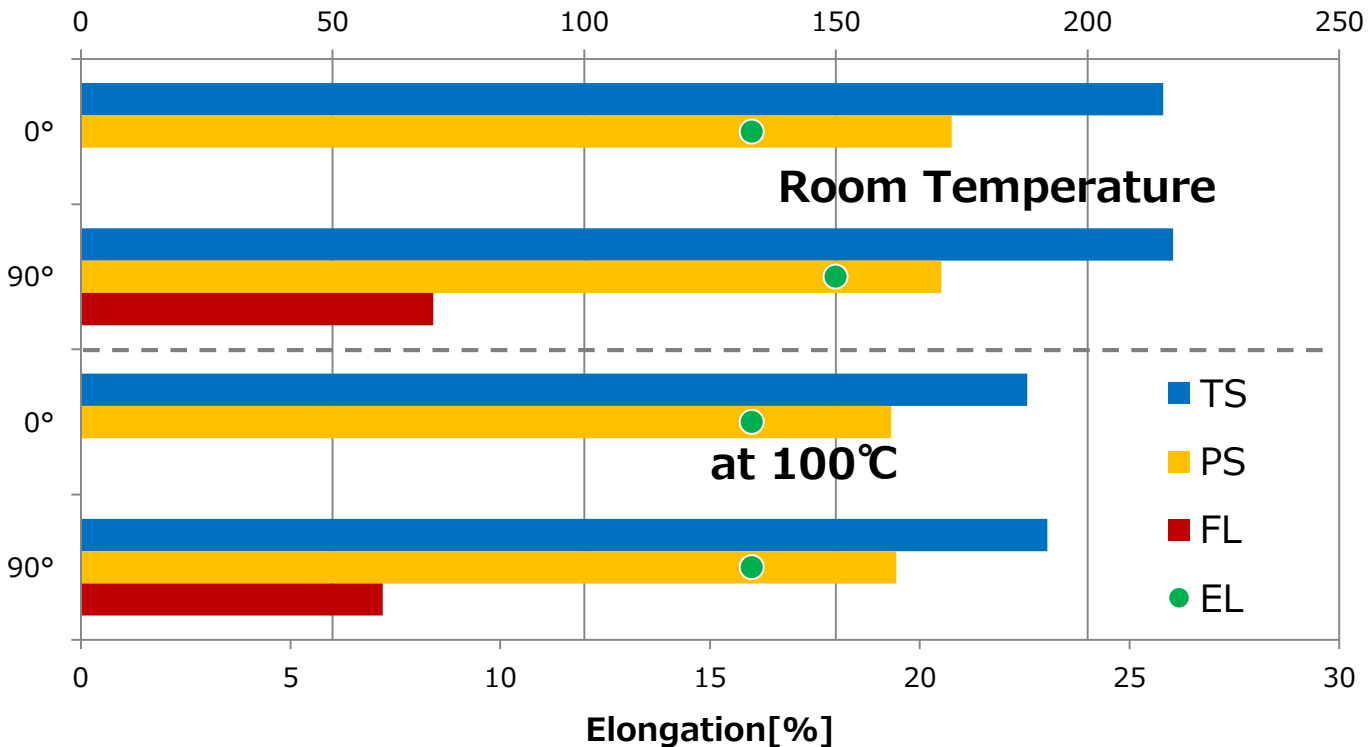
	Unit	As built		350°C-1h	
		0°	90°	0°	90°
Tensile Strength	[MPa]	221	216	215	217
Proof Stress	[MPa]	191	169	173	171
Elongation	[%]	19	20	16	18
Young's Modulus	[GPa]	72	71	70	70
Thermal Conductivity	[W/mK]	172	171	198	205

※ Collaborative Work with Nippon Light Metal Group

## Tensile Test and Rotating Bending Fatigue Test Results

※ Collaborative Work with Nippon Light Metal Group

Tensile strength, 0.2% proof stress, Fatigue limit[MPa]



※ Fatigue test with test frequency of 2500-3500rpm, R = -1, measurement stopped on reaching 10 million cycles without fracture.