T12-102

Tohoku University's Invention

A semi-solid diecast product with its particles' diameter as 2~4μm

A cost down semi-solid die-casting method, applicable to present apparatus

Summary

Compared with semi-solid diecast products, the ones produced by conventional diecast methods not only arise rougher surface, but also trend to fail to fill up the end surface with thickness of 0.1mm. So far, semi-solid diecast method cannot be simply applied to conventional apparatus, and thus increased cost turns to be a problem in industry.

This invention solves such a problem by optimization of proportion of solid phase, sleeve factor, and nucleation temperature for conventional apparatus. Semi-solid slurry can be generated in the sleeves of conventional apparatus, and notably, the thin surface fill-up result shows satisfied roughness and dimensional accuracy. **[Substance]** patent has been issued.

Utilizing the present conventional apparatus!

Inexpensive, quick, simple!

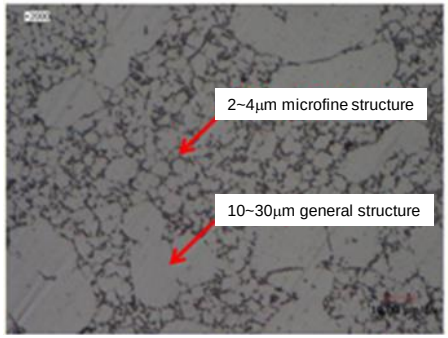
Cup, agitation, etc.	Special apparatus	Maintenance	Cooling rate (°C/sec)	Particle size [general] (μm)	Particle size [microfine] (μm)
Conventional method	necessary ×	necessary ×	0.2~2	30~150	-
Sleeve method	no need √	no need √	20 √	10~30 √	average 4 √

This invention

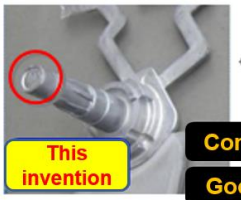
Issued patent [Substance]

An alloy diecast product with microfine spheroidal crystalline particles whose particle sizes are 2~4μm between the primary aluminum primary crystals

Microfine spheroidal structure



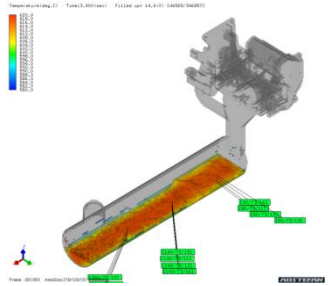
Metallographic observation (magnification: ×2000) 10μm



Simulation applied

Completely filled in the form of a thin disk!

Good quality of surface roughness!



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Application

- Automobile components
- Mobile phone components
- Equipment precision components

Patent Data Sheet

Patent No.(Serial No.): 5825583(JP), 9,038,705(US),
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