AMDAP™ Series – Metal Powders for 3D Printing –

High thermal conductivity Metal Powder AMDAP™ HTC45 for Directed Energy Deposition

The SKD61-based powder adjusted to a composition suitable for additive manufacturing of die-casting molds.
Hardness suitable for die-casting molds can be obtained by just directed energy deposition.

Feature

- AMDAP™ HTC45 has spherical shape, low oxygen content and high flowability produced by gas atomization.
- AMDAP™ HTC45 is cobalt free material, the same as SKD61.
- The hardness suitable for die-casting molds of 45-50HRC can be obtained by directed energy deposition, and no post-heat treatment is required.
- The high thermal conductivity of the overlay portion enhances the cooling effect of the mold.
  In addition, thermal stress can be reduced and heat checking can be effectively suppressed.

Typical Chemical composition, hardness and application

AMDAP™ Series	Equivalent steel grad	Hardness range after laser metal deposition (HRC)	Typical chemical composition (mass%)					Application
			C	Si	Cr	Mo	V	
AMDAP™ HTC45	SKD61 type Die Steel	45～50	0.23	0.1	5	1.2	0.4	Repair of die casting molds

Particle size：-150/+53μm

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Characteristics

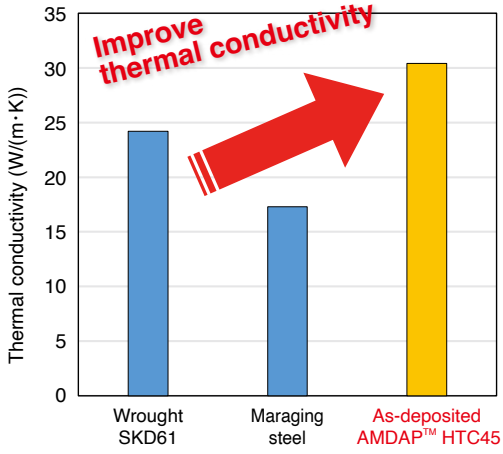


Fig.1 Thermal conductivity at RT

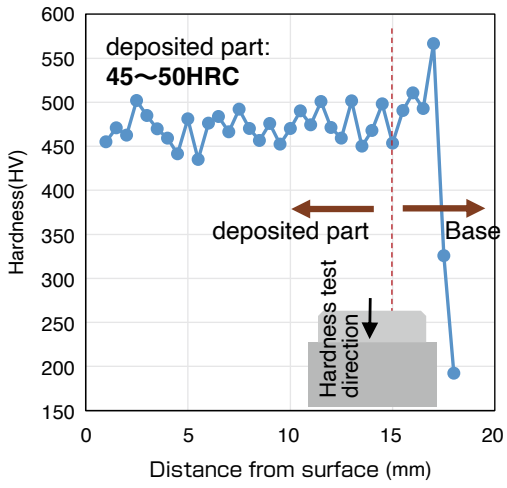
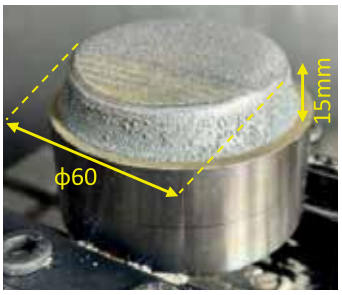


Fig.3 Hardness distribution of deposited sample

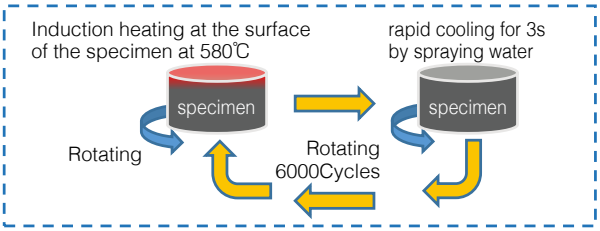


Printer
DMG MORI CO.,LTD
LASERTEC 65 DED hybrid

Base
Annealed SKD61

Welded part
AMDAP™ HTC45

Fig.2 Overview of deposited sample
(3D-printed by FUJI co.,LTD)



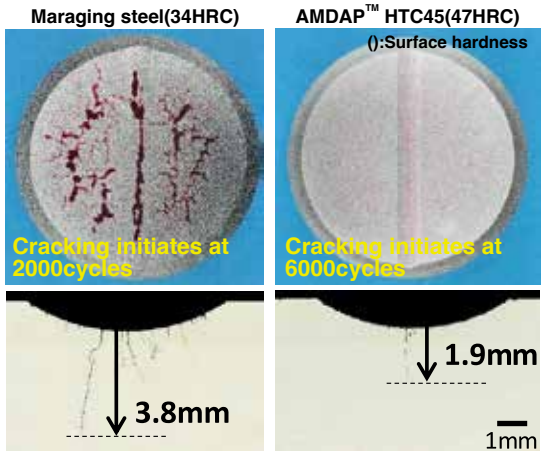


Fig.4 Heat check test results of deposited specimens
(After 6000cycles, notch shape:R=6mm, depth:1mm)

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WC2304 23.0,0(DDD)