Mo Hybrid-Alloyed Steel Powder: JIP AH6020

Alloyed steel powder realizing sintered parts with high rolling contact fatigue strength through reduction of pore size

JFE Steel Corporation
http://www.jfe-steel.co.jp/en/

Mo hybrid-alloyed steel powder JIP AH6020

Realizes high rolling contact fatigue strength without high temperature sintering, contributing to reduced manufacturing costs in parts which require high rolling contact fatigue strength.

Design of the Mo hybrid-alloyed steel

Mo hybrid-alloyed steel powder

An alloyed steel powder in which Mo is diffusion-bonded on the surface of Mo pre-alloyed powder particle.

- Improved compressibility
- Enhanced sinterability

Pore refinement

Mo distribution of Mo hybrid-alloyed steel powder (particle cross section)

Features

1. Improved compressibility: High density through a single compaction.
2. Enhanced sinterability: Realizes a fine-pore sintered structure through sintering in general-purpose mesh belt furnaces with low sintering temperatures (1120-1140°C).
3. High rolling contact fatigue strength: Realizes high rolling contact fatigue strength equal or superior to that of conventional materials produced by high temperature sintering (~1250°C).
4. High productivity: Realizes high productivity by enabling sintering using a general-purpose mesh belt furnace.

Applicable Automobile Parts

Mo pre-alloyed powder
Mo hybrid-alloyed steel powder (AH6020)

Pore distribution in sintered compacts (density: 7.3Mg/m³)

The diagram shows the pore refinement in the sintered compacts, with a focus on the improved compressibility and enhanced sinterability of the Mo hybrid-alloyed steel powder.

The applicable automobile parts include sprockets, which benefit from the improved rolling contact fatigue strength and high productivity of these powders.