



Powder Metallurgy Technique for Production and Utilization of Metal Powders

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Brief Report

Powder metallurgy (PM) is the production and utilization of metal powders. Powders are defined as particles that are usually less than 1000 nm (1 mm) in size. Most of the metal particles used in PM are in the range of 5 to 200 nm (0.2 to 7.9 mils). Powder mixing (pulverisation), die compaction, and sintering are the three essential phases in the powder metallurgy press and sinter process. Compaction is normally done at room temperature, and the elevated-temperature sintering process is usually done at atmospheric pressure and with a carefully controlled atmosphere composition. Secondary processing, such as coining or heat treatment, is frequently used to obtain unique features or increased precision.

Powders have a high surface area to volume ratio, which is exploited in the use of metal powders as catalysts or in different chemical and metallurgical reactions. While this article focuses on the use of powders to create functional engineering components, many metal powders