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Consolidation of Carbonyl Nickel Powders by Hot Pressing

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Abstract : In the current study, carbonyl nickel powders were sintered by uniaxial hot pressing technique. Loose starting powders were poured directly into a graphite die with a 15.4 mm inner diameter. Two graphite punches with an outer diameter of 15 mm were inserted into the die; then the powders were sintered at different sintering temperatures, holding times and pressure conditions. The sintered samples were polished and examined by optical microscopy. Hardness and bending behavior of the sintered samples were investigated in order to determine the mechanical properties of the sintered nickel samples. To carried out the friction properties of the produced samples wear tests were studied using a pin on disc tribometer. Load and distance were selected as wear test parameters. The fracture surface of the samples after bending test was also carried out by using scanning electron microscopy.

Keywords : nickel powder, sintering, hot press, mechanical properties
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