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Effects of sintering time and temperature to the characteristics of FeCrAl powder compacts formed at elevated temperature (Conference Paper) [\(Open Access\)](#)

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Abstract

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This paper presents the outcomes of an experimental investigation on the effect of sintering schedule, i.e., holding time and temperature to the final properties of FeCrAl powder compacts prepared through uniaxial die compaction process at above room temperature. The feedstock was prepared by mechanically mixing iron powder ASC 100.29 with chromium (22 wt%) and aluminium (11 wt%) for 30 min at room temperature. A cylindrical shape die was filled with the powder mass and heated for one hour for uniform heating of the die assembly together with the powder mass. Once the temperature reached to the setup temperature, i.e., 150°C, the powder mass was formed by applying an axial pressure of 425 MPa simultaneously from upward and downward directions. The as-pressed green compacts were then cooled to room temperature and subsequently sintered in argon gas fired furnace at a rate of 5°C/min for three different holding times, i.e., 30, 60, and 90 min at three different sintering temperatures, i.e., 800, 900, and 1000°C. The sintered samples were characterized for their density, electrical resistivity, bending strength, and microstructure. The results revealed that the sample sintered at 1000°C for 90 min achieved the better characteristics. © Published under licence by IOP Publishing Ltd.

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