

Effect of notching face on fracture toughness of green metal powder compacts

ABSTRACT

Objective: To predict the failure of a powder compacted component, it is important to understand how its physical and mechanical properties varies in its green state. The variation of fracture toughness of iron and copper powder compact with compaction pressures, along the longitudinal axes of their green compacts is presented in this paper. **Methodology/Technique:** Mode I fracture toughness, K_{IC}, was determined for specimens compacted uniaxially, using the diametrical compression technique by comparing the effect of notching a specimen on its top surface against notching it on the bottom. **Findings:** Results showed that specimens notched on the top surface had higher K_{IC} values for both powders at all compaction pressures. The pair of K_{IC} values was more stable for the copper compacts than for iron compacts.

Keyword: Green compacts; Uniaxial compaction; Diametrical compression technique; Fracture toughness