

Supercritical CO₂ Debinding in Ceramic Injection Molding

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The conventional Particle injection molding (PIM) is required to extract paraffin wax. Therefore, in extraction from PIM parts, it is important to reduce paraffin wax and to keep original shape of PIM. For this reason, recently, supercritical fluids extraction (SFE) using is used actively to debind successful PIM parts. For extraction paraffin wax of PIM, the data such as temperature, time and pressure of supercritical fluid + PIM is requisite, and these are obtained by measuring weight of reduced paraffin wax. In this work, ceramic injection molding (CIM) was selected as a material for extraction, and CO₂ was used as a solvent. The extraction rates of CIM in CO₂ were measured at various temperatures and pressures. Paraffin wax is extractible in CO₂, and the extraction rate and speed of CIM increased proportionally at the temperature and pressure increase. According to this result, it was known that the extraction rate and speed of CIM could be controlled by changing the temperature and pressure.