

### The stainless steel fiber recycle from grinding swarf by using supercritical fluids

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Supercritical fluids extraction has gained widely acceptance as the method for removal. It has many advantages of low waste production, rapid extraction, and enhanced extraction efficiency for waste removal. The recovery of stainless steel fiber by removing cutting oil from grinding swarf, which is classified as specified wastes, was investigated. The experiments for removing cutting oil from swarf were performed with supercritical CO<sub>2</sub> at 30–50°C and 10–30MPa, as well as sub- and supercritical propane at 80–110°C and 5–20MPa. In addition, the characteristics of stainless steel fiber from swarf treated with sub- and supercritical fluids were compared with those treated vacuum thermal extraction. The extraction efficiency of cutting oil using supercritical propane was several times higher than that of supercritical CO<sub>2</sub>. By using supercritical fluids as a solvent, we could not only remove cutting oil from raw swarf effectively, but also preserve the stainless steel fiber's own characteristics.