

Recycling of Carbon Particle from Phenol Resin using Supercritical Fluid

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This study aims to investigate how to recycle phenol resin, which is widely used to make insulation boards or adhesives, as carbon particles by using supercritical fluid. Since phenol resin is insoluble and infusible, it is mostly buried in the ground or incinerated as a waste, further causing environmental pollution. Therefore, it is urgent to develop a new method of recycling phenol resin. In this study, phenol resin was processed in a supercritical state through various kinds of solvents, such as ethanol, acetone, water and methanol. As a result, carbon particles could be manufactured at a lower temperature than those of the existing carbon particle manufacture methods. By examining changes in the size and physical properties of carbon particles depending on reaction solvent, this study could find a new method of recycling phenol resin as carbon particles that have the same chemical structure and amorphous structure under all the different conditions.