

ABSTRACT

Provided is a method of recovering valuable materials that is a method of recovering lithium carbonate from a lithium-ion secondary battery, where the lithium carbonate has a boron content of less than 1 ppm and a calcium content of 100 ppm or less. The method includes a heat treatment step of performing a heat treatment on the lithium-ion secondary battery at a temperature of 660°C or higher to obtain a heat-treated product, a crushing and classification step of crushing the heat-treated product to obtain a crushed product and classifying the crushed product into a coarse-particle product and a fine-particle product, both including the valuable materials, a slurry formation step of immersing the fine-particle product in water to form fine-particle product slurry, a wet magnetic separation step of performing wet magnetic separation on the fine-particle product slurry to separate the fine-particle product slurry into a magnetic material and a non-magnetic material slurry, an acid leaching step of adding sulfuric acid to the non-magnetic material slurry, or a non-magnetic material obtained by performing solid-liquid separation on the non-magnetic material slurry, or both the non-magnetic material slurry and the non-magnetic material to adjust pH to 0 or greater and 3.5 or less to leach the non-magnetic material, followed by performing solid-liquid separation to obtain an acid leachate and an acid leach residue, a neutralization step of neutralizing the acid leachate with calcium hydroxide, a neutralized cake solid-liquid separation step of performing solid-liquid separation on a

liquid obtained at the neutralization step, a calcium carbonate crystallization step of adding CO₂ to a liquid obtained at the neutralized cake solid-liquid separation step, a calcium carbonate solid-liquid separation step of performing solid-liquid separation on a liquid obtained at the calcium carbonate crystallization step, and a calcium adsorption and removal step of adsorbing and removing calcium with a chelating resin after the calcium carbonate solid-liquid separation step.

10 [FIG. 1]