

Abstract

In a water treatment method using an ion exchange resin and a reverse osmosis membrane, even when SO_4^{2-} and CO_3^{2-} are contained in water to be treated, the regeneration of the ion exchange resin is performed in a simpler manner and at lower costs. Provided are a water treatment method including a softening step of softening, by using an ion exchange resin, water to be treated containing SO_4^{2-} and/or CO_3^{2-} , a hardness component, Na^+ , and Cl^- ; a nanofiltration step of separating, by using a nanofiltration membrane, the water softened in the softening step into permeate water and a concentrated liquid from the nanofiltration membrane; a reverse osmosis step of separating, by using a reverse osmosis membrane, the permeate water from the nanofiltration membrane into permeate water and concentrated water from the reverse osmosis membrane; and an ion exchange resin regeneration step of regenerating the ion exchange resin by using the concentrated water from the reverse osmosis membrane; a water treatment apparatus suitable for performing this method; and a method for regenerating an ion exchange resin, including the softening step, the nanofiltration step, the reverse osmosis step, and a step of regenerating an ion exchange resin using the concentrated water from the reverse osmosis membrane.