Compatibility of a post-industrial ceramic with nitrate molten salts for use as filler material in a thermocline storage system

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This paper demonstrates the potential of a post-industrial ceramic commercially called Cofalit as a promising, sustainable, and cheap filler material in a molten salt direct thermocline storage system. This ceramic, which comes from industrial treatment of asbestos containing waste, demonstrates relevant properties to store thermal energy by sensible heat up to 1100 °C and is very inexpensive. In the present study, the compatibility of this ceramic with two different molten salts—the conventional binary Solar salt and a promising ternary nitrate salt also called HITEC XL—is tested at medium temperature (500 °C) under static state. The objective is to develop a molten salt thermocline direct storage system using low-cost shaped ceramic as filler material. It should significantly decrease the cost of parabolic trough storage systems and simultaneously increase the efficiency of the plants by producing superheated steam at higher temperature.

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