

Title (en)
ARTICLES AND DEVICES FOR THERMAL ENERGY STORAGE AND METHODS THEREOF

Title (de)
ARTIKEL UND VORRICHTUNGEN FÜR WÄRMEENERGIESPEICHERUNG UND VERFAHREN DAFÜR

Title (fr)
ARTICLES ET DISPOSITIFS POUR LE STOCKAGE DE L'ÉNERGIE THERMIQUE ET PROCÉDÉS ASSOCIÉS

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Application
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Abstract (en)
[origin: US2012037148A1] The present invention relates to articles and heat storage devices for storage of thermal energy. The articles include a metal base sheet and a metal cover sheet, wherein the metal base sheet and the metal cover sheet are sealingly joined to form one or more sealed spaces. The articles include a thermal energy storage material that is contained within the sealed spaces. The sealed spaces preferably are substantially free of water or includes liquid water at a concentration of about 1 percent by volume or less at a temperature of about 25° C., based on the total volume of the sealed spaces. The articles include one or more of the following features: a) the pressure in a sealed space is about 700 Torr or less, when the temperature of the thermal energy storage material is about 25° C.; b) the metal cover sheet includes one or more stiffening features, wherein the stiffening features include indents into the sealed space, protrusions out of the sealed space, or both, that are sufficient in size and number to reduce the maximum von Mises stress in the cover sheet during thermal cycling; c) the metal cover sheet and/or the metal base sheet includes one or more volume expansion features; or d) the metal cover sheet has a thickness, tc, and the metal base sheet has a thickness, tb, wherein tc is greater than tb; so that the article is durable. For example, the article does not leak after thermal cycling between about 25° C. and about 240° C., for 1,000 cycles.

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