Octadecanoic acid solar container material

Can PVC be used with octadecanol & decanoic acid?
The chemical-resistant Type I PVC is compatible with octadecanol and octadecanoic acid,but not with decanoic acid. Caution is recommended when using Type I PVC with the other fatty acid PCMs. Likewise,cast acrylic is not recommended for use with decanoic and dodecanoic acids.

Are solid-liquid composite phase change materials based on octadecanoic acid?
Hence, this research proposes a solid-liquid composite phase change materials (CPCMs) based on octadecanoic acid (C18-acid), octadecanol (C18-OH) and expanded graphite (EG). The CPCMs structural and thermal properties were analyzed using the spectroscopy and calorimetry techniques.

What is octadecanoic acid (c18-acid)?
Octadecanoic acid (C18-acid) is a kind of excellent PCM with higher latent heat and lower cost for thermal energy storage,and compounding with alcohol-based PCM to prepare a binary eutectic with appropriate thermal storage temperature will be ideal choice for energy storage or PCM based cooling devices.

Does dodecanoic acid have thermal properties?
We conducted a literature research on dodecanoic acid and other fatty acids ,,,,,,and found that there are different reports on its thermal properties,such as heat capacity,phase transition temperature and enthalpy,and thermal conductivity.

Is hexadecanoic acid a reliable PCM for thermal energy storage?
Long-term cycling results showed that all six PCMs examined are thermally stable over 3000 melt-freeze cycles. Even for a lower-purity sample of hexadecanoic acid,there were no noticeable changes for Tmpt and ? fusH. Therefore,these are reliable PCMsfor thermal energy storage applications.

Is dodecanoic acid a promising phase-change material for thermal energy storage?
Dodecanoic acid as a promising phase-change material for thermal energy storageThermal reliability test of some fatty acids as PCMs used for solar thermal latent heat storage applications Energy Convers. Manag.,44 (2003),pp. 2277 - 2287

Spent coffee grounds (SCGs) are waste residues arising from the process of coffee brewing and are usually sent to landfills, causing environmental concerns. SCGs contain a ...

Fatty acids are also bio-based phase change materials and can be used as building phase change materials, making them the focus of current research. However, there are differences ...

Phase diagram is a powerful tool to guide the exploitation of thermal energy materials. Heat storage

technology of phase-change material (PCM) was widely used to solve major energy utilization ...

Furthermore, octadecanoic acid 1, 4-butanediol ester was selected to be encapsulated with silica as shell for application in the thermal protection of electronic devices. Currently, silica as ...

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Li, Stearic Acid/Copper foam as composite phase change materials for thermal energy storage, J. Therm. Sci., No 29, ?. 492 DOI: 10.1007/s11630-020-1272-8 Gu, Enhanced thermal conductivity of ...

Abstract Octadecanoic acid (OA) is well-known as an excellent phase change material (PCM) for heat storage due to its high energy density and narrow phase change temperature. In the practical ...

Hence, this research proposes a solid-liquid composite phase change materials (CPCMs) based on octadecanoic acid (C18-acid), octadecanol (C18-OH) and expanded graphite ...

In solar drying technology, selecting an appropriate phase change material (PCM) and aligning it with suitable weather conditions is essential for drying various crops, each requiring specific temperatures ...

In this study, we systematically studied the thermodynamic properties of six fatty acids, including octanoic acid (FA8), decanoic acid (FA10), dodecanoic acid (FA12), tetradecanoic acid ...

Biochar-based composite phase change materials (PCMs) are gaining popularity in thermal energy storage (TES) applications. Organic PCMs derived from fatty acids are favored for ...

A solar thermal water heating system using a custom-built latent heat storage tank with paraffin wax, puretemp68 and stearic acid/palmitic acid eutectic mixture based phase-change ...

Abstract Organic phase change materials (PCMs) have many properties that make them desirable for integration in latent-heat solar thermal energy storage (TES) systems operating in the ...

Hence, this research proposes a solid-liquid composite phase change materials (CPCMs) based on octadecanoic acid (C18-acid), octadecanol (C18-OH) and expanded graphite (EG). The CPCMs ...