

TECHNICAL DATA SHEET - savE® HS21

savE® Phase Change Materials (PCM) are organic or inorganic chemical compounds that have large amount of heat energy stored in the form of Latent Heat which is absorbed or released when the materials change state from solid to liquid or liquid to solid. The PCM retains its latent heat without any change in physical or chemical properties over thousands of cycles. Various specific temperature savE® PCM's are commercially available (-33⁰C to +89⁰C) depending upon the applications.

Applications

PCM provides energy efficient solutions for many industries including:

- Insulation for Building and Piping Products
- Biopharmaceutical Transportation
- Telecommunications and Heat Sinks
- Hot and Cold Storage
- Food / Poultry / Milk Products Transportation
- Boiler and Hot Water Systems Industry looking to exploit Off-Peak Electricity Tariffs / Reducing Chilling Equipment Costs by Storing Energy at Off-Peak Hours

However there is no limit as to who can apply PCM technology to their operation, to improve thermal management, cost and energy efficiencies.

PLUSS® Encapsulation

Pluss® pioneered the use of HDPE panels as encapsulation for PCMs in India. Our calculations for total heat transfer across thin membranes show that HDPE/ PP is as good as aluminum, stainless steel, etc. Pluss® encapsulations are thin enough to give good overall heat transfer coefficient with good mechanical strength.

savE® HS21

savE® HS21 is an inorganic chemical based PCM having melting temperature of 21⁰C. It stores thermal energy as latent heat in its crystalline form. On changing phase this latent heat is released or absorbed, allowing the ambient temperature within the system to be maintained

savE® HS21 is constituted of the right mix of various salts, additives and nucleating agents allowing equilibrium between solid and liquid phases to be attained at the melting point. The savE® HS 21 is free flowing in molten state and can be encapsulated in various forms .

Why *savE*[®] HS21?

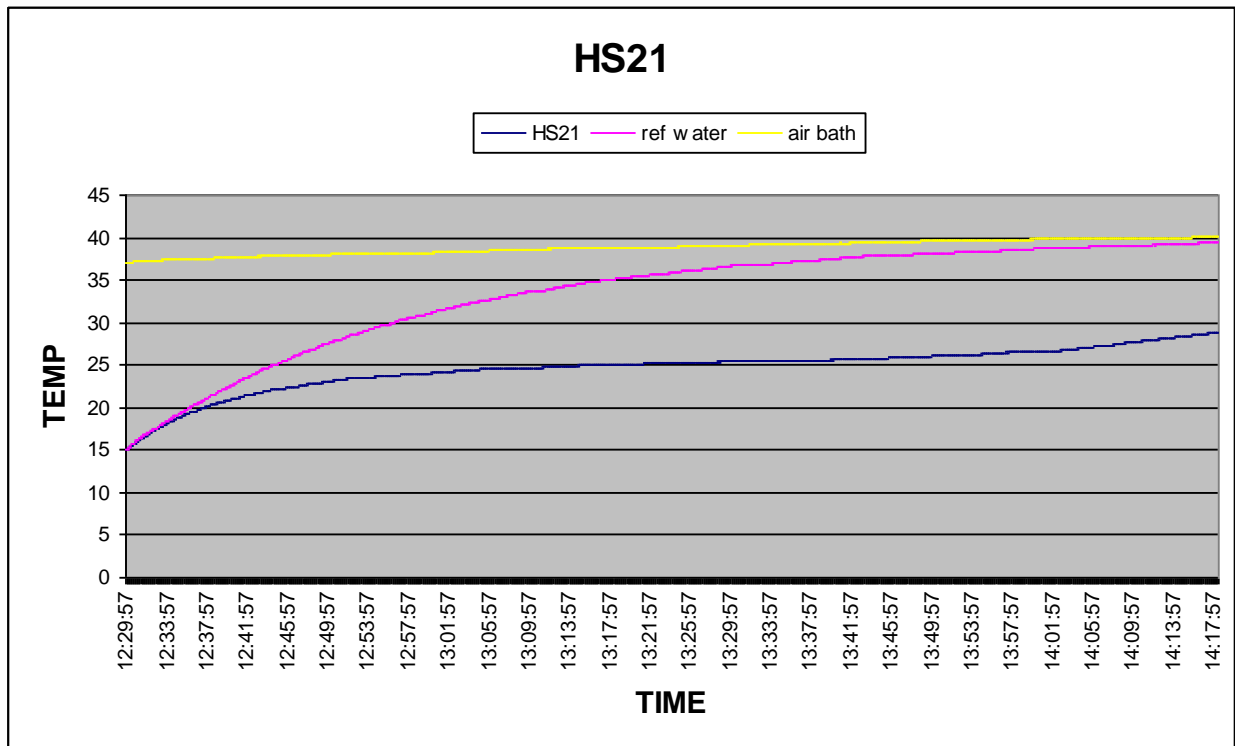
savE[®] HS21 has a phase change temperature of 21⁰C, a temperature that makes it ideal for many heating/cooling thermal energy applications. Some of its salient features include:

- HS21 is chemically and thermally stable by using Plus[®] proprietary additives.
- This is mixture of inorganic salts.

Technical Specification:

Product : *savE*TM
 Series : HS21
 Description : Mixture of inorganic materials
 Appearance : White Colour

T-History Test



A 20g sample is taken in a test tube in molten condition and placed in a temperature controlled bath. A temperature sensor is placed in the test tube and bath to record the temperatures using a datalogger. The bath is maintained at around 36 °C during the melting cycle.

Property	Value	Test Method	Test Conditions (if any)
Melting Temp. (°C)	22-24	T - History	36 °C Bath
Freezing Temp. (°C)	16-18	T - History	7 °C Bath
Liquid specific gravity	1.400 – 1.450	pycnometer	40 °C
Latent Heat (kJ/kg)	190	T- History	7° to 36°C
Specific Heat-Liquid (kJ/kg.K)	0.850	Calorimetry	36 °C
Base Material	inorganic Chemical		-
Congruent Melting	Yes		-
Sub Cooling	Low	T-History	-
Thermal Stability (cycles)	Under test	PLUSS® Internal	
Max.Operating Temp. (°C)	36		

Pluss Polymers Pvt. Ltd.

610-A, Udyog Vihar, Phase V, Gurgaon – 122016, INDIA Tel: 91-124-4309490 / 91 / 92. Fax: +91.124.4309493

Email: info@pluss.co.in Website: www.thermalenergystorage.in, www.pluss.co.in

The information given here is meant as a guide to determining suitability of our products for the stated applications. The products are intended for use in industrial applications. The users should test the materials before use and satisfy themselves with regard to contents and suitability in the desired application. We guarantee that our products will meet our written specifications. Nothing herein shall constitute any other warranty expressed or implied. Recommendation herein may not be construed as freedom to infringe/operate under any third party patents. In the event of a proven claim, our liability is limited only to replacement of our material and in no case shall we be liable for special, incidental or consequential damages arising out of usage of our material. This datasheet is subject to change without prior notice.

