

## **TECHNICAL DATA SHEET – savE® OM 46**

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 (-33<sup>0</sup>C to +89<sup>0</sup>C) 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® - OM 46**

savE® - OM 46 is an organic chemical based PCM having melting temp. of 46<sup>0</sup> C. 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® - OM 46 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® OM 46 is free flowing in molten state and can be encapsulated in various forms .

### Why *savE<sup>®</sup>* OM 46?

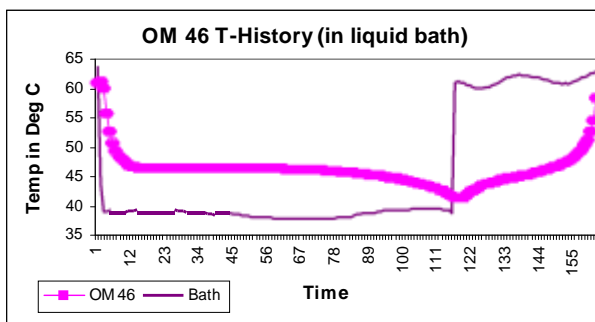
The phase change temperature of *savE<sup>®</sup>* - OM 46 is 46°C, a temperature that makes it ideal for several heating/cooling thermal energy applications. Some of its salient features include:

- The salt is chemically and thermally stable by using PLUS<sup>®</sup> proprietary additives
- Mixture of organic materials

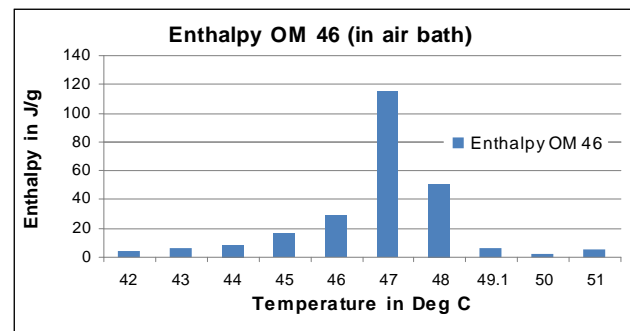
### Technical Specification:

Product	: <i>savE<sup>®</sup></i>
Series	: OM 46
Description	: Mixture of Organic materials
Appearance	: White waxy Solid (below 46 <sup>0</sup> C)

### T-History Test



T-History graph *savE<sup>®</sup>* OM 46



Temp Vs Enthalpy data for *savE<sup>®</sup>* OM 46

A 30g 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 (liquid bath) is maintained at around 38°C during the melting cycle.

C during the freezing cycle and at around 57 °C (air bath) during

Property	Value*	Test Method	Test Conditions (if any)
Freezing Temp. (°C)	46	PLUSS® T - History	@ 38 °C (liquid bath)
Melting Temp. (°C)	47	PLUSS® T - History	@ 57 °C (air bath)
Latent Heat (kJ/kg)	245	PLUSS® T - History	From 41 to 51°C
Liquid Density (kg/m <sup>3</sup> )	880	ASTM D891-95	@ 56°C
Solid Density (kg/m <sup>3</sup> )	930	PLUSS® Internal	@ 30°C
Liquid Specific Heat (J/g.K)	2.5 to 2.6	Theoretical Value**	--
Solid Specific Heat (J/g.K)	1.6 to 1.7	Theoretical Value**	--
Thermal Conductivity (W/m.K)	N.A.	--	For Liquid
Thermal Conductivity (W/m.K)	N.A.	--	For Solid
Base Material	Organic	-	-
Congruent Melting	Yes	-	-
Flammability	Combustible at high temperature	-	-
Thermal Stability (cycles)	Under test	PLUSS® Internal	-
Max.Operating Temp. (°C)	~80	-	-

\*- Nominal Values. Actual values lie in a range. Consult test certificate for details.

\*\* - Calculated from literature value

### Pluss Polymers Pvt. Ltd.

610 A, Udyog Vihar, Phase V, Gurgaon -122016 Haryana (India)

Tel: +91 124 4309490 / 91 / 92, Fax: +91 124 4309493

Email: info@pluss.co.in, Website: www.pluss.co.in, www.thermalenergystorage.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. Contents of this datasheet are subject to change without prior notice.

