IP 13

TECHNICAL DATASHEET

PRODUCT DESCRIPTION

Phase Change Materials (PCM) are organic or inorganic chemical compound that store large amount of thermal energy as Latent Heat which is absorbed or released when the materials change state from solid to liquid or liquid to solid. The latent energy during the phase change can be used to store the energy obtained from a source and can be released later when needed. A Phase Change Material retains its latent heat without any change in physical or chemical properties for over thousands of thermal cycles of freezing and melting.

With high energy storage density, Phase Change Materials can be packaged in HDPE or LDPE bottles or pouches, metallic encapsulations and used after conditioning them for the required action of absorbing or releasing energy.

PCM IP13

The PCM IP13 is a positive inorganic phase change material useful for applications involving low temperature requirements. The properties of IP13 make it suitable to be used for applications involving medicine, vaccines, food, vegetables and bio-medical transport applications, etc. PCM IP13 is used for shipper boxes for controlled temperature transport providing suitable temperature range for long hours in tough ambient conditions.

KEY FEATURES

- High heat storage capacity
- Consistent performance over repeated thermal cycles
- Non-toxic and biodegradable

TYPICAL APPLICATIONS

Medicine and Vaccine transport

Frozen Food transport

IP13				
Sr. No.	**THERMOPHYSICAL PROPERTY**	**NOMINAL VALUE**	**UNIT**	**TEST METHOD**
1	TEMPERATURE RANGE			
	MELTING	(6) to (17)	°C	T-History Method
	FREEZING	(2) to (8)	°C	T-History Method
2	LATENT HEAT			
	MELTING	204* 186 (7) to (15)	kJ/kg	T-History Method
	FREEZING	140*	kJ/kg	T-History Method
3	SPECIFIC HEAT			
	LIQUID	5.27	kJ/kg-K	T-History Method
	SOLID	4.00	kJ/kg-K	T-History Method
4	DENSITY			
	LIQUID	1400-1500	kg/m^3	ASTM D891-95
	SOLID	1230-1270	kg/m^3	ASTM D792-08
MAX OPERATING TEMPERATURE 60°C				

** The Latent enthalpy values are corresponding to the temperature range shown in Sr. No. 1*
*** The above values are nominal values based on calculation methods formulated in-house. Actual property values for the produced batch shall be provided with the certificate of Analysis. The properties in PCM batches are acknowledged to be within ±2% of the nominal values presented above.*

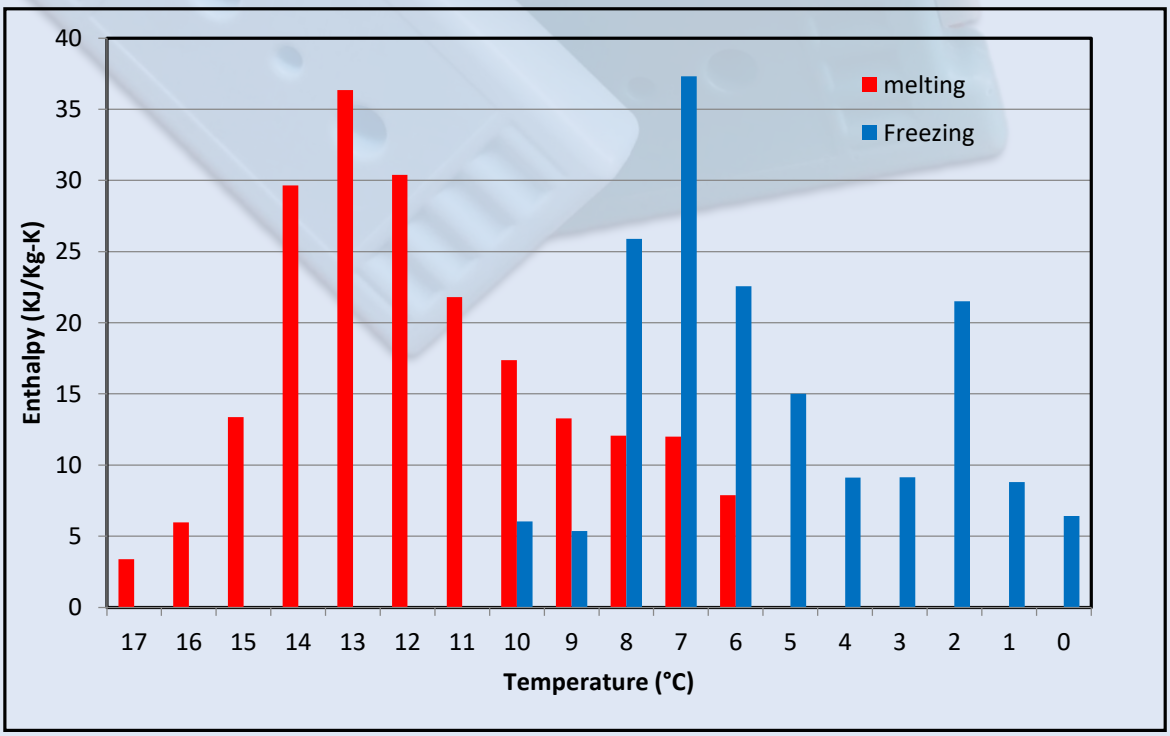

Figure 1: Enthalpy of IP13 against temperature

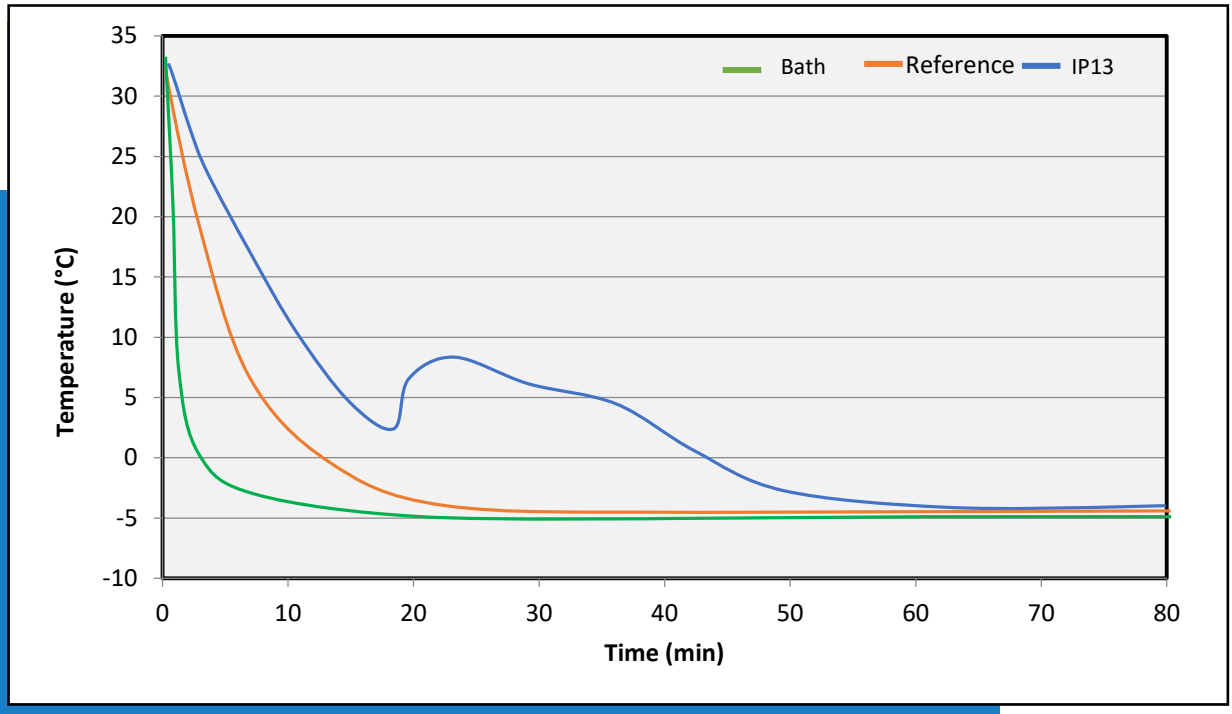

Figure 2: Freezing Curve of IP13

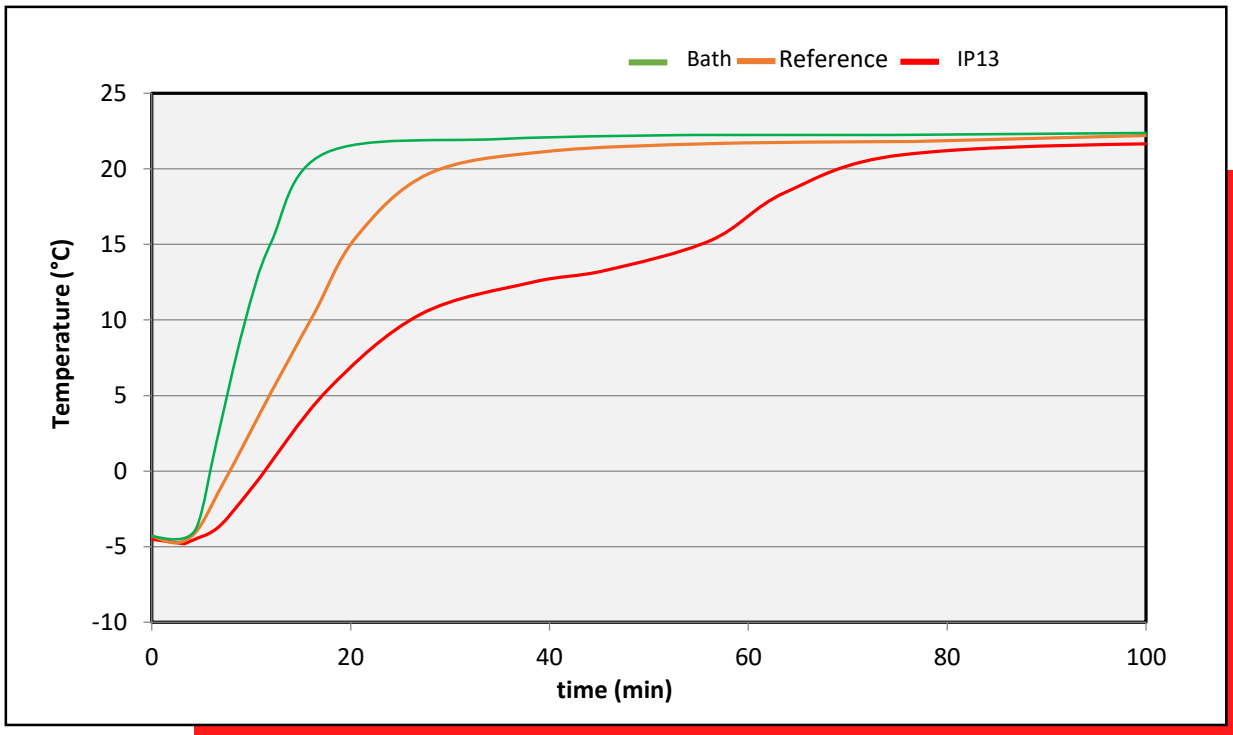

Figure 3: Melting Curve of IP13

ENCAPSULATIONS

The PCM IP13 can be encapsulated into HDPE bottles, LDPE pouches, HDPE drums or metallic encapsulations which are leak-proof and comply to food grade standards.

Sr. No.	Size (mm)	Vol (mL)	Qty per bottle (gm)	Colour
1	160 x 110 x 30	400	500	Yellow, White

**Other colour and sizes can be made available on demand*

Sr. No.	Capacity (kg)	Colour
1	20	Blue
2	50	Blue
3	250	Blue

**Other colour and sizes can be made available on demand*

Sr. No.	Size (mm)	Qty (gms)	No. of cells	Colour
1	610 x 157	1960	4-celled	White
2	495 x 157	1470	3-celled	White
3	457 x 157	1260	3-celled	White

**Other colour and sizes can be made available on demand with or without multi-cell pouches*

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