

TECHNICAL DATASHEET

PRODUCT DESCRIPTION

Our Organic Phase Change Material (PCM) is a high-performance thermal energy storage solution formulated from bio-based fatty acids, designed to maintain temperature stability within the 20°C to 24°C range. This PCM is ideal for applications requiring precise ambient temperature control and energy efficiency.

PCM OP23

The PCM OP 23 is a positive temperature organic phase change material, designed for applications requiring temperature regulation around and slightly above room temperature. It is particularly suitable for use in **building energy efficiency systems**, HVAC applications, passive thermal storage, and **electronics cooling**, where maintaining a stable thermal environment is critical.

PCMs with phase transition temperatures in the range of 20–24°C are ideal for thermal energy storage and temperature buffering in indoor environments. They help reduce temperature fluctuations, improve occupant comfort, and enhance overall energy efficiency by lowering peak cooling loads and optimizing system performance.

Derived from organic, bio-based materials, PCM OP 23 offers reliable thermal cycling, chemical stability, and long service life, making it a sustainable and effective solution for modern thermal management applications.

KEY FEATURES

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

TYPICAL APPLICATIONS

- Cold Chain & Temperature-Controlled Packaging (pharmaceuticals, biologics, food)
- HVAC Systems & Building Energy Efficiency (thermal buffering, passive cooling)
- Cold Storage & Refrigeration Backup
- Textiles & Wearables (thermal comfort)
- Electronics Cooling
- Green Buildings & Passive Temperature Regulation



Building energy consumption



Data Centre



Electronics Cooling

OP23				
Sr. No.	THERMOPHYSICAL PROPERTY	NOMINAL VALUE	UNIT	TEST METHOD
TEMPERATURE RANGE				
1	MELTING	18.0 to 27.0	°C	T-History Method
	FREEZING	18.0 to 27.0	°C	T-History Method
LATENT HEAT*				
2	MELTING	248.84*	kJ/kg	T-History Method
		224		
	FREEZING	19.0 to 25.0	kJ/kg	T-History Method
SPECIFIC HEAT				
3	LIQUID	2.4	kJ/kg-K	T-History Method
	SOLID	2.9	kJ/kg-K	T-History Method
DENSITY				
4	LIQUID	850 – 950	kg/m ³	ASTM D891-95
	SOLID	950 - 1050	kg/m ³	ASTM D792-08
MAX OPERATING TEMPERATURE 90°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 $\pm 2\%$ of the nominal values presented above.

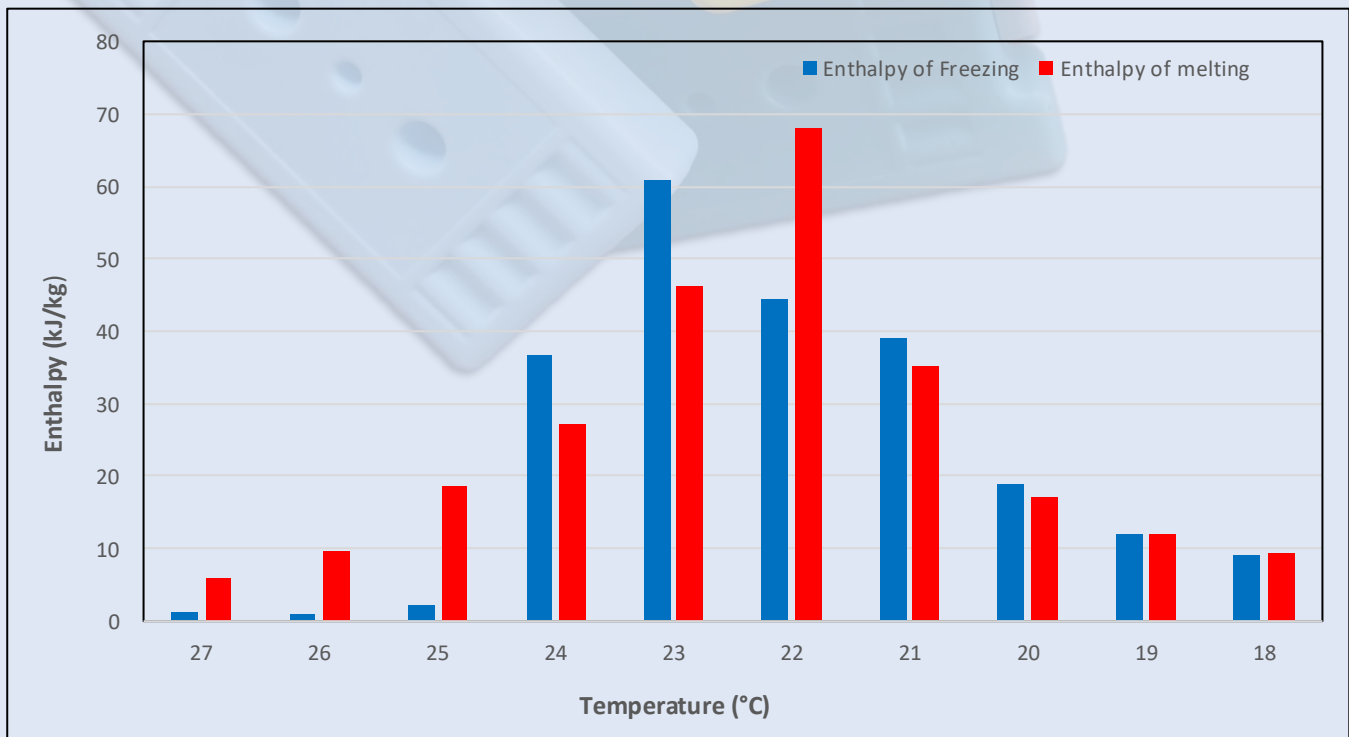


Figure 1: Enthalpy of OP23 against temperature

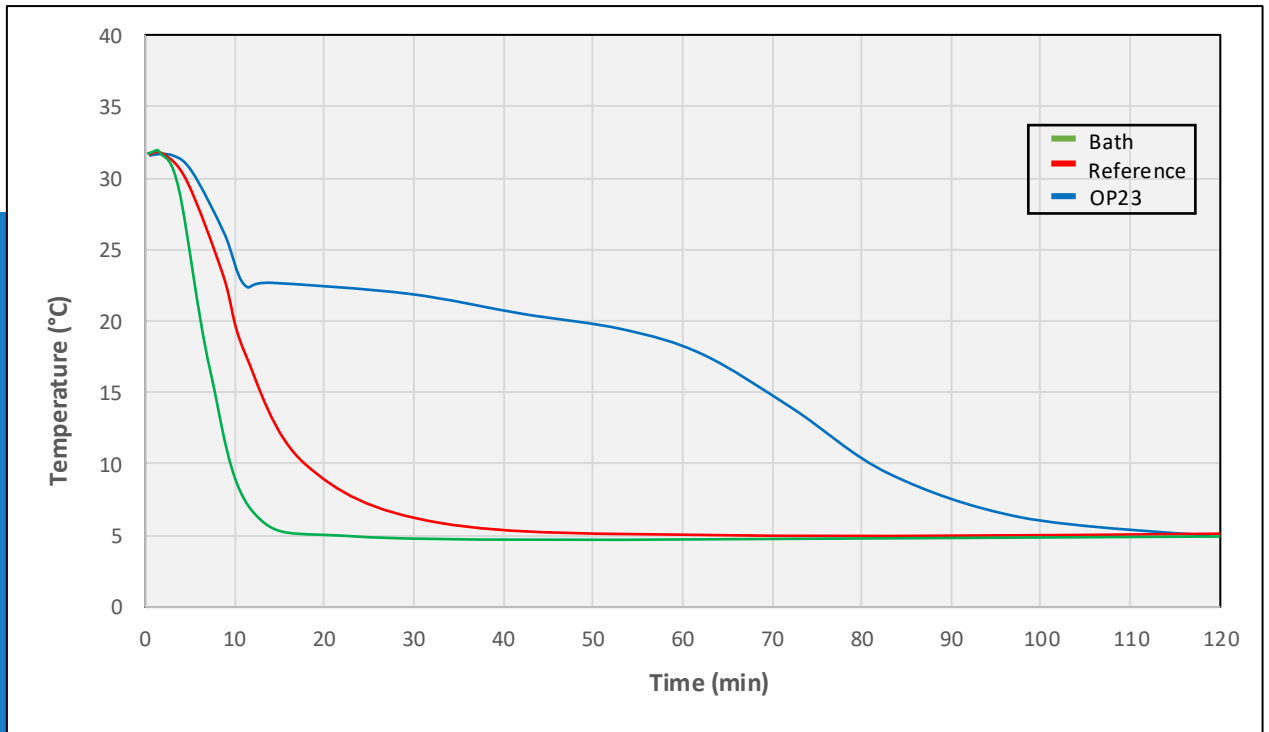


Figure 2: Freezing Curve of OP23

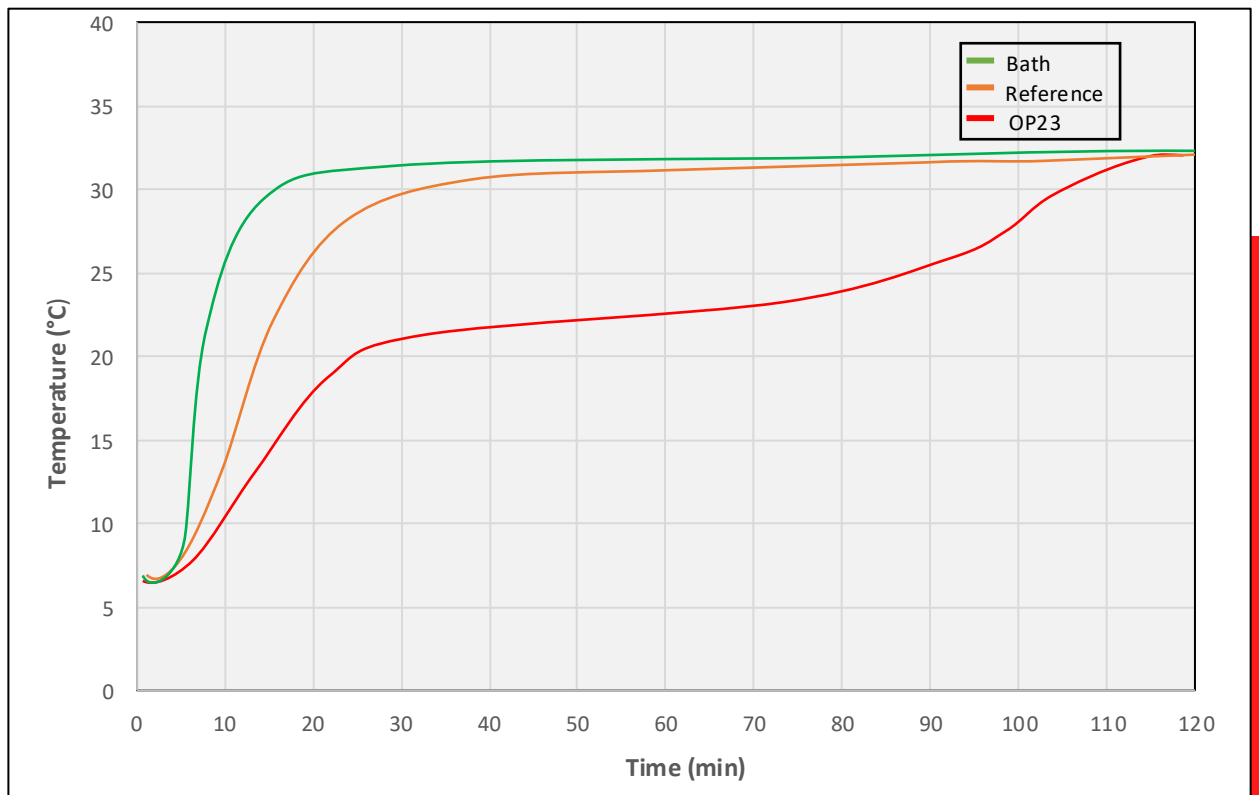


Figure 3: Melting Curve of OP23

ENCAPSULATIONS

The PCM OP23 encapsulated can be encapsulated into HDPE bottles, LDPE pouches 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	450	310	Yellow, White

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



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

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



Sr. No.	Size (mm)	Qty (g)	No. of cells	Colour
1	610 x 157	1000	4-celled	White
2	495 x 157	750	3-celled	White
3	457 x 157	600	3-celled	White

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

Disclaimer: The thermophysical properties indicated in this datasheet are based on the methods formulated in-house and should be used for thermal calculations pertaining to the specific application. It is highly recommended to users to test the material for their specific design and provide acceptance regarding suitability of the product to their use case. This information provided herein is subject to change without any prior notice in view of continuous improvement in product development. All information regarding usage and handling of the product shall be conveyed in documented form on request for bulk orders. This publication is exclusive right of B P Refcool, which forbids any reproduction and disclosure without its express consent. All care has been taken to ensure that the prices and information were correct at publication, however, B P Refcool takes no responsibility for their use. B P Refcool reserves the right to apply any change at any time and without notice.