

# DATASHEET

## Phase Change Material: DAPCM80-1

**MH&W's DAPCM80-1** is a combination of hot-melt waxes optimized with special packages to improve thermal conductivity while maintaining the high Heat of Fusion.



The wax mixture in DAPCM80-1 melts at a nominal 80°C. Users of DAPCM80-1 measure various temperatures depending on the dimensions of the block and the position of the melt plane in time. The material is optimized for transient absorption of heat loads in electronic enclosures over a 6 to 24 hour period of exposure. Typical application is in passive Natural Convection cooling of electronic enclosures exposed to daily sunlight heat peaks. The material melts to absorb heat during daylight hours and refreezes during cooler night hours.

Provision for up to 10% volume expansion on melting must be provided.

### ADVANTAGES

- Does not depend on crystalline water of hydration. No nucleation or particle egregation issues
- Unlimited number of freeze-thaw cycles
- Repeatable performance w/o degradation
- Other melt temperatures available

### APPLICATIONS

- NEMA 12 Enclosures
- Outdoor Electronics

### PACKING CONSIDERATIONS

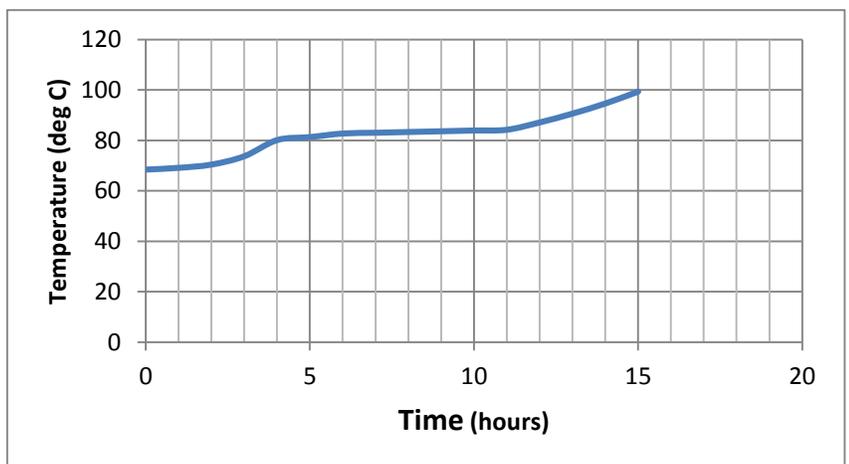
Material melts and must be contained to be used effectively. User must control material thickness to achieve effective transient cooling.

Typical packages include heat sealed Polypropylene cylindrical tubes, vacuum formed polypropylene housings, custom fabricated metallic housings or multilayer pouch envelopes.

Preferred method of packaging for use is in pouches. Multilayer pouch material consists of mylar outer layer for strength, aluminum foil middle layer to control gas permeation and polypropylene inner layer for hermetic sealing.

Properties	symbol	unit	DAPCM80-1
Color			white
Compound			filled hot-setting wax
<b>Thermal Properties</b>			
Melt Temperature	$T_f$	°C	79.5 – 86.1
Heat of Fusion	HF	KJ/kg	202
		W-Hours/kg	56.1
Thermal Conductivity	$\lambda$	W/mK	0.08
Specific Heat (solid) $C_p$		KJ/kg°K	2.0
Specific Heat (liquid) $C_p$		KJ/kg°K	2.9
<b>Electrical Properties</b>			
Breakdown Voltage	$U_{d;ac}$	KV/mm	>1.0
Dielectric Breakdown	$E_{d;dc}$	KV/mm	>5.0
<b>Mechanical Properties</b>			
Density		Kg/M <sup>3</sup>	800
Penetration@25 °C		ASTM D1321	15 - 22
Viscosity@ 100 °C		SUS	75
Flash Point		°C	277 Min
PH in H <sub>2</sub> O		insoluble	Non-Corrosive

### Typical Thermal Performance of DAPCM80



**DISCLAIMER:** Purchaser shall be solely responsible for determining the adequacy of the product for any and all uses which the purchaser shall apply the product, and the application of the product by the purchaser shall not be subject to any implied warranty of fitness for that purpose.



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