



ENERGY

TEAP

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TH89 PHASE CHANGE MATERIAL (PCM) DATA SHEET

1. GENERAL

TH89 Phase Change Material (PCM) is a hydrated salt which has a large quantity of energy (in the form of latent heat) which is absorbed or released when a material changes from the solid to the liquid state (melting) or from the liquid to the solid state (freezing). With TEAP additives these phase changes take place at constant temperature and the process can be repeated over thousands of cycles with no change to their physical or chemical properties.

TH89 salt with a melting temperature of 89°C - a temperature that makes it ideal for many heating applications. TH89 PCM offers the best aspects with respect to a number of selection criteria:

- temperature range of 86°C to 92°C i.e. 1 L of TH89 salt release an energy amount equivalent to 10 L of water.
- Chemical and thermal stability by using TEAP additives.
- Non-flammable.
- Suitable for other physical and thermodynamic properties.

2. TH89 PRODUCT APPLICATIONS

Domestic/ Commercial

- Hot water system using solar, off-peak electricity, heat pump or other source of waste heat.
- Space and central heating using solar, off-peak electricity, heat pump or other source of waste heat.
- Small to large industrial boilers.
- Passive cooling of telecommunications and electronic systems.

3. MANUFACTURE OF TH89 PCM

TH89 is manufactured in accordance with TEAP Quality Control (QC)/ Quality Assurance (QA) to give it the highest quality PCM product.

TEAP additives are the most important ingredients to make the PCM work well with many cycles life and thermal stability.

4. PCM ENCAPSULATIONS

Ball material	Polyolefine material that is chemically neutral towards TEAP PCM salts & heat transfer fluid
Ball shape	Spherical
External diameter	75mm
Volume of PCM per ball	~ 180mL for 75mm diameter
Number of balls per 1m³	2549 for 75mm diameter

Other forms of PCM encapsulations can be designed & incorporated depending on individual customer's needs & requirements.

5. TH89 DATA

5.1 Technical Data

Type of PCM	Hydrated salt
Appearance	Clear deliquescent
Melting temperature	89°C
Latent heat	63.6 Wh/L
Solid sensible heat	0.84 Wh/L °C
Liquid sensible heat	1.29 Wh/L °C
Flammability	Non-flammable
Vapour pressure	Not applicable
Flash point	Not applicable
Useful temperature range	86°C to 92°C
Recommended maximum operating temperature	105°C

5.2 Chemical Resistance

The following materials are suitable for use with TH89.

TEAP PCM	Plastic	Metal
TH89	- Polyolefines	- Aluminum - Copper - Stainless steel