

TEAP ENERGY

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## TH29 PCM BULK HANDLING & HEATING INSTRUCTIONS

**This document is intended only as a background PCM information for TEAP's authorised companies/ parties that have appropriate knowledge and understanding in TEAP PCM with precautionary handling of the material by a properly trained person using this manual. TEAP makes no representations or warranties on the performance of the PCM as made by others.**

## TH29 PCM BULK HANDLING

### 1. Storage and Delivery (in bulk)

The TH29 PCM is stored in a closed container when delivered in bulk. Plastic containers normally used range in size from 2 to 100 litres. Container size varies according to the volume of the order.

**It is important to note that the container must always be in a closed-sealed system in order to maintain the PCM product integrity.**

### 2. Storage of PCM (when not in use)

The TH29 PCM supplied in containers must be stored in a dry place and off the ground when they are not in use so that air can circulate and keep the containers dry and clean. It is also important to note that all PCM containers must be completely sealed e.g. airtight.

### 3. PCM Encapsulation

Upon receiving the PCM (in bulk) the following instruction procedure should be carefully read and understood prior to the final encapsulation of PCM for optimum use.

#### Encapsulation material

Check material compatibility of the container that will be used for storing the PCM. Please consult TEAP for further advice if needed.

The containers must be in a closed-sealed system which can be in many different shapes and forms and they vary depending on each individual application. Please consult TEAP for further advice if needed.

#### Mixing procedure/ Filling

Before filling of PCM into a final encapsulated container/ object:

The PCM must be heated (at greater than 29°C). The maximum heating temperature of PCM is 45°C.

There are several method of heating that can be used. Some of them for example are:

- Heating of TH29 PCM container via a heating oven.
- Heating of PCM container via a warm water tank.
- Use of an electric heating wrap system.

The PCM must be agitated until complete dissolution of all chemicals is satisfied.

#### Important Notes:

- 1) **The loss/ gain of water content from the PCM must be kept to an absolute minimum during the mixing/ filling process.**
- 2) **Chemicals can settle in the mixing container so ensure the container is mixed well until complete dissolution of all chemicals is satisfied.**

## TH29 HEATING INSTRUCTIONS

### 4. PCM Container Details

TH29 PCM	Description
PCM mass	Approx. 30 kg
PCM volume	20 L approx.
PCM recommended maximum operating temperature	45°C
<b>Container</b>	
Material	Plastic PE
Shape	Square
Maximum temperature	60°C
Container type of lid	Screw cap

**Caution:** The lid of PCM Container **MUST** be closed & sealed at all times.

### 5. Equipment Setup for PCM Melting

A heating oven is recommended for melting the TH29 PCM.

Heating oven	Specification
Type	standard oven
Capacity	50 to 100 litres
External dimensions (mm)	height- 775 width- 590 depth- 645
Temperature range	5°C to 260°C ( $\pm 1^\circ\text{C}$ )
Load	500 to 1000 watts
Power supply	220 to 240 volts 50Hz 10amp
<b>Operation of heating oven</b>	
Temperature control	approx. 45 to 50°C to be maintained by oven temperature control ( $\pm 1^\circ\text{C}$ )
TH29 PCM recommended maximum operating temperature	45°C to be controlled by oven

**Caution:** The recommended maximum temperature of PCM is 45°C.

## 6. Heating Procedure

Place 20 litres plastic container of PCM in the heating oven.

Set oven thermostat around 45 to 50°C.

Turn on power.

### Heating Time

The heating time depends on the kW rating of element, outside ambient temperature, heat loss etc. For example it can take up to 36 hours for complete melting i.e PCM is 100% liquid.

### Inspection of PCM

A regular inspection of PCM should be carried out to check whether the PCM has completely melted. It is also important to check the PCM temperature (use a temperature meter by placing it in the PCM solution) to ensure its maximum temperature does not exceed 45°C.

**Important Note: The lid of PCM container must be closed at all times during the melting procedure. This is to keep the loss/ gain of water content from the PCM to an absolute minimum.**

## 7. Final Encapsulation of PCM

Before the TH29 PCM can be filled into the final encapsulated container, immediately following the melting of PCM, it is important that:

The PCM be completely melted i.e 100% liquid.

The PCM temperature be at greater than 29°C. The maximum temperature of PCM is 45°C after the heating complete.

The PCM be agitated e.g stir PCM by hand using a clean rod until complete dissolution of all chemicals is satisfied.

### Important Notes:

1. The loss/ gain of water content from the PCM must be kept to an absolute minimum during the heating/ filling process.
2. Chemicals can settle in the mixing drum so ensure the drum is mixed well until complete dissolution of all chemicals is satisfied.