

## Quick guide to preconditioning PCM batteries (phase change material)





- For preconditioning, PCM batteries are cooled below their freezing point.
- To do this, place the PCMs in commercially available freezers or special pharmaceutical refrigerators.
- **Note:** The lower the temperature, the less preparation time is required.

Recommendations for preconditioning PCMs		
Envisaged range of use	Cooling temperature <i>i</i>	Duration
<b>2 to 8°C</b>	-20°C (+/- 5°C)	14 hours
<b>-25 to -15°C</b>	-35°C (+/- 5°C)	14 hours

### Pre-defrost" PCM batteries before use

- As soon as the first liquid droplets can be seen inside the battery, the battery is ready for use.

## Key data

PCM batteries meet the following criteria for safe transportation:

- Before use, make sure that the phase change temperature is within the desired range.
- PCM batteries are non-toxic and non-carcinogenic for humans and animals.
- They do not react with and do not act as a solvent for packaging materials.
- They can be disposed of in the conventional way (no hazardous waste).
- They are biodegradable.
- They are flame retardant (high flash point).
- They are non-corrosive.
- They are stable in the event of temperature changes (in particular no undercooling).
- Their volume deviates only slightly depending on the temperature.



## Multiple use

- Please note that PCM operating durations differ depending on the transport box (see temperature profiles).
- Re-use batteries only when you are sure that they have been correctly preconditioned.
- Check the PCMs for external damage and soiling; clean the batteries and dispose of defective PCMs.

## Please note:

- When using PCM batteries below the freezing point, the batteries should be preconditioned in a liquid state close to the freezing point.
- A safe method would be to completely defrost a frozen battery until only a small amount of frozen material is left.
- Alternatively, store PCMs for at least 24 hours above, but close to, freezing point.