



# ULTIMATE FREEZER PACK

Non-Hazardous ❄ Non-Toxic ❄ Reusable ❄ Durable ❄ Multi Year Shelf Life





## A HISTORY IN THE MEDICAL FIELD

TCIP developed a portable blood bank, using Phase Change Materials (PCMs), to maintain the precise temperatures required to store and transport blood. This portable unit allowed blood to remain with the patient in the critical hours following surgery, which is especially important with younger, smaller patients.

## THE IMPORTANCE OF PRECISION

The TCIP portable blood banks are so precise with maintaining proper temperature that they allow unused blood to be returned to long-term storage without risk. A way to transport blood in emergency helicopters to the scenes of trauma during the "Golden Hour" for both the United States military and civilian trauma helicopters finally emerged. TCIP next developed couriers for transplant organs, which maintained the precise temperature required to keep the vital organs viable. When the United States Military needed to transport viruses long distance and for up to 5 days, TCIP answered the call.

## AFFORDABLY SAVING LIVES

The largest health care services in the world use TCIP's insulated courier units and PCMs daily replacing dry ice and ice. PCMs were developed to transport allografts of bone and tendon at the temperature necessary in the surgery room. This permits non-used allografts to be returned to long-term storage, saving the hospital and patient money, as well as preventing loss of vital tissue.

## WHAT IS PCM?

A Phase Change Material (PCM) is a substance that melts and solidifies at a specific temperature and is capable of storing and releasing large amounts of energy.

## THE SCIENCE BEHIND PCMs

A "Phase Change" is a transition between a liquid and a solid, like ice, or is a transition between solid and a gas, dry ice for example. When a PCM freezes, it releases a large amount of energy called "latent heat" and does this at a relatively constant temperature. As the PCM melts, it absorbs a large amount of heat from the environment. A PCM changes from solid to liquid and back to solid at a precise temperature.

Our PCMs are engineered to solidify at different temperatures, allowing them to maintain constant exact temperature in the refrigerated or frozen range that we desire.





# FROZEN PC-0

0°C / 32°F

## Replaces Messy Ice

PC-0 maintains a 32 degree Fahrenheit or 0 degree Celsius refrigerated temperature environment. The PC-0 can maintain a refrigerated environment for up to 24 hours or longer depending on insulation and quantity of PC-0. The product's hard outer shell is almost indestructible, allowing for repeated use over the years. PC-0 will maintain a refrigerated environment without the mess of ice once it melts. Simply store the unit in your freezer 24 hours prior to use and it will keep your items cold for a full day. It is perfect for traveling with items that need to stay cold.



PC-0 can also be used WITH ice, keeping the ice frozen longer!

- ❄ Available in S/M/L
- ❄ Durable & Non-Toxic
- ❄ Non-Hazardous
- ❄ Multi Year Shelf Life



## CONTACT US FOR MORE INFORMATION



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# FROZEN PC-7

-7°C / 19.4°F

## Replaces Dry Ice

PC-7 maintains a 19.4 degrees Fahrenheit or -7 degrees Celsius frozen temperature environment. PC-7 has a multi year shelf life and can maintain a frozen environment for up to 24 hours or longer depending on insulation and amount of PC-7. The product's hard outer shell is almost indestructible, allowing for repeated use over the years. PC-7 will keep your items frozen without the hazard dry ice presents. It is perfect for traveling with items that must be kept frozen. PC-7 is non-toxic and does not have a hazardous material charge during shipping. Simply store the PC-7 unit in your freezer 24 hours prior to use and it will keep your items frozen for a full day.



PC-7 is perfect for traveling with items that need to be kept frozen!

- ❄ Available in S/M/L
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# FROZEN PC-16

-16°C / 3.2°F

## Replaces Dry Ice

PC-16 maintains a 3.2 degrees Fahrenheit or -16 degrees Celsius frozen temperature environment. The PC-16 can maintain a frozen environment for up to 24 hours or longer depending on insulation and the amount of PC-16. The product's hard outer shell is almost indestructible, allowing for repeated use over the years. Please note: If your freezer is not colder than -20 degrees Celsius, and many residential freezers are NOT cold enough to energize this PCM. If your freezer is -20 centigrade or colder the PC-16 will freeze in 48 hours and be ready to use. PC-16 will maintain a frozen environment without the need for dry ice. PC-16 can be kept in your freezer and in the event of power loss will keep food products frozen. Multiple PC-16 units may even keep products frozen for several days.



**PC-16 does not pose the risks of toxic dry ice!**

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# FROZEN PC-21

-21°C / -5.8°F

## Replaces Dry Ice

PC-21 maintains a -5.8 degrees Fahrenheit or -21 degrees Celsius ultra-frozen temperature environment. The PC-21 can maintain a frozen environment for up to 24 hours or longer depending on insulation and the amount of PC-21. The product's hard outer shell is almost indestructible, allowing for repeated use over the years. Never need dry ice again for any of your ultra-frozen needs. Please Note: PC-21 must be charged in an ultra cold -50 freezer, and will not charge in a residential freezer. Most retail freezers are not cold enough to energize this product. If Your Freezer is -50 or colder freeze PC-21 for 48 hours prior to use. PC-21 does not pose the risks of dry ice, and can be always available.



**PC-21 is the ultimate ultra-frozen temperature environment!**

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