



DuraTemp

ULT Backup Kit



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DuraTemp

ULT Backup Kit

Overview

The DuraTemp ULT Kit is an innovative technology, consisting of formed bricks which contain -70°C Phase Change Material (PCM). Each kit is designed to keep valuable samples, medicines, vaccines or biologics below critical temperatures for longer and with less energy use and less energy demand. Users should consider the bricks as a thermal backup, aiding and maintaining freezer at ULT temperatures.

DuraTemp ULT Kit Objectives:

Resiliency

- Deliver increased resiliency warm up time from -80°C to -60°C by up to 12 hours* in the event of power or equipment outages
- Achieve more even sample temperatures across freezer cabinet.

Energy

- Reduce Energy consumption & demand due to ability to increase freezer temperature setpoint from eg. -86°C to -74°C without sacrificing warm up time.

*Results vary by ULT model & Manufacturer. Based on testing of TSX600 by ThermoFisher

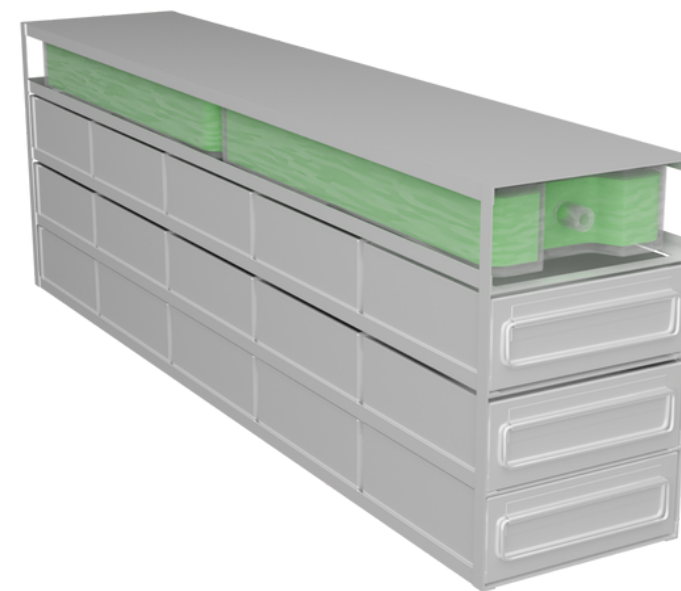
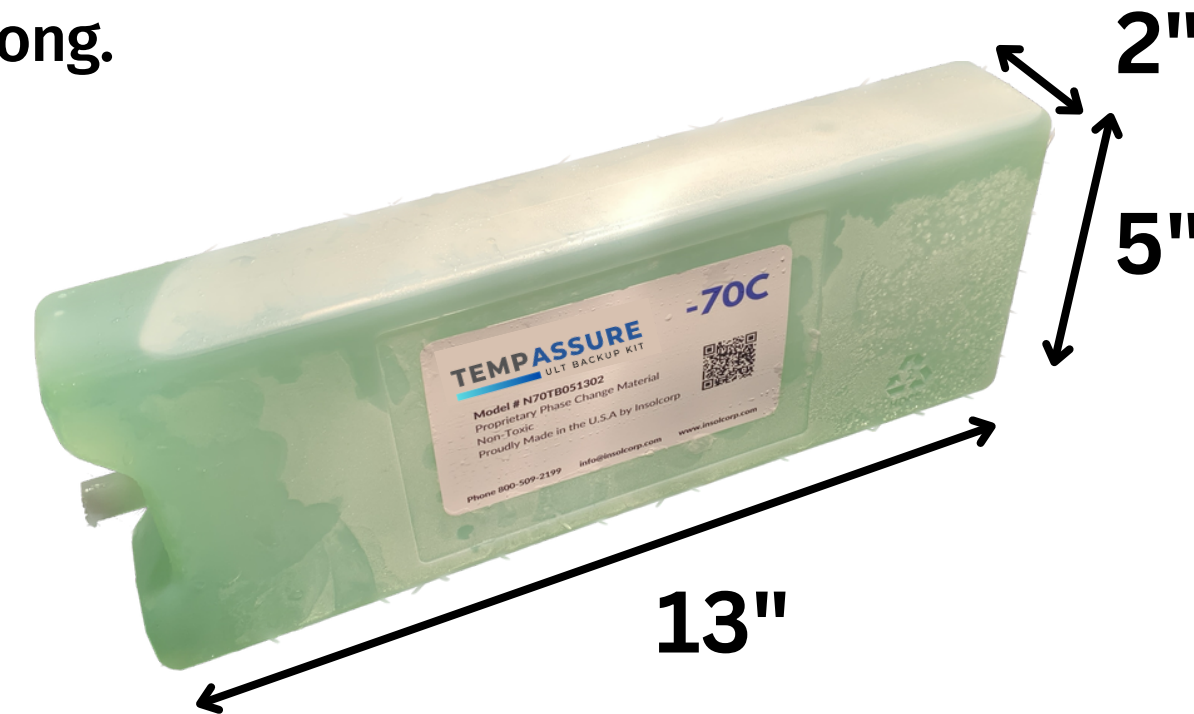


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Product Information

The DuraTemp ULT Kit is a collection of (x12) encapsulated PCM bricks measuring 5" wide x 2" deep x 13" long.



Once conditioned for use, The DuraTemp™ bricks can be placed within the freezer where they will passively help improve energy use, and improve warm up time in the event of power failure.

The bricks can be placed loose within the freezer., or each DuraTemp™ brick fits neatly within standard Freezer racks and draws in most freezers.

SPECIFICATIONS

- Dimensions:** 5.1" W x 2" H x 13" L
- Ready Indicator:** White: Frozen Green: Melting
- Units per Kit:** 12
- Weight per Unit:** 6.375 lbs
- Content** Proprietary Mineral Based Non-Toxic Phase Change Material
- Safety** Health: 3, Fire: 0, Reactivity: 0 - **Avoid Direct Contact with Eyes**





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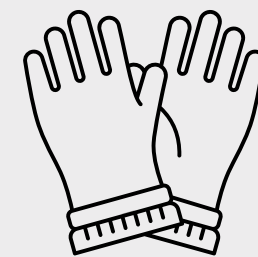
Safety



Eye Hazard - Wear Eye Protection

The formulation of PCM inside each encapsulated brick contains an eye hazard, which can cause serious eye damage if not addressed.

If encapsulation is compromised and PCM leaks and comes in contact with eyes, hold eyelids apart and flush with clean water for 20 minutes. Remove contact lenses if present. Contact Physician.



Handling

Products when used inside ULT freezers will become very cold, reaching temperatures below -86°C . Wear insulated gloves suitable for handling ultra-low temperature products.



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DuraTemp ULT Backup material is engineered with a color change indication, providing visual confirmation that the product is "Ready" for use



DuraTemp ULT Backup material is **GREEN** liquid prior to "Conditioning". Freezing is required for minimum 48 hours @ 80°C. Time and Setpoint may vary by freezer conditions.

DuraTemp ULT Backup material is **OPAQUE WHITE** solid when frozen, and is considered "Conditioned" and ready for use.

DuraTemp ULT Backup units can be used over and over (frozen and thawed) to protect your samples.

NOTE: If one or more bricks are not 100% white, maintain -80°C or below in freezer for longer period and inspect in 8 to 12 hours. Continue until 100% opaque white.

Conditioning Prior to Use





Conditioning Prior to Use

CAUTIONS & Suggestions

When using a ULT freezer, it is important not to overload the freezer with large amounts of room temperature product. This may cause unwanted increase in freezer temperature during cool-down cycle.

The DuraTemp ULT kit adds a large amount of mass to an operating freezer. While each freezer is different, we typically suggest in a large ULT freezer (>20 ft³), **no more than three (3)** ULT bricks be introduced to the freezer at a time.

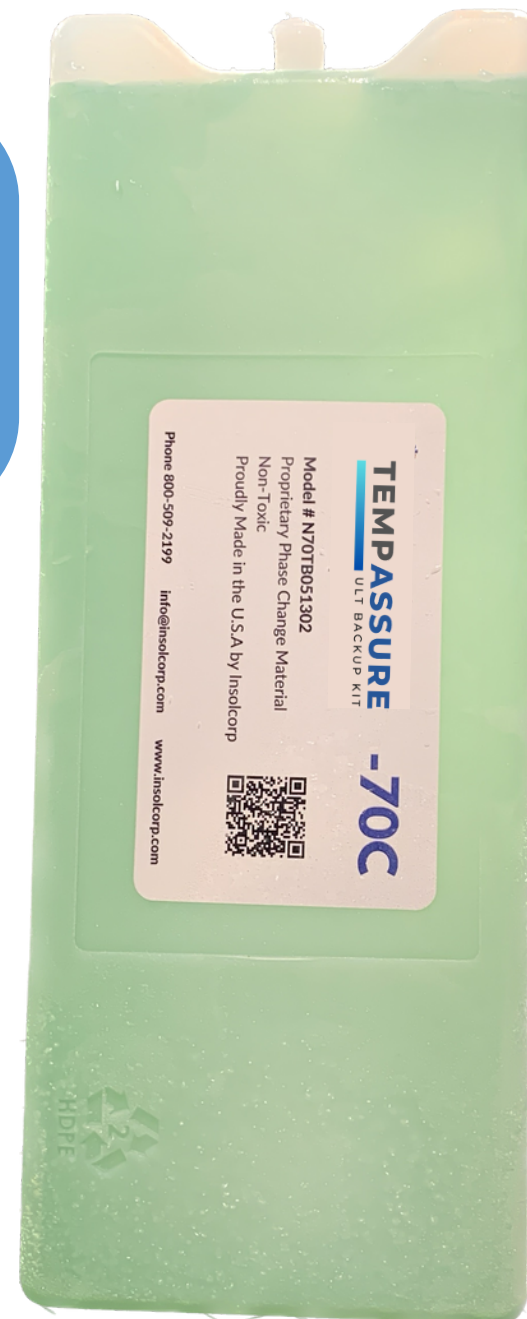
It is also recommended that during conditioning the DuraTemp bricks “freezing process”, the ULT bricks are not placed too close to samples/contents stored in the ULT freezer.

Conditioning Prior to Use



+48 Hours @ or Below -80°C

DuraTemp ULT Bricks placed into freezer.
Green = Not Conditioned



48 Hours+ Later
DuraTemp ULT Bricks turn
White = Ready/Conditioned

Condition Prior to Use



**DuraTemp ULT Bricks
placed into freezer.
Green = Not Conditioned**



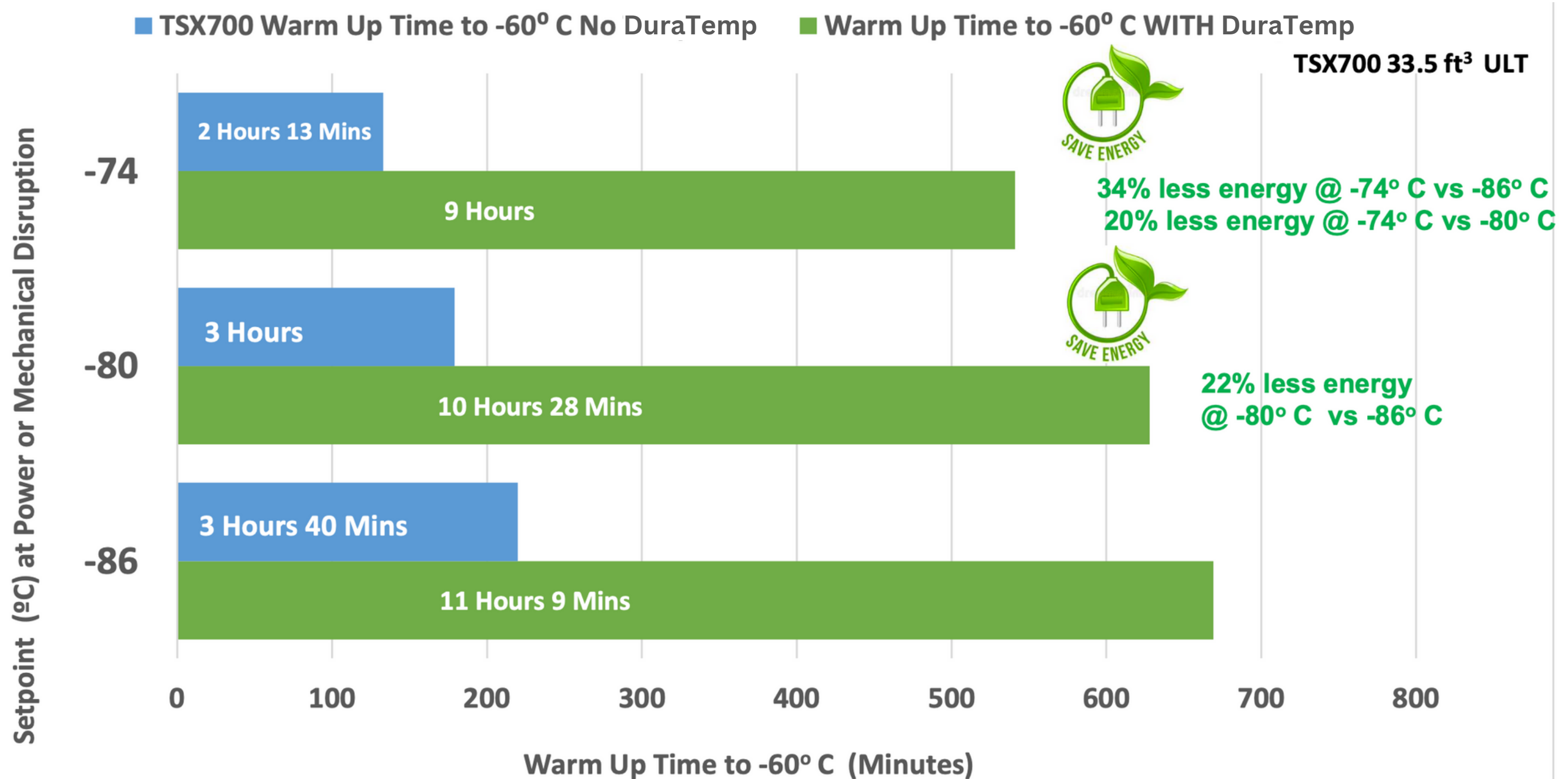
**48 Hours+ Later
DuraTemp ULT Bricks turn
White = Ready/Conditioned**



Resiliency / Hold Time

Testing of New TSX700 ULT freezers by Independent 3rd Party demonstrated significant improvement in hold time (over 300%) and remarkable reductions in energy usage when optimizing setpoint.

Specific results will vary based on Freezer Size, Model & Age.



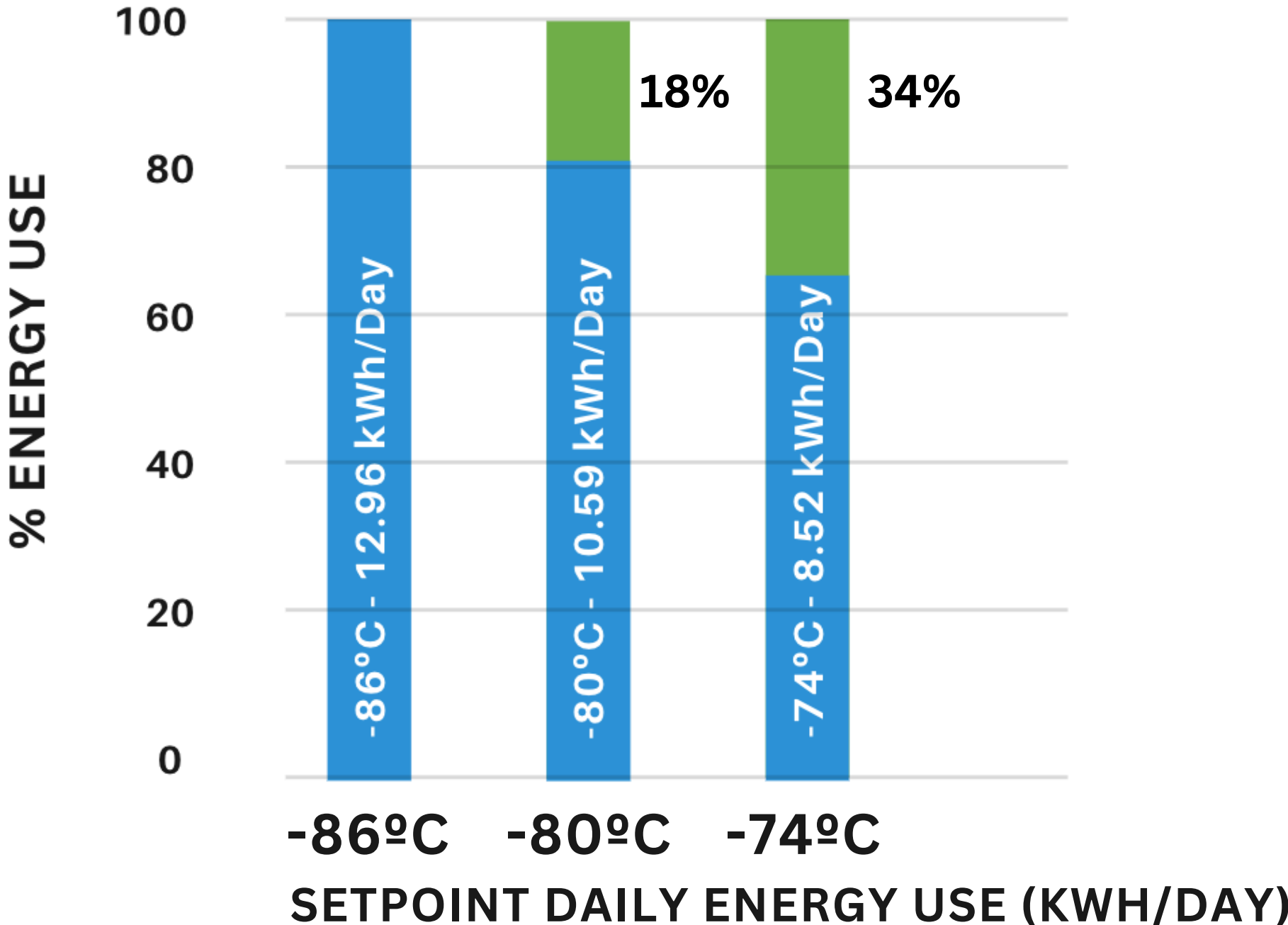
Energy Savings

A brand new, state of the art ULT freezer uses much less daily energy, but still has only 4 hours of warm up time during power interruption. As a result, many freezers are kept at -86°C.

DuraTemp ULT Kit delivers extended warm up time and allows for to increased setpoint, achieving energy savings and dramatically increasing protection of your payload.

ENERGY SAVINGS WITH SETPOINT CHANGES

Changing from -86°C to -74°C achieves 34% Energy Savings with IMPROVED Hold Time vs -86°C ULT without DuraTemp



ULT Setpoint	kWh/Day	Savings
-86°C	12.96	0%
-80°C	10.59	18%
-74°C	8.52	34%