



## **COLD CHAIN TECHNOLOGIES' SOLUTIONS FOR ENSURING TRANSPORTATION, STORAGE OF COVID-19 VACCINES UP TO POINT OF USE AT THE REQUIRED TEMPERATURES**

**Background:** The strict temperature control requirements needed for maintaining the COVID-19 vaccine and ensuring it is safely transported, thawed and ready to administer – in the right quantity and at the right time - is going to be a logistical challenge for many facilities.

**CCT's Portfolio:** Cold Chain Technologies (CCT) [offers a range](#) of solutions to meet the needs of customers for transportation and storage of vaccines at various temperature ranges.



*Pictured: the KoolTemp® EcoFlex96™  
(Source: AP)*

Here is an overview of transportation and storage guidelines to maintain the cold chain for the two approved COVID-19 vaccines in the US (**Figure 1**).

Scenario	Pfizer	Moderna
Shipping to Central location from Manufacturer	Specially designed Thermal shippers maintaining -70°C +/- 10°C for up to 10 days	Shipped in containers maintaining a frozen temperature of -20°C
Storage at central location (IDN, Warehouse) in FROZEN condition	<ul style="list-style-type: none"> <li>Ultra-Low Temperature freezers for up to 6 months</li> <li>Existing shipper by replacing DI every 5 days to store for 30 days</li> </ul>	<ul style="list-style-type: none"> <li>Can be stored at Frozen temperature of -20°C for up to 6 months</li> </ul>
Refrigeration	Can be refrigerated and stored between 2-8°C for up to 5 days	Can be refrigerated and stored between 2-8°C for up to 30 days
Room temperature (ready to administer)	Stable at room temperature for up to 6 hours	Stable at room temperature for up to 12 hours

Figure 1

## Problem Statement

While many centers will receive COVID-19 vaccine shipments, they may not have the freezers for storing the Pfizer vaccine and / or refrigerators for storing the Moderna vaccine – such that it can be used within the stipulated time.

More so, while certain centralized facilities will have the above infrastructure, as they need to send out vaccine to “Points of Use” (PoU) for administration, this cold chain might be broken and a “Just In Time” delivery may not work – causing a loss of a constrained supply of vaccines, especially in the earlier months of 2021.

The above could be relevant for IDNs with various smaller acute and non-acute linked facilities; Retail pharmacies who would be managing vaccination campaigns for Nursing homes and Assisted living communities; Community centers - churches, afterschool centers, community activity centers, elderly housing etc.

## What is Needed?

Maintaining and monitoring of required temperatures during transportation and storage to / at the Point of Use (PoU) centers – both short-term and long-term (especially when hospitals will need to hold inventory for patient administration).



*Pictured: A worker at a distribution facility carries a KoolTemp® EcoFlex96™ with Moderna's COVID-19 Vaccine inside (Source: AP)*

## Transportation and Storage Solutions CCT

Specially designed and rigorously tested “passive” shippers (rather than expensive freezers / refrigerators).

Here (**Figure 2**) are different use cases and the proposed Cold Chain Technologies solutions that can meet the needs of our customers.

Use Case	Pfizer (Deep Frozen)	Moderna (Standard Frozen)	J&J and AZ
<u>Transit to Large Sites and Hubs</u>  (Longer duration transport and storage need)	STS Dry Ice Ultra-Low (DIUL) Solutions	STS Suppressed Temperature (ST) Solutions	GTS Excel Solutions
<u>Transit from Large Site to PoJ Sites</u> <u>Administering Vaccines</u>  (Shorter duration transportation and storage need while thawing in transit)	GTS Excel Refrigerated (RFG) Solutions		
<u>Onsite Storage</u>  (Longer term storage when holding inventory)	EcoFlex Dry Ice Ultra Low (DIUL) Solution	EcoFlex Suppressed Temperature (ST) Solution	EcoFlex Refrigerated (RFG) Solution
<u>Onsite Storage</u>  (Shorter duration storage, when vaccines are planned for administration)	EcoFlex Refrigerated (RFG) Solution		

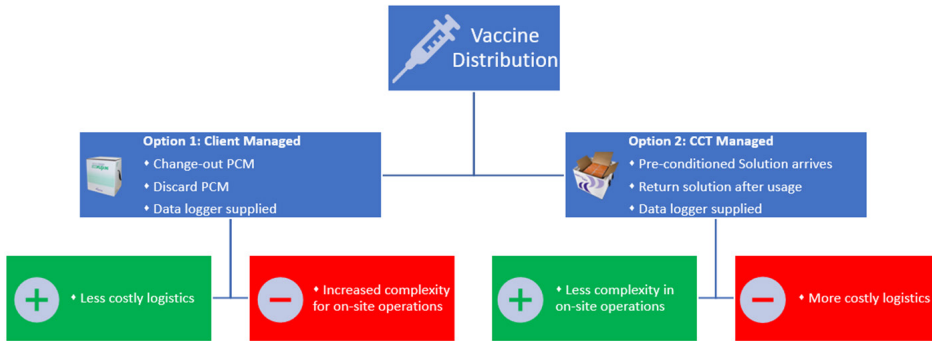
Figure 2



Pictured (L-R): KoolTemp® EcoFlex96™, Koolit™ Advanced PCM Gel, KoolTemp™ GTS Excel



CCT will be making available its EcoFlex range of containers for transportation of vaccines at -20°C. As the centers build inventory of vaccine to successfully manage the vaccination campaigns and need to store vaccines for longer durations, CCT can provide conditioned PCM gel packs to help maintain the storage temperature at Refrigerated levels (2-8°C) for 30 day periods (at which the Moderna vaccine is stable). Hence, centers can use the same boxes, in which vaccines were received and may only need to swap out the PCM gels at periodic intervals (every 96 hours). These can be handled via two options:



Simple totes (above) can be used to carry the EcoFlex boxes to the point of use which can be made available by CCT.

Through near-real-time temperature monitoring capabilities using sensors embedded in these specially designed thermal shippers, along with location tracking capabilities, all delivered through a hosted and secure web-interface, CCT can help provide visibility of relevant data across transit and storage to assure temperature integrity of vaccine for running campaigns in the PoU centers. The rules-sets for alerting and tracking capability and be easily configured and optimized to ensure best performance and reliability.



## About Cold Chain Technologies (CCT)

Cold Chain Technologies is a leading global provider of reusable and single-use thermal packaging solutions for the shipment of temperature-sensitive material, principally serving the life sciences supply chain. With more than 50 years of ensuring product safety in transit, CCT has built a reputation as the industry's most innovative and reliable provider to the largest global life sciences OEMs and distributors. For more information about CCT, visit: <https://www.coldchaintech.com>.

## Learn More about these innovative solutions from Cold Chain Technologies.

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*Pictured: Workers loading Moderna's COVID-19 Vaccine into the KoolTemp® EcoFlex96™ (Source: AP)*

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