

# **An Advanced Aerogel Packaging Solution for Cold-Chain Biologics Materials Handling**

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## **Abstract:**

Long distance transportation of biologistics is currently limited due to the fact that most containers have a limited time that temperatures inside the containers can be kept steady and at the required low temperature. In some cases expensive and heavy data loggers are used that need to be returned to the vendor upon delivery of the biologistics product. Here, we propose the design, construction, and testing of a light-weight aerogel-based containment package that can be utilized for the safe transportation of temperature sensitive biologics, under sterile environment. Aerogels are currently known as the best insulating material and have demonstrated superior thermal insulating capability compared to materials routinely used in the shipping and storage industry. Its light-weight and biologically-friendly nature makes this material an excellent choice for long-distance transportation and containment of biologistics and the preliminary data acquired in this work will serve as a platform for further growth and utilization/ incorporation of this material in packaging and transportation.