

BARRIER TECHNOLOGY



HEALTHCARE

UPGRADE YOUR COLD CHAIN PACKAGING

Inhances' **ColdShield™** technology provides the best protective barrier for PCM formulations packaged in rigid plastic containers, ensuring safe, and reliable passive temperature controlled transportation of biologics, vaccines and pharma compounds

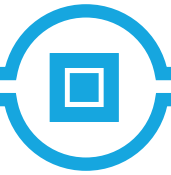
Today's biologics, vaccines and pharma compounds require storage and transportation within specific temperature ranges to avoid costly losses or failures. Small temperature fluctuations can cause pharma products to lose potency and efficacy. Phase change materials (PCM) are used in rigid plastic containers in highly engineered cold chain packaging to maintain temperature specifications. However, these PCM's permeate through plastic container walls, potentially altering the intended temperature profile of the PCM formulation, and contaminating the packaging and contents during transportation and storage.

Inhance Technologies' **ColdShield™** technology has been developed to provide the highest barrier performance against a wide range of PCM's used in plastic containers. This permanent barrier enables PCM containers to maintain their specified temperature range for extended shelf life. Proven commercially, **ColdShield** transforms ordinary HDPE plastic containers into high performing cold chain solutions, protecting the packaging, the valuable contents and the environment from PCM formulations, whether organic, paraffinic, or bio-based.

ADVANTAGES OF COLDSHIELD™ TECHNOLOGY

- Effective barrier for all PCM formulations
- Expands container design freedom
- Long term storage stable (5+ years)
- Enables reuse while sustaining performance
- Fully recyclable
- Proven technology





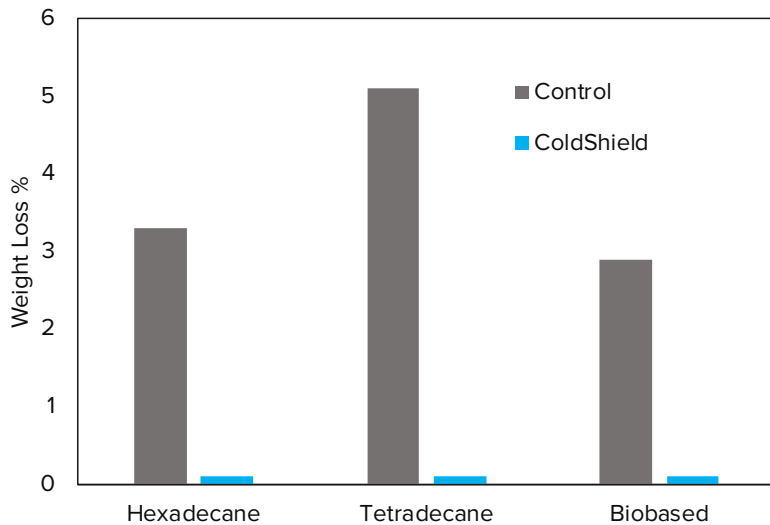
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BLOCKS PERMEATION OF PCM FORMULATIONS

Permeation against select PCM formulations is shown in the chart below. While unmodified HDPE containers lose a significant amount of the PCM due to permeation, ColdShield reduces permeation 10 - 100 fold. This reduction in permeation eliminates any change in the specified temperature profile of various PCM mixtures, while extending the useful life of the container.



Permeation of different PCM solvents in unmodified HDPE containers (grey) versus ColdShield treated HDPE containers (blue). Permeation measured at 50°C for 30 days.

Inhance's ColdShield™ is used to safely transport vaccines across the globe, minimizing contamination and product failure



Inhance Technologies solutions' can be applied in a number of industries to improve product performance and sustainability

CALL US TODAY AT [800-929-1743](tel:800-929-1743) OR SEND AN EMAIL TO INFO@INHANCEPRODUCTS.COM TO LEARN MORE AND EVALUATE COLDSHIELD™ FOR YOUR COLD CHAIN PACKAGING REQUIREMENTS

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INHANCE TECHNOLOGIES

16223 Park Row, Suite 100

Houston, TX 77084

T: 281-578-1440 O: 800-929-1743

inhanceproducts.com