

Cold Chain Testing Services



What Is Cold Chain Testing?

Driven by the growing Biologics, Pharmaceutical, Biopharmaceutical and Food industries, the need for cold chain solutions continues to increase rapidly. Its 7% annual growth rate will bring it from an estimated \$200 billion in 2018 to a projected \$290 billion by 2023.

The term “cold chain” refers to a temperature-controlled supply chain; an uninterrupted series of distribution and storage activities which maintain the product at a given temperature range over time. The cold chain’s function is to protect and extend the shelf life of products ranging from fresh food, flowers, pharmaceuticals, and biopharmaceuticals.

Commonly controlled temperature ranges can be as extreme as “cryogenic” (typically from -5°C to -150°C), “refrigerated” ($+2^{\circ}\text{C}$ to $+8^{\circ}\text{C}$), or controlled room temperature (20°C to 25°C). Many pharmaceuticals also react to humidity, light, mechanical vibration, and shocks.

Cold chain packaging systems are either active or passive. Most cold chain packages are passive in that they rely on the “precondition” of the product and the thermal mass to maintain temperature. A cold chain package typically consists of insulation providing a thermal barrier, and a refrigerant protected by an exterior distribution package. Common refrigerants used to maintain the internal temperature include wet ice, dry ice, or gel packs.

As an accredited test lab, Westpak uses calibrated environmental chambers to simulate temperature profiles of the intended distribution environment. During the performance qualification testing, accurate thermocouple probes and data loggers measure the temperatures within the cold chain package system to determine the response to the test condition.

Just as important to the thermal performance is the mechanical integrity of the package. The package must maintain not only the required temperature but also withstand the normal impacts, vibration and other mechanical excitation common in the distribution environment. Westpak has extensive experience in environmental and dynamic testing to ensure that a cold chain package is both thermally and mechanically robust.



Cold Chain Tests

- Environmental
- Altitude
- Customized Tests

Westpak's ISO 17025 accreditation assures you of the highest quality testing and data provided by any testing laboratory.

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Environmental Testing

Environmental testing is a process of subjecting a test specimen to various temperature and humidity conditions in order to determine the effect of these conditions on the test specimen. Often, this conditioning is conducted prior to other tests such as mechanical or package performance testing in order that the test specimen be exposed to a full range of potentially harmful temperature and humidity levels.

Altitude Testing

Altitude testing simulates the reduced air pressure experienced at higher elevations and the impact on integrity of elevation. Sealed flexible systems have the potential the fail when exposed to altitude. In fact, altitude exposure by truck transport can exceed the levels experienced in commercial air transportation.

An altitude test is either a pass or fail. Shippers may burst at the seams if the internal pressure of the flexible packaging cannot equalize. Additional packaging costs may be incurred to pull a partial or full vacuum on the packaging in order to avoid the effects of altitude. Altitude can also affect your product when the package is jeopardized.

Customized Testing

Working with you, Westpak can determine what specific test requirements may be needed for your individual/unique product. We can then customize a protocol and test plan to meet the prerequisites of your industry, product and package system.

Testing Standards

ASTM D4332
ASTM D6653
ASTM F2825
IEC 68
IEC 6008
ISTA
ISO 2233



For more information or a quote, please contact one of our offices below or go to: www.westpak.com/contactus.aspx

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