

What is an Environmental Chamber and why do we use them?

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Alex Roskoss Answers These Important Questions

When a shipment is sent it can encounter a variety of temperature exposures from the loading dock at 5am on a winter 's morning in Minnesota, to the bright sunshine on the airport tarmac in Johannesburg at 2pm mid-summer. These extremes and all temperatures between can be encountered by a shipment and the exposures can vary greatly in duration and intensity.

If you want to ensure your shipment and the packaging you 've chosen to protect the shipment can survive the exposures it will see there are two real options. Send a shipment out to experience the worst exposures it will encounter or subject it to the

worst exposures in a controlled way.

Choosing the first option to ensure your packaging solution works has some large concerns. If you are sending a shipment out to encounter the worst exposures what are the chances you will encounter these on a single shipment? Will it be a heat-wave, will the aircraft have a delay on loading? Will the shipment be left in direct sunlight for hours? If you can 't guarantee these conditions on a single trip then you may have

to send multiple shipments at multiple times and monitor each and every one. Even after doing this you will not typically have any data from adverse events, the situations where procedures were not fully followed or something unusual occurred. How would you try a real life shipment that replicates disruption to distribution by volcanic ash clouds?

There are a lot of variables which affect each shipment sent and with real world shipments these cannot be effectively controlled.



Environmental Testing Chamber (twin walk in chamber shown)

Intelsius Testing

Only by carrying out large numbers of shipments, and analysing the data from all of these, can you get to a position where you assert the protection provided is sufficient for the challenges encountered. If you find the protection is insufficient and an alternative protective solution is required then you may have to repeat the whole process again.

To simulate the worst case exposure expected for a shipment and monitor the performance of the packaging solution against this, we use Environmental Chambers. These are electronically controlled heated and cooled spaces that can be set to simulate the temperature exposures expected in shipping. You can simulate the December shipment from Minnesota to Johannesburg through different temperature exposures for different times and simulate an entire journey's exposures. This allows control over the specific exposure periods so you can expose a shipment to the freezing temperatures you might find on the loading dock, the airport and aircraft hold, then the high temperatures on the tarmac and in a

customs warehouse under afternoon mid-summer sun.

Control of the time and duration of exposures and the freedom to specify these exposures means rather than a large number of systems facing uncontrolled challenges, a smaller number can be exposed to controlled extreme challenges and generate a more concrete position on whether the protection provided by a specific packaging solution meets the requirements.

The environmental chambers save time and money when testing packaging solutions and if the challenging exposures are set appropriately, can provide design guidance on achieving a packaging solution which you can prove works against the challenges your shipments will face.

The chambers can vary in size with the kind of systems you want to expose and so can be table top sized or up to big enough to accommodate a full trailer. They can be a considerable capital expenditure depending upon their size and the performance of the heating and cooling required.

They all require complex controllers to execute the programmed time and temperature sections and control the heaters, fans and cooling systems to reach and maintain the specified temperatures. With the addition of knowledgeable operating staff and good laboratory procedures, well operated environmental chambers will enable you to receive timely performance information about the suitability of your packaging solution for the challenges it will face in shipping.

If you'd like more information about environmental testing chambers, please contact your Intelsius Business Development Manager or me - Alex Roskoss, European Head of Technical Services at 01904607390.

