

PACKING TIPS

Airfreight packaging: Don't take it lightly!

Packing up an airfreight shipment is more complicated than you might think. Follow these guidelines to make better packaging decisions. Packing up an airfreight shipment is more complicated than you might think. Follow these guidelines to make better packaging decisions.

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Do you know what happens to your airfreight shipments once they leave your door? Barry S. Rope and his colleagues at Unisys, the computer hardware and software manufacturer, thought they did. More than 10 years ago, Rope (then manager of corporate package engineering) met with staff from traffic, quality control, product design, and other functions to discuss ways to minimize damage to the delicate electronics Unisys was shipping worldwide.

Someone in the group asked how many times an airfreight shipment would typically be handled, from the time a product came off the assembly line to the time a package was opened by the end user. "We came up with 10 to 15 times," recalls Rope, now a packaging consultant in Farmington Hills, Mich. "We were nowhere near right."

The correct answer, he says, was about 44 times for a small parcel, up to 78 times for a heavyweight domestic shipment, and as many as 91 times for an international shipment. That included every move, from lifting an item from a picking cart to a packing table, to transfers between storage locations in distribution centers, to handling by freight forwarders, airlines, distributors, and end users.

Today those numbers have dropped as shippers, airfreight forwarders, and airlines have worked together to streamline processes and speed deliveries. But at a dozen or more physical handoffs, they're still high enough to give anyone pause when deciding how to package airfreight consignments.

The handling process, though, is just one of several factors that influence airfreight packaging and outer packing. If you want to adequately protect air shipments from damage, consider these recommendations before you pack up your company's products and send them winging on their way.

1. Know the handling environment.

Airfreight shipments of all sizes are subject to several hazards, including **shock** (when packages are dropped or are struck by other objects); **vibration** (which occurs when packages travel on automated equipment and in the aircraft itself); **compression** (when a package bears the weight of another object, either vertically or laterally); and **climatic conditions** (such as extreme cold, heat, or humidity). To cover all those bases, American Airlines Cargo recommends that packaging be able to withstand 8 to 12 physical handlings, slide on any surface, withstand pressure of up to 60 pounds per square foot, tolerate 30 seconds in the rain, and withstand a 12-inch drop to any surface.

Shippers should expect that smaller shipments will mostly be moved by hand, while larger items are likely to be moved by forklift and other automated equipment, says Steven Goldberg, executive vice president, operations for Chicago-based freight

forwarder Seko Worldwide. Whether a shipment flies on a huge, all-cargo aircraft or in the belly of a narrowbody passenger airplane also affects how it is handled, he notes.

Although it will increase the chargeable weight, unitizing shipments pays off because it reduces the chance of damage, Goldberg says. "Take the time to do it right, not just toss it on a pallet and throw a little shrink wrap around it," he recommends. Ensuring that nothing extends beyond the edge of the pallet, for example, can prevent damage from materials handling equipment.

Palletized shipments often are consolidated in airfreight containers, or unit load devices (ULDs), with lighter items on top, says Laura Sanders, vice president of operations for Lynden Airfreight in Seattle. It's important that the pallets be properly loaded and in good condition, she says. She's seen overloaded, unbalanced, or poorly constructed pallets collapse—resulting in damage not only to that shipper's goods, but also to those of other shippers in the same consolidation. Another common problem: Packages that are too big for the loose items inside. The resulting air space around the product provides no support, so anything stacked on top may crush the boxes.

Shipments that fly with parcel carriers will be subjected to highly automated handling. Don't assume that means gentle handling, though, cautions Rope. In an automated environment, he says, "Everyone's in a hurry and moving packages as fast as they can. If it's small, it's going to get tossed around." While moving through the parcel carriers' hub-and-spoke distribution system, moreover, a single package may travel along conveyors, down chutes, and into bins or bags several times. And now that those carriers have raised weight limitations to as much as 150 pounds, heavy items may end up jostling smaller packages, Rope adds.

2. Know your product.

Do you know what you're shipping—how it's made, how it works, and how strong or fragile it is? It pays to know, because that information should influence your packaging choices.

If there are special handling considerations, such as temperature sensitivity or fragility, you'll need to take that into account. Make friends with your company's product engineering, packaging, and purchasing professionals, recommends Rope. These folks really know the products you'll be shipping, and can help you understand how well they will stand up to transport conditions.

You may even want to get involved during the design stage, as damage in transit can be due to a product's inherent weakness rather than to insufficient packaging. "When the product is on the drawing board, a lot can be done to the product itself to improve stability," Rope says. "Rather than throwing more packaging around it, adding a bolt or brace can make a difference."

He tells of one company that failed to understand that and ended up paying the price in higher packaging costs. The manufacturer of computer equipment began air freighting heavy-duty printers, which included an attached pedestal, to overseas customers. Virtually every shipment arrived with cracked or bent pedestals. When the manufacturer took one of the printers to a testing lab and put it on a shock table, it was found to have a fragility rating of 11 on a scale that measures gravitational forces. "Air freight should have a fragility rating of around 30 Gs, but no one had tested the design for how it would stand up in transit," Rope notes. Because that model had already been produced in large numbers, the manufacturer had to pay for a specially cushioned pallet at a cost of about \$30 for each printer.

3. Watch the weather.

Because of the speed of air travel, it's possible for cargo to fly from the hot, humid tropics to extremely cold environments in just a day or two. That's why it's wise to prepare for climatic conditions at origin, transshipment point, and destination.

"If a product is sensitive to climate conditions, then it needs to be packaged with strong, appropriate inner and outer packaging," says Sanders. The challenge is to package for protection from the elements, but not so tightly that the product can't "breathe" and allow moisture from condensation to pass, she adds. Some shippers place small packages of desiccants that absorb moisture in their packages for added protection.

Although forwarders and airlines make every effort to protect shipments from the elements, there are times when shipments must wait outdoors to load or unload, says Goldberg. That's especially true in smaller airports in developing countries, but problems can happen anywhere, so shippers need to consider the possibilities when deciding how to pack sensitive goods.

What's the worst that could happen? Sanders relates this tale about one shipper that didn't think things all the way through: "If fruit is tendered in a metal container in July, with no cooling equipment or inner packaging, and the forwarder and carrier have not been told that there's fresh fruit inside, then you could have a whole lot of red juice on the tarmac," she observes.

4. Talk with the experts.

The fruit shipper's experience points out the importance of communicating with forwarders and airlines to ensure shipments will be adequately protected, says Sanders. Talking with a service provider about proper packing before shipping a new product or to a new location for the first time will help shippers minimize the potential for damage, Goldberg adds.

Packaging manufacturers can also offer sound and helpful advice, says Rope, but cautions that they may focus solely on the materials they work with. Packaging consultants are other good sources of information, especially for shippers that don't have packaging engineers on staff.

Communication about protecting your shipments shouldn't stop with packaging selection, though. Using standard international signage to mark special handling requirements on shipping documents and on each package will make it clear at every step of the way that your shipment needs special care.

5. Make the Right Tradeoffs.

There are tradeoffs to consider when packaging air shipments for maximum protection. You won't, for instance, want to trumpet what's inside to would-be thieves, but if your product needs to be top-loaded, is temperature-sensitive, or is potentially dangerous, then you have to make that obvious if you want it to arrive in good condition.

There also are cost considerations. Freight charges for lightweight, bulky shipments are assessed on the basis of density, or "dimensional weight." Under its Resolution 502, the International Air Transport Association (IATA) plans to change the density calculation method in such a way that rates will be cheaper for low-density commodities if shippers reduce the size of the packaging they use.

Rope says it isn't easy to figure out if you'd be better off using smaller but more costly packaging or paying the extra low-density charge and sticking with packaging that you

know can do the job. This might be a good time to see whether strengthening the product in some way would allow you to reduce packaging without compromising protection or raising costs, he suggests.

In the end, says Sanders, airfreight packaging decisions should be based on knowing that the money you end up spending because of inadequate packaging and resulting damage comes right off your bottom line. "If your freight arrives on-time and damage-free, it's able to be installed and utilized as it should be, and you're able to sell it for the value you think it's worth," she says, "then the cost of pallets and other packing will be minimal in comparison."

Play by the Rules

How you package your airfreight shipment isn't always left entirely up to you. For some products, federal and international regulations make that decision for you.

If, for example, you ship products that are classified as hazardous materials, International Air Transport Association (IATA) regulations will specify the inner packaging and outer packing that's required. They also restrict which commodities and how much volume can be packed together. Those rules are intended to protect potentially dangerous shipments and minimize the chance of leaks, spills, fires, or explosions. If you fail to match a hazardous product with the specified packaging and your product leaks, you not only subject your company to huge fines but also put peoples' lives at risk, says Steven Goldberg, vice president of operations at forwarder Seko Worldwide.

Some perishable products fall under packaging rules that were developed to ensure food safety. One federal program, for example, requires seafood shippers to guarantee that specified temperatures were maintained at all times during transportation and storage. Many air carriers, moreover, have their own packaging rules for perishables.

Even the packing materials themselves can be subject to restrictions. Australia, China, Japan, and the European Union are among the governments that prohibit the use of untreated wood to pack ocean and airfreight shipments. Attempting to prevent the further spread of insect pests, those and other countries require wooden crates and pallets to be treated by approved methods and be marked to that effect with specified symbols.