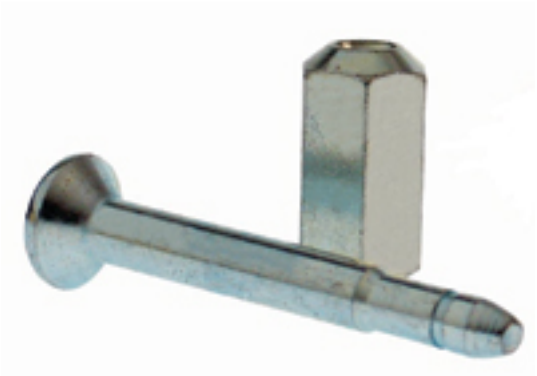
Securing Supply Chains with Seals

Steve Diebold, Sales Manager, American Casting & Manufacturing Corp., and Robert Knorr, Security Seals Product Manager, Labelmaster



Bolt seals

Pharmaceuticals are a prime target for theft because of their resale value. In some cases, stolen pharmaceuticals are actually sold to legitimate suppliers who are unaware that the drugs are contraband. Because of a rise in thefts in general, but particularly of pharmaceutical warehouses, the Food and Drug Administration is strongly urging drug manufacturers to review current security initiatives and reinforce less secure areas in the drug distribution chain.

One tool often used in supply chain security programs is security seals. There are two primary types—indicative and barrier. Indicative demonstrate if the item being sealed has been tampered with. They can easily be broken since their function is to demonstrate entry, not deter it. The use of stronger seals, known as barrier seals, is becoming more common. In addition to providing evidence of tampering, these seals can actually deter theft because they are harder to remove. These seals are typically used on ocean containers, rail cars and long-haul trucks.

Regulatory Standards

ASTM F1157, the “Standard Practice for Classifying the Relative Performance of the Physical Properties of Security Seals” is a standard used to determine physical strength characteristics of security seals and was used to develop criteria for ISO/PAS-17712. The International Standards Organization drafted publicly available specifications for ISO/PAS-17712 to fill the need for an international standard to evaluate the physical properties of seal strength. It identified three levels:

indicative, security and high security, based on criteria such as impact, shear, bend and tensile strength.

The Customs-Trade Partnership Against Terrorism (C-TPAT), a joint effort between government and business, is a voluntary program to help protect global commerce from terrorism. These standards primarily apply to intermodal containers and truck trailers. One requirement for C-TPAT is the use of high-security seals on shipments entering the U.S.

Plastic padlock seal with wire hasps

Types of Seals

There is a wide array of security seals available for containers, closures and devices. Types of seals vary depending on their use—from securing cargo containers to inventory control—and many can be personalized with custom data. Following are various types and materials of security seals and locks, and their recommended usages:

- Plastic padlock seals are made entirely of plastic and used in applications in which a lightweight seal would not likely be accidentally broken. They are very light and easy to handle. Tampering is readily evident. They are more suited to short-term use in applications like door latches, handles, valves and switches.
- Plastic padlock seals with solid wire hasps are versatile seals available at various levels of complexity. The all-steel type can stand up to physical punishment. The type with a transparent acrylic seal has high visibility of the locking portion, high tamper resistance and more identification options.
- Steel cable locks are heavy-duty, self-locking mechanisms that must be removed with a bolt cutter. These locks meet C-TPAT guidelines, and are ideal for securing rail cars, cargo doors, gates, drums and hazmat shipping

containers. They provide long-lasting durability and maximum security for a range of applications.
- High-security cable seals are heavy-duty, adjustable seals that are suitable for securing rail cars, cargo doors, lids, drums and containers. They are easy to apply, but can only be removed with a cable cutter.
- Bolt seals are high-security bolt locks that can only be removed with bolt cutters. C-TPAT-compliant bolt seals are primarily used for securing rail cars, cargo doors, lids, drums and containers.
- Plastic band seals are commonly used for cargo shipping. They are considered simple, yet high-security locking systems. Their resistance to accidental damage makes them optimal for trucks and containers.

Criteria for Selecting the Correct Seal

Below are criteria for determining the best seal for your application:

- Determine if an indicative or barrier seal is required.
- If using a barrier seal, determine what strength level is needed.
- Make sure that the seal type that you choose fits the device.
- Choose a seal that has the appropriate level of strength and security.
- Measure seal cost vs. security risks.
- Use a manageable locking system considering the tools and resources you have at your disposal.
- Consider the durability of the seal in relation to its environment.

Using Seals Effectively

A seal in and of itself is not an effective supply chain theft prevention and product-tracking program. It is one component, that if used effectively and in conjunction with other security measures, can provide evidence of tampering and even help deter theft. There are additional steps, however, that can be taken to reinforce their effectiveness—by layering devices, for example, as well as using multiple seals, matching labels and tape, enhancing visual identification, or applying segregated sealing by separating the seal from the bar code, RFID tag or other identifiers.

Another way to create more diverse and theft-resistant security identification is to use colors and alpha-numeric combinations on a rotating basis. Using a variety of model, size and style of security seals, and changing them from time-to-place and place-to-place can make tampering much more difficult. Using unique color combinations for wire or material coding can also help maintain container integrity. Logos, custom marking, warning labels or any other type of symbols that quickly

and easily identify source and content should be used as well.

Source URL (retrieved on *05/03/2015 - 9:54am*):
http://www.chem.info/articles/2010/07/securing-supply-chains-seals?qt-most_popular=1