

# How to Archive Shot-Peened Almen Strips

**AN IMPORTANT ASPECT** of archiving shot-peened Almen strips is the packaging and location for long-term storage. After years of storage, the last thing one wants to find in the archive is a paper envelope with rusted Almen strips, making verification of the arc height test results impossible. So, how should shot-peened strips be packed to prevent rust?

Rust is formed when a moist steel surface meets the oxygen in air. But let's not get into the chemical details; rather let's focus on how to provide an environment where rust is inhibited and prevented.

## Packaging

Several options: Soak the strips in WD-40 or some other oily substance and bag them. While effective, oil and liquids are not conducive to storage in a paper bag. Furthermore, when verification of the arc height is required, cleaning and degreasing will be necessary.

A better approach is the use of desiccant packs or VCI (Volatile Corrosion Inhibitor) paper. Both methods require a sealed storage container so excessive moisture does not enter. In the case of VCI paper, the protective gases cannot escape. Another method is to use a VCI-treated plastic bag.

The effective life of desiccant packs is typically one to three years, depending on the environment. As silica granules absorb moisture, the effectiveness drops.

The VCI paper can last from five to 20 years, depending on how often the sealed environment is disturbed. For longer storage periods, a program may be established where the VCI paper is replaced on a regular basis.

Reusing the original Almen strip cardboard box is a handy way to archive peened Almen strips. (Electronics Inc. puts two pieces of VCI paper in every 50-piece box of Almen strips.) However, a strip of VCI paper and sealed plastic vacuum wrap or zip-lock food storage bag is recommend unless an ideal storage temperature can be provided.

A proper and informative package label is as important as the physical packaging itself. Nothing is more frustrating than

to find well-kept strips and not being able to identify them. Some important information elements on the label are:

- Customer and company name
- Job, test, or work-order number
- Quantity of strips in the package
- Information on how long the samples should be archived, and subsequent disposition
- Name of person that performed the testing
- Date when the samples were shot peened

## Storage Environment

Now we come to the second important issue. A wet, damp basement is certainly not an ideal storage location. There are two factors to be considered:

- 1) Low and stable temperature
- 2) Relative humidity

A Google search for "recommended paper document archive environment" gave this result: "Ideal temperatures for paper records vary between 65° and 72° Fahrenheit. Relative humidity should be between 40 and 55 percent." This is also a good guideline for Almen strip storage.

A stable temperature is important because when a metal surface cools below the temperature of the surrounding air, condensation may form on its surface. In typical manufacturing facilities where the temperature cools overnight and rises later in the day, the higher humidity will cause condensation to form on the cool metal surface.

Above a certain relative humidity of the air, metal parts can rust rapidly and the corrosion hazard is considerable. Below a critical humidity, the rate of corrosion becomes insignificant. This critical relative humidity is at about 45%.

Aside from well-packed peened Almen strip samples, an air-conditioned and temperature- and humidity-controlled environment can help to keep Almen strip samples in mint condition. ●



*Plastic Bag with VCI Paper Strip*



*Used Strip Box with VCI Paper and Seal Wrapped*