

How Should I Store My Gaskets?

Most people recognize that many consumable products, including products in our homes, have manufacturer recommended storage requirements. These practices are followed because we prefer not to waste any portion of the \$2 to \$3 we spent on that gallon of milk by improperly refrigerating it.

Yet, most gasket storage practices are rarely optimal or even satisfactory. What is the optimum way to store gaskets? Better yet, how can I improve the way I currently store my gaskets?

Location

The base guideline of most gasket manufacturers is to store gaskets and gasketing material in a cool, dry location away from heat, excessive humidity, direct sunlight and chemicals. The optimum storage conditions are defined as 40-deg F to 80-deg F with 40 to 75 percent relative humidity, in a room with no windows and non-UV or low-UV producing lights, minimal dust and no chemical storage nearby. Where can a location like that be found in most facilities?

Gasket storage areas are more commonly found near a large receiving door, lit by fluorescent bulbs and subject to frequent temperature and humidity fluctuations. Heavy metallic gaskets are often stacked on shelves, and soft rubber-bound gaskets are often stored on a pegboard hanging from the wall. Sheet material is sometimes stored flat on an open-air rack or partially rolled up and stored on end in a corner, or along a wall.



Figure 1. Pegboard gasket storage

There are many good reasons why it is important to store gaskets properly. First, the gasket is faulted in the majority of bolted flange connection failures (see *Sealing Sense*, January 2008, available at www.pump-zone.com). As a result of our immediate inclination to blame the gasket, it is imperative to give the gasket a chance to perform at its optimum level before it is installed.

Rubber-Bound Gaskets

Gaskets can be made of complex material. Consider rubber-bound sheet gasket materials. Upward of 15 to 20 individual components have to interact to provide the best finished product. The principal components include the rubber binder, the reinforcing fibers and the filler components.

Everyone is aware that rubber deteriorates relatively quickly unless it has been formulated to withstand specific environmental conditions to which it will be exposed during its lifetime. Gaskets are not designed to be stored for an extended period under some of the common storage conditions previously described. Rubber chemicals used in gasket manufacturing are intended to provide optimal processability during manufacturing and optimal performance in a bolted flange connection.

Reinforcing Fibers and Fillers

Reinforcing fibers are often considered the one component that is indestructible and unaffected by abuse. In the days before the conversion to man-made fibers, that may have been the case. In today's world, modern fibers can gradually dry out, weather and deteriorate.

Filler components may arguably be the largest contributor to gasket deterioration. These components come in many forms from many different chemical families and are generally unique to every manufacturer. They are selected and combined to optimize gasket performance and maintain a cost level that the end user can afford. They can often deteriorate quickly in a storage environment because they were designed to work in a more aggressive, pressurized and chemical environment.

Binders

Binders combine all the components in the gasket. With the manufacturer's unique mixing process, these components greatly contribute to the material's flexibility. As the gasket ages naturally, and depending on the way the finished gasket or sheet was stored, problems such as stretching, distortion, cracking and sticking can occur.

Other Gasket Types

Other industrial gasket types (PTFE, semi-metallic and metallic) are not as susceptible to poor storage conditions but can be affected. Excessive dust can settle on gaskets and cause compatibility issues with the media being sealed. High humidity and moisture can also cause metallic components to oxidize.

Optimal Storage Conditions

Gaskets are one of the most critical components in a piping system. To give them a chance to work the way they were designed, they need to be stored in a way that minimizes deterioration. It is easy to recommend storage in a perfect world. Since we do not work in ideal conditions, optimizing existing storage practices and locations is the best initial step.

Minimize dust, temperature fluctuations, high/low temperatures and exposure to UV light and chemical vapors. If

you store cut gaskets on a pegboard, do not leave them there long as they will stretch. Put them on a shelf, if possible. Roll remnant sheet material relatively tightly, band it and if possible, wrap in something opaque like cardboard. Stand the roll up so it is not tilted. It is better if you can store your sheet material flat. Make sure to keep the spacers in place on spiral wound gaskets.

If possible, keep your storage area away from large receiving doors. Install a curtain around the area to avoid direct drafts if this is where your storage area is located. Covering the immediate top of gaskets from direct light exposure will also help.

Summary

These steps will help ensure the best piping system performance for the longest time possible. When fewer gaskets are wasted due to deterioration from poor storage the result is additional money to combat real problems.

Next Month: *What's new in braided packing technology?*

We invite your questions on sealing issues and will provide best efforts answers based on FSA publications. Please direct your questions to: sealingsensequestions@fluidsealing.com.

P&S



Figure 2. Flat storage of sheet gasket material

Fluid Sealing Association

Sealing Sense is produced by the **Fluid Sealing Association** as part of our commitment to industry consensus technical education for pump users, contractors, distributors, OEMs and reps. *This month's Sealing Sense was prepared by FSA Member Mike Shorts.* As a source of technical information on sealing systems and devices, and in cooperation with the **European Sealing Association**, the FSA also supports development of harmonized standards in all areas of fluid sealing technology. The education is provided in the public interest to enable a balanced assessment of the most effective solutions to pump systems technology issues on rational Total Life Cycle Cost (LCC) principles.

The **Gasket** division of the FSA is one of six with a specific product technology focus. As part of their mission, they develop publications such as the *Metallic Gasketing Technical Handbook* as well as joint FSA/ESA publications such as *Guidelines for Safe Seal Usage - Flanges and Gaskets* and *Gasket Installation Procedures*. These primers are intended to complement the more detailed manufacturer's documents produced by the member companies.

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