

Expert Advice Aids Selection of the Right Gasket Material

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Just because it is white does not make PTFE right for your application.

There are now a wide range of PTFE products to choose from in the industrial gasket market place. The products have evolved dramatically since the late 1960s, from just virgin and commercial grade PTFE to the present day offerings, which are described as calendered or restructured filled PTFE sheet.

PTFE has many benefits. The two most notable are the exceptional chemical resistance, which means there are only a few chemicals that will attack the polymer, and that it can withstand temperatures up to 260°C (500°F). The product has one significant weakness. It exhibits creep, and/or cold flow characteristics under compressive loads, thus affecting the gasket's performance since frequent retightening is required. The point is, most users of PTFE are unaware of the fact that several different materials can be used successfully for the same application. The question to oneself should now be, what product is right for my application?

There are varied processes in how PTFE sheets are manufactured, sintering the PTFE into a billet form, and then skiving into sheets, or having sintered PTFE sheets manufactured from a molding process. Fillers or fibers can be added to reduce the creep behavior of both processes. The other process of calendering (made from a PTFE cake as it were), then sintering the sheets, creates sheets with a very even homogenous structure throughout the entire manufactured sheet, thus dramatically reducing the problems of creep.

With any different process, there are diverse costs associated with the manufacturing techniques, and diverse costs to the end user. For example, a 1/8" x 60" x 60" sheet manufactured from the calendered process, also known as the restructured process, will cost approximately four times as much as glass filled, sintered PTFE product of the same size.

As mentioned earlier, PTFE has exceptional chemical resistance capabilities. Pulp and paper mills use a wide range of PTFE gaskets in their facilities. For example, in the bleachery portion of the plant, an application like Sodium Hydroxide or Sodium Borohydride calls for a gasket manufactured from a restructured sheet process. The gasket is four times more expensive than a glass filled, sintered process gasket. In 85% of all applications, sintered PTFE products will work as well as restructured PTFE. Researching and finding the correct gasketing product for each particular flange is the real challenge in increasing production and reducing costs.

Today's PTFE has a wide range of fillers that can be incorporated into the sheet to meet the many chemical service needs. Some fillers include Barite, Synthetic and Mineral Silica, Barium Sulphate, or Hollow Glass Micro-Spheres. Each of the fillers has a specific service application, which can be used for a particular chemical in a particular flange.

In the last few years, there have been PTFE resin shortages meaning large price increases have been passed onto the manufacturers. This also results in increased costs to the consumer. Those higher costs have not fallen all the way back from pre-resin shortage concerns in Canada. The Canadian market is now experiencing the introduction of restructured sheet from China. This looks and feels like the same

products they have been manufacturing in the Americas for many years now, but it can be purchased at a significantly lower cost to the industrial gasket consumer. The choices are numerous and the cost savings to the consumer can be tremendous. The work is finding a reliable supplier/manufacturer to guide you in the correct direction for the most effective cost savings when purchasing PTFE gasketing products.

The highest price gasket product is not always the best selection for your particular application. So just because it is PTFE and it is white, does not mean it is always right for your application.