

Alert 14-07: Choosing Steel Drum Linings

For more than 100 years, steel drums have been the container of choice for packaging a wide variety of products. From baby food to highly purified solvents to hazardous materials, they have stood the test of time. A significant segment of the steel container market is in the form of lined containers. These are containers that have a coating applied to the interior that is designed to protect the customer's product. Many of these coatings have undergone rigorous laboratory and field testing over the years to ensure that they are suitable for the lading being packaged. However, with the introduction of new products and reformulations of existing ones, linings that may have been acceptable before may no longer perform the same way. This bulletin is designed to assist customers in the lining selection process.

Lining Selection – New Products

The first step in determining the proper lining for a new product is the submission to the drum manufacturer of the product's Safety Data Sheet (SDS), the distribution environment in which the package will be exposed, the fill temperature, the product's pH and any other attributes that are unique to the product. In some cases, not all ingredients are listed on the SDS. Full disclosure of the product's formulation will allow the drum manufacturer to select the appropriate lining for the product.

The drum manufacturer will forward the information provided to the lining manufacturer, who will compare the ingredients and characteristics of the product to those of existing products, and suggest an appropriate lining. If an absolute match cannot be found, the lining manufacturer will request a sample of the product so that accelerated exposure studies can be performed to determine the product's effect on various lining types. Industry standards for compatibility testing are a minimum of 90 days at 49 degrees Celsius or 120 degrees Fahrenheit. Compatibility tests at 120 days afford an additional level of security in determining longer-term storage conditions. Once these exposure studies are completed, the lining manufacturer will report the data and make a suggestion as to the type of lining that should be used.

Lining Selection – Reformulations

Product reformulations usually happen gradually over time with little regard to the effect on the drum lining. For this reason, it is extremely important to notify the drum supplier when product reformulations are being considered even with something seemingly innocuous, such as a change in the product's pH. Other changes that should be reported to the drum supplier include, but are not limited to, a change in raw materials, fill temperatures or material handling issues. Sometimes, the submission of an SDS for the reformulated product is all that is needed. Other times, a sample of the reformulated product will need to be sent to the lining supplier for further testing. As with new products, the lining manufacturer will report the data and make a suggestion as to the type of lining that should be used.

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Shelf Life

Because of their strength and durability, lined steel drums are often incorrectly thought of and used as storage containers. It is extremely important to remember that lined steel drums are designed and built as shipping containers with the primary purpose of safely transporting products from point A to point B. Product exposure tests conducted by lining manufacturers on drum linings are designed to evaluate the lining's ability to resist attack from the lading for a specified period of time. There are potential issues associated with the use of linings that exceed those time periods suggested by the lining manufacturer.

Responsibility

Whether dealing with a new product or the reformulation of an existing one, full disclosure of the product's characteristics, including submission of a product sample, is essential in determining the correct lining. It is the responsibility of the container filler to select the proper lining and provide written documentation to the container manufacturer specifying the lining that is acceptable. Your container supplier will be happy to work with their lining supplier to help you select the proper linings for your product line.

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This information is based on the Industrial Steel Drum Institute's best knowledge at time of issuance. It is the responsibility of any filler or user of steel drums and pails to ensure that the unique characteristics of products contained therein or any reformulation of products are accurately described to the drum and lining manufacturers. Customers, fillers and users should consult the appropriate professional for assistance in compliance with the responsibilities outlined hereunder.