



GLASSINSIGHT

Improving Performance In Production

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ask the expert...

EXPENDABLE REFRACTORIES SUPPORT CONTAINER GLASS PRODUCTION



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For the container glass processing sector, expendable refractories are essential in the high-temperature feeder area. Here, Pyrotek Glass Division's Applications Engineer, Rick Retorick* responds to a series of application questions commonly posed by customers.

Q: What are the key characteristics of a successful refractory for container glass processing?

A: Expendable refractories are required to have precise dimensions and to deliver process performance that meets the particular requirements of the customer. The refractory material must have a high tolerance to thermal shock, high erosion resistance and good mechanical strength.

Q: What are the common problems with expendable refractories?

A: The most common problems associated with expendable refractories are thermal shock, which gives rise to cracking in the refractory, and erosion

of the refractory due to the glass moving over its surface and causing wear.

Q: How can these problems be solved?

A: In cases where the glass container producer is short run-oriented, there are normally no problems associated with erosion, particularly with the orifice plate. In many cases, the orifice plate is changed out so frequently that there is very little if any wear to the orifice hole. Generally, the plungers, spouts and tubes are in service much longer than the orifice plates. Customers, especially those producing the same product for long production runs, expect to see longer wear of these refractory parts. In order to achieve the best possible wear and thermal shock performance, it is necessary in many applications to use formulations that include alumina, zirconia, and silica. By varying the amounts of these base ingredients, superior performance can be achieved against thermal shock and erosion. It is also a good practice to preheat any refractory before installation.

Q: What specific refractory products and materials are available?

A: Pyrotek supplies a broad selection of high-performance material solutions providing effective options for a variety of production applications.

Formulations offered, range from high mullite materials, through to those con-

taining various amounts of alumina, zirconia, and silica depending upon the specific needs of the customer. Different products for both short and long run-oriented container glass production range in alumina content up to 97% and zirconia content up to 40%.

For example, the Pyrocast range of refractory shapes provide glass manufacturers with over 30 years of dedicated production coupled with application experience and proven performance. The pre-cast expendables—manufactured in particular product formulations including Pyrotek M (mullite-alumina composition), Pyrotek AZS 20M, and Pyrotek AZS 40M (both alumina-zircon-silica)—are available in a variety of shapes and sizes, all with proven process use in high-temperature, molten glass contact applications. Pyrocast's smooth surface

finish does not mark or streak the glassware and Pyrotek's selection of in-stock moulds help minimize costs and ensure timely delivery.

Feedback from many customers using higher zirconia refractories have evidenced an increase in wear resistance, delivering up to 50% longer service life than typical high alumina refractories. The increase in service life of the expendable parts directly translates into reduced maintenance costs.

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** Rick Retorick is the Applications Engineer for the Pyrotek Glass Division, based in Carlisle, Pennsylvania, USA. Rick has 30 years experience in refractories used in the glass, steel and aluminium industries.*



Typical expendable refractory shapes from Pyrotek, manufactured with Pyrocast, find broad applications in a variety of container glass process applications.