

Contact materials that can take the heat

Using the correct contact material is essential when loading ware into the lehr furnace. Jennette K Glowski looks at materials from Dura Temp that offer glassmakers a number of options to enhance the safety and efficiency of their operations.

Loading ware into a lehr furnace safely can be a difficult task. In addition to a correctly located and timed loader mechanism, a quality lehr stacker bar and lightweight pockets, a smooth and successful operation requires appropriate contact material for the ware that is being produced. Due to the immense heat emitted by the lehr furnace which results in a high ambient temperature, extra attention must be given to ensure the correct materials are used.

For almost 40 years supplier of hot ware handling solutions Dura Temp Corporation has supported the glass manufacturing industry with successful ware handling solutions in various areas, including the lehr furnace. The Dura Temp team of engineers has in-depth knowledge and experience to help clients select ware handling equipment for lehr bar applications, including lehr stacker bars, pocket assemblies and contact material type and shape.

Straight stacking

When pushing ware into the lehr, a quality stacker bar is needed to keep the ware in straight lines. Dura Temp's lehr stacker bar is an open-tube design featuring adjustable spacing between pockets to accommodate

different centre-to-centre distances. The design uses convection to create a natural air current through the bar, allowing the bar to cool and maintain alignment while also preventing warpage. Fixed position bars are also available for glassmakers who will not need to change spacing between the pockets.

Pocket strength

Lehr bar pockets that are lightweight and durable are also essential for safely transferring ware into the lehr furnace and Dura Temp offers pockets capable of withstanding crashes while maintaining the desired lightweight construction. For its standard twin tube lehr bar, the company offers two different styles of adjustable pockets. The first is a cast steel pocket assembled with two contact material inserts held in place by a retaining pin. This pocket is crash-resistant, lightweight and provides protection for the contact material. The second type is a pin-style pocket, in which the contact material is simply 'dropped on' the pocket. Solid blocks of material such as graphite or calcium silicate or two smaller pieces of carbon-fibre-carbon contact material separated by a spacer can be used in this pocket style. The size of the spacer determines the height of the contact material, making this option suitable for glassmakers producing a variety of container heights.

Contact material requirements

Perhaps the most critical component of safely and successfully loading ware into the lehr furnace is the proper contact material. The high ambient temperature near the lehr furnace makes temperature capability one of the most important characteristics. Low thermal conductivity is also a key characteristic of contact materials used on the lehr bar because it is critical that they do not pull heat from the containers and cause damaging checks right before they enter the lehr furnace. Recommended materials for the lehr bar include carbon-fibre-carbon, dense graphite, calcium-silicate hydrate, stainless-steel braid and high temperature textile tape. These materials offer thermal properties conducive to the elevated lehr temperatures yet they are gentle on the glass with long operational life.

Carbon-fibre-carbon

Carbon-fibre-carbon performs well in instances where other materials break, if lehr bar weight is an issue, or when precision shapes are required. Dura Temp's carbon-fibre-carbon contact materials are very durable, can withstand continuous temperatures up to 900°F (482°C), have low oil absorption and have the versatility to handle a number of types of ware. The materials are offered in sheets for glassmakers to machine on-site to their specific requirements as well as in a variety of pre-cut shapes.

Suitable for use on adjustable or fixed position lehr bar pockets, the materials can be made into different cut shapes that are interchangeable in the same pockets, allowing the same bar and pockets to be used on different jobs – requiring only the carbon-fibre-carbon cut shapes to be changed. ▶




Calumite – an essential raw material for the glass industry.

Use Calumite to:

- Reduce energy consumption
- Improve glass quality
- Increase furnace pull
- Reduce furnace temperatures
- Reduce NO_x and CO₂ emissions
- Provide a high quality alumina source

To find out more call Calumite Ltd on:
+44 1724 282211
 Email: nicola.johnson@calumite.co.uk





Dura Temp's carbon-fibre-carbon contact material is suitable for use on adjustable or fixed position lehr bar pockets.



Dura Temp's stainless-steel braid material on a lehr bar section.



An open-tube design lehr stacker bar.



Calcium-silicate contact material available from Dura Temp.

Dura Temp recommends that carbon-fibre-carbon be used as the lehr bar contact material for beer, wine, standard bottles and for higher speed lines.

Calcium-silicate hydrate

Calcium-silicate can be used in areas of high heat with flame when other contact materials may begin to burn. Dura Temp's calcium-silicate contact material for lehr stacker bars can withstand very high continuous

temperatures of up to 1200°F (650°C); it has a low thermal conductivity and a long service life.

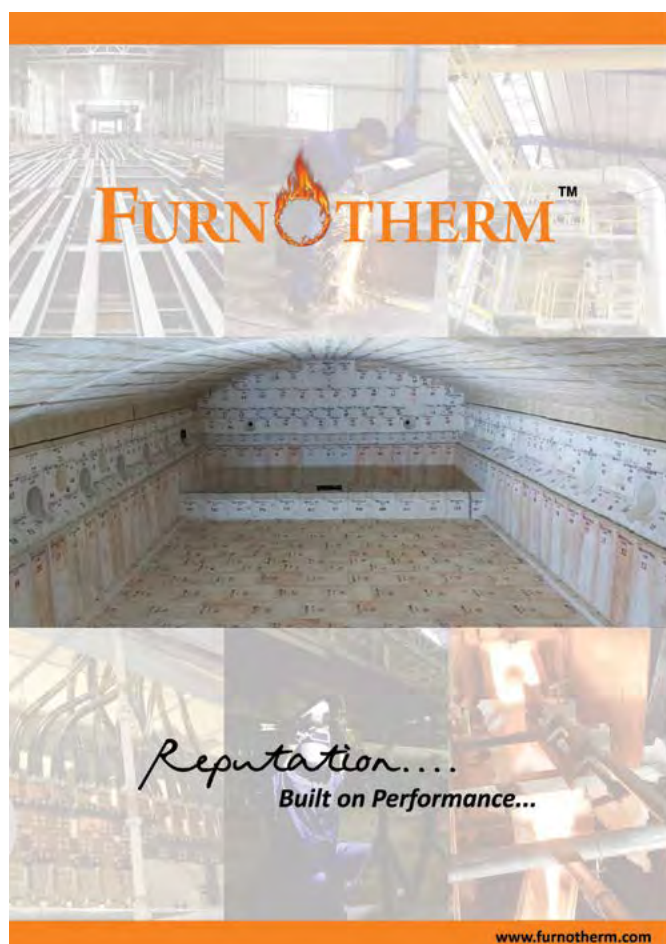
The material is typically cut as thick triangles, up to 2ins (5.1 cm), that are dropped on the mounting pins of adjustable pockets or welded directly to the lehr stacker bar. Calcium-silicate material is easily machined using standard tooling and can be tapped – for this reason it is often contoured to the shape of more difficult-to-handle containers to ensure they are steadily moved into the lehr furnace.

Dura Temp advocates calcium-silicate as the contact material on the lehr bar for large, slower moving ware including liquor, champagne, specialty-shaped bottles and tableware.

Stainless steel

A more recent addition to the company's product line is stainless-steel braid contact material, which can be used in similar fashion to carbon-fibre-carbon material. Dura Temp's stainless-steel braid has high temperature capabilities of 1200°F (650°C). The material has a long wear-life (service-life) and consistent surface quality. Importantly, the braid is attached to the metal support with a high strength weld, preventing it from detaching under the harsh operating conditions. Dura Temp recommends that stainless-steel braid be used as the contact material on the lehr bar for beer, wine, standard bottles and for higher speed lines.

High temperature woven tape and 100% stainless-steel tape are also available through Dura Temp as contact material for the lehr area. The material is made with a multi-layer weaving process that provides tensile strength. The tape can withstand 1200°F/650°C while providing consistent surface quality and long wear-life. Dura Temp recommends the stainless-steel tape for saw tooth bar and flat shaped bar applications as well as for other applications where a flexible and easy to handle contact material is required. ●



About the author:

Jennette K Glowski is Marketing & Communications Manager at Dura Temp

Further information:

Dura Temp Corporation, Ohio, USA
 tel: +1 4198 664348
 email: jennette.glowski@duratemp.com
 web: www.duratemp.com