



402-VMQ Silicone Closed Cell Foam

The EMI-02 range of Closed Cell Silicone Foam is available in Extruded, moulded and Sheet form, which can be cut, joined, stripped, punched and adhesive backed. It includes a good range of densities, ranging from 200 – 400Kg/m³, is Food Contact approved and is available with UL94V-0 certification.

These foams have become a very important part of our product range as due to their high resilience, low compression set, 100% memory and ability to meet the UL94V-0 rated insulation they are perfect for the requirements in today's mass transport industries, (non-flammable cushions and carpet underlay on planes and trains) and for many Military and Telecoms applications as well.

Silicone Foams are best defined as being made from liquid silicone rubber which is catalyzed, rapidly mixed and cast onto a smooth plastic release liner. The cast foam is dispensed onto the release liner in a controlled thickness, passed through a curing oven then post-cured to drive out any residual moisture or vapors. These foams benefit from being cheaper to produce than Gum based sponge, they are capable of meeting UL94V0 Fire insulation requirements and can be easily laminated with other substrates like

Aluminum Foil for heat reflectance or fiberglass for flame barriers.

Whilst the finished Closed Cell Foam appears very similar to Closed Cell Sponge it does have a few differences. The main one is that whilst the higher density foams do have a level of closed cells, it is nowhere near as high as the gum rubber base, in fact we should probably label the material Semi-Closed Cell. Unlike the low density foam which is fully open celled or the Gum which is fully closed cell these higher density silicone foam products are actually composed of both open and closed cells. In an uncompressed state they will allow air and moisture to flow or penetrate but when compressed do provide some form of environmental seal. This is a problem in certain environmental sealing or higher IP applications like door seals where the opening and closing will cause a wicking effect across the material. When the door is opened any moisture or liquid that is sitting on the open faces of the foam will be pulled into the open cells by suction or gravity, then when the door is shut and the sponge re-compressed the fluid is either forced back out to the surface or deeper into the seal. It doesn't take many operations of the door before the seal becomes totally saturated and thus compromised and if the material should freeze at any point the liquid will expand potentially rupturing the cell structure further compromising its effectiveness. Even in a flange plate configuration, the action of metal expansion with heat and cold will eventually lead to a 'wicking' effect (a form of capillary action through the holes) although not as quickly.

This problem can be reduced by over restricting the expansion of the material during production, this can lead to a higher percentage of closed cells but it tends to render the material dull and unresponsive thus altering its sealing capability and its compression recovery, hence this production process is not recommended and it may suggest that a gum based sponge may be more appropriate for the application.

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