WHY CHOOSE...
CB Frost’s range of BISCO® Silicone and PORON® Urethane to seal LED lighting?

Multiple factors including the correct careful choice of enclosure and gasket materials contribute to a successful design. Material selection is critical when trying to find the right solution for long term sealing. The use of incorrect materials could result in dust or moisture ingress within the device causing failure and expensive replacement costs. The most common materials used to seal enclosures and cases include:

- Silicone
- Polyethylene
- Neoprene
- PVC
- EPDM

Each material offers different properties and characteristics that result in different sealing capabilities. Sealing of LED lighting is at its early stages but compressibility, environmental exposure, sealing effectiveness (especially when offering guarantees/warranty), non-fogging and low outgassing specifications should be considered when selecting the correct material. This is where PORON Urethane and BISCO Silicones should come in to consideration.

The range of BISCO Silicones and PORON Urethane maintain excellent resistance to compression set (collapse), exhibit good vibration damping and shock absorption. Parts manufactured in BISCO Silicone and PORON Urethane continue to perform after constant and repeated deflection, sealing integrity will be maintained. Many engineers prefer to use gasketing materials like PORON Urethane and BISCO Silicones that are already certified for use under several standards. These certifications enable designers to design-in gasket material without testing the material itself, effectively simplifying the screening process.

BISCO Silicone – Unique selling points
- Excellent compression set and deflection characteristics
- Excellent ozone and UV resistant
- Excellent high and low temperature range
- UL94 approved to V-0 and HF-1
- Gasketing and sealing rating to UL 157 JMLU2 Listed (File #MH13898)
- IP65 and IP66 approved (subject to sound design of component)
- Low outgassing
- Fire safe (Low smoke and Low toxicity)
- HT800 - London Underground Approved

PORON Urethane – Unique selling points
- Excellent compression set and deflection characteristics
- Certified by UL for gasketing and flammability (UL HBF)
- Low outgassing
- Non fogging
- Variety of densities
- UL Certified for gasket material - reference UL JMST2 (File #MH15464)
- UV Stable

Water Sealing
Pressure: 1.5 psi (10.3 kPa) | Gasket Width: 0.250 inch (6.35mm)
Gasket Thickness 0.125 inch (3.175mm)

CARRYING OUT A COMPREHENSIVE WATER SEALING STUDY, THE FOLLOWING MATERIALS硅酮 (HT800), PORON (41-15188), EPDM, Neoprene/EPDM blend, Vinyl Nitrile and neoprene sponge were evaluated for their initial sealing effectiveness. A high-demand scenario was simulated with 1.5 psi (10 kPa) of water pressure on 6.35mm wide gasket using materials of a medium firmness compressed to various compressions. The following chart shows the results:

Material Types (Medium Grade)
- Silicone (HT800)
- Polyurethane (41-15188)
- EPDM
- EPDM/Neoprene Blend
- Vinyl Nitrile
- Neoprene

Stress Relaxation Curves
25% Material Compression

Stress relaxation and compression set resistance are two attributes that can significantly impact long-term performance. BISCO Silicone and PORON Urethane materials lose less force and level out quickly unlike neoprene, blend (EPDM/Neo), EPDM and vinyl nitrile sponge, see table below.
Compression Set (%)
50% Compression for 22hr @ Room Temperature and 70°C

Material rebound after constant deflection for a specified time and temperature provides a similar conclusion. Elevated temperature is used to simulate accelerated aging. PORON Urethane and BISCO Silicone exhibit minimal Compression set. All other materials take a significant compression set.

Compression set resistance becomes critical when a gasket is exposed to compression cycling. If a gasket takes a significant compression set sealing may be compromised as a result of the decreased thickness. This will usually take place over time and is not always evident in initial testing. This is when the use of either BISCO Silicone or PORON Urethane sponge can provide you with effective and dependable long term sealing solutions.

CB Frost also stock and supply the industry standard materials, Neoprene, EPDM, Nitrile, EPDM/Neoprene blend and Natural sponges. These along with the BISCO Silicone and PORON Urethane materials can be easily converted to plain or adhesive backed die cut shapes, strip or fabrications, using our wide range of manufacturing facilities.

For further information please contact our sales team who will be able to assist you with your requirements.

CB Frost & Co Ltd
Green Street | Birmingham | B12 0NE

t +44 (0)121 773 8494  f +44 (0)121 772 3584  w cbfrost-rubber.com  e info@cbfrost-rubber.com  t twitter.com/cbfrostco

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