



Rail / Electronics

Case Study: (LU) enclosure door seal

The London Underground (LU) system is one of the world's oldest and busiest metro systems, with over five million passengers using it every day. Due to the underground nature of the system, the electronic equipment used to control the trains and infrastructure must operate reliably in harsh conditions, including high humidity, vibration, and temperature extremes.

The Opportunity & Challenge

A company that specialised in building custom electronic architecture contacted Silicone Engineering for a London Underground project. The company required a door seal for a custom electronic enclosure.

The enclosures would house and insulate critical electronics such as switchboards and control systems. For this project, the customer's design engineers were particularly interested in a flame-resistant material with low smoke and toxicity attributes, with the final product achieving a UL rating.

The applications also required the seal to be a low compression set, partly to protect the electronics from dust and water ingress inside the humid environment by creating a strong seal.





The Solution: **expansil™ V-0 Medium**

Our material engineers selected expansil™ V-0 Medium for the enclosure gasket material.

The engineer explained the material was selected for numerous beneficial reasons, including; UL-rated, 30% compression from this density would create a tight door seal, formulated for excellent flame resistance material and would meet the low smoke stringent criteria of London Underground.

The extruded sponge section would also be a significant gap filler and sit inside the door gasket channel. From similar projects, the seals have proven to be highly effective at preventing moisture and other contaminants from entering the boxes. The closed cell structure helped negate the vicious vibrations the LU is famed for, which has helped ensure the electronic equipment's reliability inside.

After successful testing trials, the customer was happy with the material's performance and moved ahead to production. The seals have helped ensure the reliable operation of the critical control equipment housed in the boxes while reducing maintenance costs and improving overall system reliability.

