



Rogers BISCO MS80® Cellular Foam Helps Provide a Healthy Night's Sleep for CPAP Users

General Industrial

According to the National Council on Aging, roughly 936 million adults worldwide are estimated to have mild to severe sleep apnea, which can lead to heart, kidney, and metabolic health complications. The primary medical treatment for sleep apnea is to use a CPAP (Continuous Positive Airway Pressure) machine to keep airways open while sleeping and to prevent snoring.

CPAP machines are medical equipment devices that must perform their tasks safely and quietly to promote healthy sleep. Some CPAP machines also provide temperature and humidity control to maximize the comfort of the air stream. Cleanliness is essential, as humidity and natural exhalation can promote pathogen growth. It must therefore be cleaned often, so a machine that is easy to sanitize regularly is critical to the design. The material selection must take these factors into consideration to provide a durable and safe design for the life of the machine.

Customer Problem

A respiratory device manufacturer was seeking a replacement for the low-density polyurethane (PU) used in their CPAP machines. The previous foam used was degrading over time and crumbling due to repeated cleanings, posing a health risk to the patient as foam particles could enter the air stream and then be inhaled. The breakdown of the material also affected the performance of the device over time.

The manufacturer needed a specialty foam that could hold up to an extensive set of strict requirements maintained over the life of the machine. Along with the medical safety requirements, such as biocompatibility and resistance to fungal growth, it also had to hold up to repeated sanitation methods, such as chemical, UV/ ozone, and/or steam cleaning processes. The proposed foam also needed to dampen vibration and sound from the machine so as to not disturb the patient's sleep.

The Rogers Solution

Rogers' BISCO® MS80 silicone foams were extensively tested and found to be an ideal choice for this application, with densities and color options for maximum customization. This foam proved to be durable enough to withstand repeated sanitation processes, particularly the UV/ozone method, with little to no degradation over the lifetime of the device. This material also provided attractive acoustic and vibration absorption, promoting a quiet night's rest for the patient.