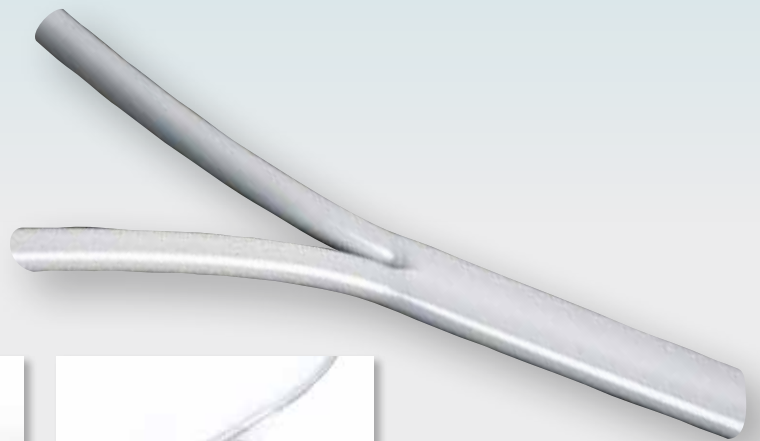




# Silicone Extrusion



## High-quality silicone hose and tube solutions for the healthcare and medical industry.

Trelleborg Sealing Solutions has a long-standing history of producing extruded silicone hose and tube for the medical, pharmaceutical and biotech industries, including brands such as Pharmatube™, PharmaSil™, NutraSil™, Pharmedable™ and SilFit™.

Our extrusion process is unrivaled. We can vary inside diameter, outside diameter or wall thickness to exact specifications, as well as layer cross-sections from many types of materials to create products with unique features. In addition, we can manufacture very small extrusions, under 0.02 inch / 5 mm in diameter.

Our processes can create a myriad of designs including thin walled, thick walled, ribbed, perforated or split hosing and tubing. In addition, we can engineer any formed extrusion profile, including bends, coils or pigtailed in single or multiple planes.

The vast majority of Trelleborg's extrusions are custom-fabricated to meet each customer's unique requirements. The process typically begins in the tool room with the precision manufacture of a die and mandrel. Post-processing extrusion capabilities include services such as post curing, cutting, spooling, printing and drilling.

### Capabilities Enhancing Extrusion

- Milling – large portfolio of standard and specialized platinum and peroxide cured silicone materials including medical grades
- Braiding – single or double braiding, 4 ply wrap, 4 ply plus wire wrap
- Color Striping, Tinting
- Hose/Tube Configuration – single or multi lumen, standard, custom or bulk
- Hose Assemblies – Universal Fit, Permanent Crimp Fittings, Reusable Fittings, Sanitary 316SS
- Continuous length twisted tubing
- Layered extrusions

### Application Examples

- Pacemaker leads
- Catheters
- Drug delivery
- Wound drains
- Medical cuffs
- Feeding tubes

## EXTRUSION

### Unique and Pioneering Extrusion Capabilities



**GeoTrans® – Game-Changing Technology** Our innovative manufacturing process involves the movement of die and mandrel, resulting in innovative designs that eliminate secondary operations and reduce costs. Extruded design possibilities include balloons, single to multi-lumen, stop lumen, bump tapered tubing and advanced wound drain technology.



**Multi-Lumen Meets Miniaturization** We have consistently developed extrusion technologies required for complex and miniaturized silicone devices in medical disciplines such as cardiac rhythm management and interventional cardiology.



**Silicone Foam Extrusion** Our proprietary blowing agent allows us to produce a closed-cell silicone sponge that can be extruded in various client-specified cross-sections. We offer foam rods and tubes, as well as foam-jacketed extrusions.



**Kink Resistant Tubing** Manufactured using a proprietary winding and over-jacketing process, Trelleborg's kink resistant tubing balances flexibility and hoop strength, while guaranteeing open-lumen integrity. The tubing is designed with embedded filaments that wind in a continuous helical pattern along its length, ensuring resistance to flow restricting conditions. The kink resistant tubing is used for medical applications ranging from catheters to prosthetic devices.



**Extruded Ribbon** A cost-effective alternative to silicone sheeting, our extruded ribbon is available with a range of elastomeric properties and dimensions. A continuous process allows our extruded ribbon to be spooled onto various carrier substrates, which can then be punched or laser cut to form various components including check valves and other pressure sensitive medical devices.



**Braided Reinforced Tubing & Hose** Platinum-cured for a high degree of purity, this silicone hose is reinforced with a polyester braid to withstand demanding applications, as well as cleaning and sterilization. It is odorless, tasteless, sterilizable and autoclavable for a variety of uses. Trelleborg also offers customer wire-reinforced braided tubes. Our PharmaSil™ reinforced silicone hose is designed specifically for demanding medical applications. It is extruded in a controlled environment under cGMP practices and can withstand repeated SIP and CIP cleaning and sterilizing cycles.



**Wire & Cable Jacketing** Wires and cable assemblies up to 0.2 inch / 5 mm can be jacketed with one or more layers of silicone to precision tolerances. Such products can be supplied on spools or cut to length. Wires and cable assemblies are jacketed with medical grade HCR, platinum-cured silicone.



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