

Additive Manufacturing of functional elastomer parts with silicone materials

AM of Functional Parts from Silicone-Based Elastomers

Fluid-MEX opens new possibilities in additive manufacturing: for the first time, industrially established, chemically crosslinking materials can be processed in a controlled manner. A standardized methodology for material characterization and process development has been implemented to enable the additive production of functional elastomer parts.

Process Principle

In Fluid-MEX, the feedstock – liquid or paste-like – is processed layer by layer using eccentric screw pumps. This ensures precise dosing and uniform layer formation with highly viscous materials.

Materials and Properties

Silicones, such as room-temperature vulcanizing (RTV) or Liquid Silicone Rubber (LSR), polyurethanes, thermosetting epoxies, and metal/ceramic pastes for green-part fabrication can be processed (one- and two-component systems).

Especially, LSR offers new possibilities for industrial applications with its high tensile strength, thermal stability up to approximately 300 °C, and excellent chemical resistance. It also meets biocompatibility standards, enabling applications in medical and food-grade industries.

Applications

Fluid-MEX is suitable for functional elastomer parts with hardness ranging from Shore 5 to 90A. Typical applications include seals, gaskets, flexible connectors, and damping elements with complex geometries. The ability to locally tailor part properties significantly expands the range of functionality.

Material & Process development

Our standardized approach to material characterization and process development ensures optimal performance, e.g. of pure LSR in Fluid-MEX. It enables the reproducible production of functional elastomer parts with tailored properties for demanding industrial applications. To do this, different Fluid-MEX machines and comprehensive measurement methods – such as rheological analyses – are available.

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[exhibit overview](#)