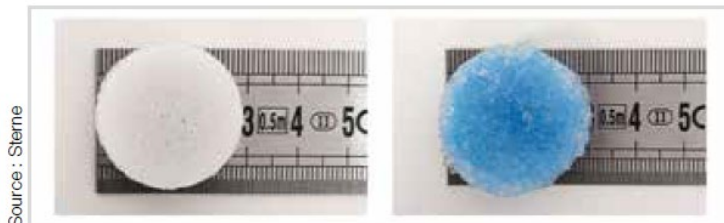


“Sterne focuses on intelligent materials”

4D Printing – Specialist in silicone transformation since 1996, Sterne has always always looked toward the future and been fully committed to innovation. The company has pioneered additive manufacturing by developing in-house its own silicone 3D printing technologies (SiO-Shaping). These technologies enable cost optimization for prototyping or small series and can be applied both standard as well as biocompatible and implantable silicones. However, they “only” allow the manufacture of definitive (static) objects.

The constant evolution of future challenges and needs in the healthcare sector leaves no rest to innovation. 3D printing has evolved to 4D printing. The development and manufacture of dynamic objects is opening the range of applications. 4D printing: what is it exactly? It’s a 3D printing of an object that can be transformed under the influence of an external stimulus. The object comes to life and becomes dynamic! This transformation can be a change of color, shape, size, texture, ... or any other functional property, reversible and irreversible. The trigger may be light, humidity, temperature, magnetism, electricity or pH... the material used is therefore said to be intelligent.

Can silicone be intelligent? To answer this question, Sterne carried out tests, printing an object in silicone that reacts when stimulated by a magnetic field, but also a piece that changes shape when it comes into contact a source of heat. Another test is the printing of a silicone part that absorbs water.



On the left, the base part; on the right, the same part has absorbed the water it was in contact with.

These intelligent materials by their ability to react to one or more external stimuli, they open a multitude of applications, particularly in the field of health sector. A process for the future that pushes back the boundaries of medical devices design! Sterne now has the capacity to print small series of series of dynamic objects in standard silicone and biocompatible and implantable silicone. However, the company wishes to go even further and transpose the molding industrialization process in its ultra-protected environments to intelligent materials. Quite a challenge! eg www.sterne-elastomere.com