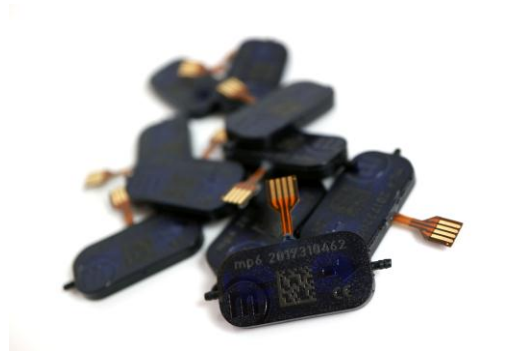


TechNote

Sterilization of micropump mp6

Sterilization refers to any process that eliminates, removes, kills, or deactivates all form of life and other biological agents present in a specified region. During partly or full disinfection and decontamination only certain germs and a certain percentage of them are removed. In an ideal case, sterilization is a complete sterilization. In many sectors sterilization becomes indispensable. There are various methods for sterilization which depend on sensitivity as well as the size of the sterile material. The Bartels



micropump mp6 used for various applications such as in medical technologies and analytics has been tested for different sterilization methods.

Steam sterilization is a simple yet effective decontamination method. Products are exposed to saturated steam at high temperatures (121°C to 134°C) and are placed in a device called "autoclave", then heated through pressurized steam to kill all microorganisms including spores. The exposure time of the device would be anywhere between 3 to 15 minutes, depending on the generated heat. Following sterilization, liquids in a pressurized autoclave must be cooled slowly to avoid boiling when the pressure is released.

According to DIN EN 554 steam sterilization (121°C, 20 minutes) as well as Ethylene Oxide (EtO) Sterilization (50°C, 10% EtO > 60% rel. Humidity) of the Bartels micropump mp6 is possible. E-Beam sterilization or e-beam processing, involving the use of beta radiation, or gamma sterilization which makes use of gamma rays, also called electromagnetic radiation, that readily pass through plastics and kill bacteria by breaking their covalent bonds of bacterial DNA. EtO sterilization is mainly used to sterilize medical and pharmaceutical products that cannot support conventional high temperature steam sterilization - such as devices that incorporate electronic components, plastic packaging or plastic containers.

The Bartels micropump mp6 is durable under environmental composite temperature and humidity, tested according to IEC 60068-2-38 (10 cycles of 24h from -10 °C to 65 °C up to 93 % rel. humidity).