

Sensor protection with SIPERM® materials



Devices for the qualitative and quantitative measurement of gases or humidity are usually equipped with highly sensitive measurement sensors. To ensure the functionality of the measuring devices, these sensors have to be protected against soiling and mechanical damage. With explosive gas mixtures, the environment must be additionally protected against ignition sources caused by the measuring device.

The solution for the protection of gas measurement sensors

Porous materials made of stainless steel (SIPERM® R) and polyethylene (SIPERM® HP) are frequently used to protect measurement sensors in devices for the qualitative and quantitative measurement of gases or humidity. The measuring devices benefit in several ways from the effects of these porous materials.

- ◆ **Stabilized and homogeneous gas flow:**
SIPERM® materials have a homogeneous pore distribution which effects a uniform diffusion of the gases to be detected through the sinter filter and thus protects the often highly sensitive measurement sensors against significant fluctuations.
- ◆ **Protection against soiling and mechanical damage:**
The particles present in the gas stream are retained by the filter effect. At the same time, the sensor is protected against impact and shock loads.
- ◆ **Flame arrester (stainless steel only):**
Protection against flashback during the detection of explosive and flammable gases.

The properties of our porous materials can be perfectly adjusted to the functions of the measuring devices. By targeted and precise adjustment of the material porosity, an optimal synergy between the response speed of the measuring sensor and the protection of the measuring head against soiling or flame flashback can be found.

For the connection of the porous material with the measuring device various solutions are available. Porous geometries made of stainless steel are often pressed in or on the corresponding solid connecting parts such as threads, flanges or housing using a suitable pressing tool and then are sintered together. Particularly at the interfaces between porous and non-porous materials stable chemical compounds are formed in the sintering process, which lead to a high mechanical strength of the components. Sensor units which are manufactured in this way can be directly screwed to the measuring device. Assembly faults, which can occur with other connection methods such as welding, glueing or clamping are hereby avoided.

With sensor protection heads made of porous polyethylene (SIPERM® HP) other properties are in the foreground. Thus, the inherently hydrophobic PE provides moisture-sensitive sensors with reliable protection against humidity. In the opposite case, when the material is hydrophilized, it can be used to protect moisture measuring sensors in soil analysis.



Protective caps for sensors made of SIPERM® R

Please do not hesitate to contact us!
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