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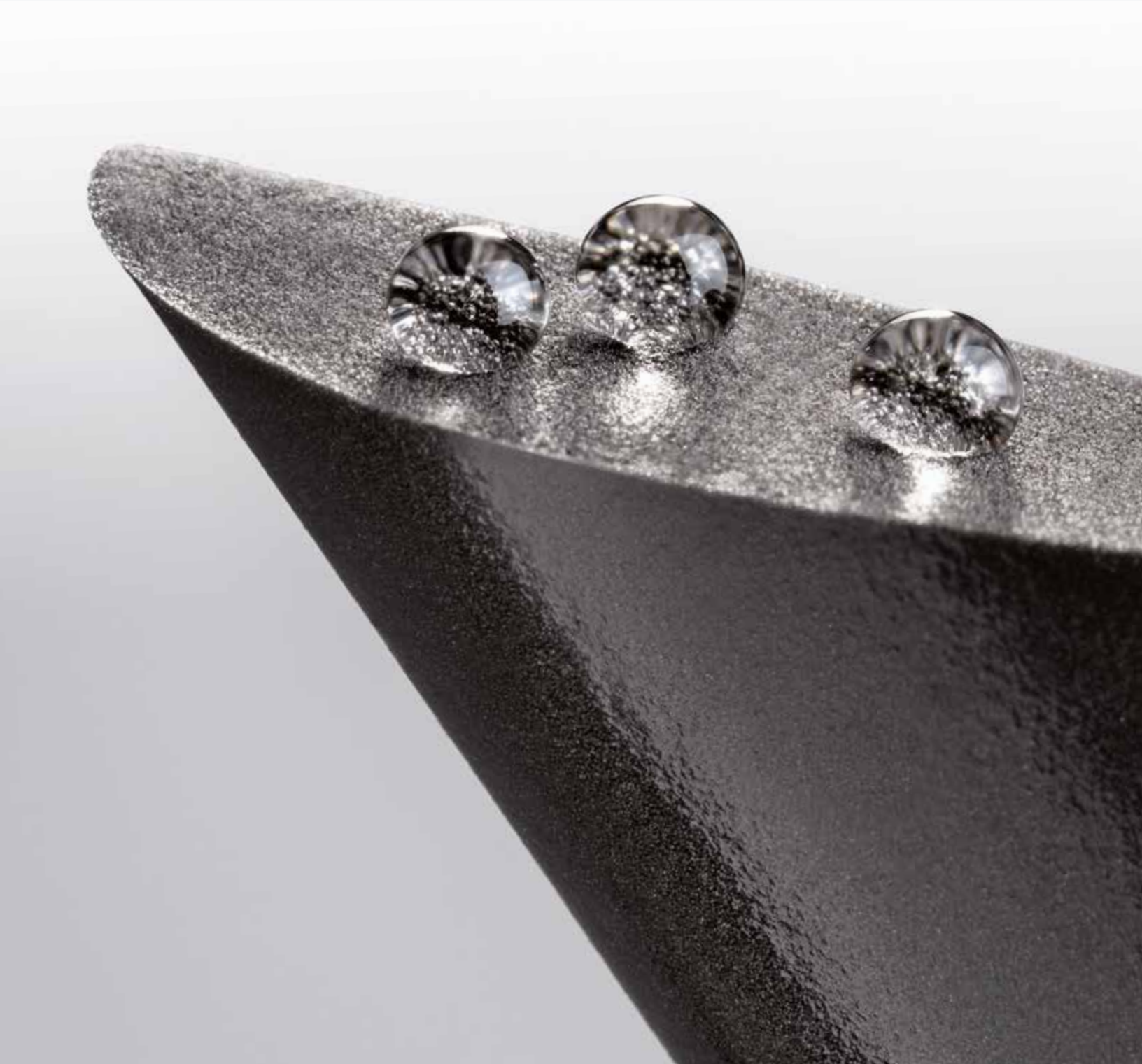
SONDERHPOFF FIP CC Technology

The 2C polyurethane foam sealing with very low water absorption

Henkel

SONDERHOFF FIP CC Technology

Closed-cell sealing foams on 2-component polyurethane basis

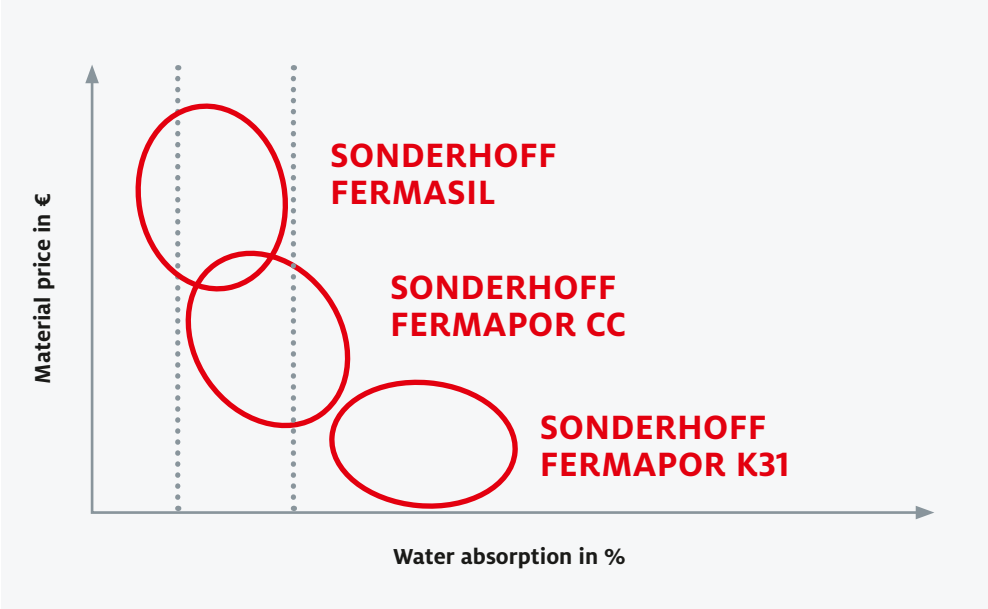


Formed-In-Place Closed-Cell Technology

Very low water absorption at attractive material costs

The SONDERHOFF FIP CC technology (Formed-In-Place Closed-Cell) combines the high water resistance of the silicone world with the attractive material costs of the polyurethane world.

Is SONDERHOFF FERMAPOR CC thus the better choice compared to silicone? That depends on the application! Silicone remains unsurpassed in its temperature resistance. But where -40 to +80 °C is sufficient and water absorption is the decisive criterion, the polyurethane based sealing foam SONDERHOFF FERMAPOR CC is a very attractive alternative in terms of price. We are available for sampling at any time, also in comparison with other closed-cell liquid sealing systems.



All SONDERHOFF material systems from Henkel can be adapted to the particular requirements of the specific application. Thus, the prices and water absorption vary according to the formulation.

SONDERHOFF FERMAPOR CC closes the gap between high-priced closed-cell material systems and low-priced mixed-cell systems.

With the SONDERHOFF FERMAPOR CC material systems and the further developed FIPFG process, a technology is available that opens new fields of application for automated gasket foaming due to its increased economic efficiency.

SONDERHOFF FERMAPOR CC

The material systems on proven polyurethane basis

SONDERHOFF FERMAPOR CC material systems are addition cross-linking, 2-component systems to produce polyurethane soft foams. The main elements of the A-component are polyfunctional alcohols, the polyols. The B-component consists of the aromatic MDI isocyanate and its derivatives. When components A and B are mixed, a chemical reaction starts which, together with the SONDERHOFF FIP CC foaming process, leads to the formation of a predominantly closed-cell polyurethane soft foam.

Familiar processing conditions – typical polyurethane

Once the foam is fully cured, it can be used for applications with high tightness and quality requirements. The temperature application range is from -40 to +80 °C, for a short time even up to +160 °C, depending on the test conditions, and is tested accordingly for each application under real conditions. The exact curing time depends on external influences such as temperature, humidity, seal dimension and is also evaluated for each specific component.

The SONDERHOFF FIP CC material systems

Low water absorption even with damaged surfaces

SONDERHOFF FERMAPOR CC also makes a valuable visual impression due to its very fine-celled, dense, and particularly even foam structure as well as its smooth, slightly shiny surface. And even if the surface should be damaged due to component handling, practical tests and laboratory tests show that the water absorption changes only slightly.

Proven and new benefits – typical polyurethane

- Predominantly closed cells, therefore very low water absorption
- Ice water-resistant at water temperatures up to 1 °C
- No oven or humidity required for curing
- Very robust, assembly-proof sealing surface
- Low water absorption even after damage to the sealing surface (e.g. cracks)
- Cost-effective polyurethane alternative to 1-component and silicone applications
- Formulation can be customized like mixed-cell 2-component polyurethane
- Thixotropic and half-thixotropic formulations available
- No shrinkage occurs
- Meets the standards REACH, EC Regulation 1907/2006, RoHS

Versatile formulations – typical polyurethane

Because SONDERHOFF FERMAPOR CC is formulated on a polyurethane basis, our know-how from over 1,000 polyurethane formulations is directly available to you for the variation of SONDERHOFF FERMAPOR CC. Take advantage of our many years of experience for the development of customized material systems. Contact us – we will be pleased to develop the right material solution for your requirements.

PROCESSING INFORMATION

SONDERHOFF FERMAPOR CC systems are processed with 2-component medium-pressure mixing and dosing machines. The recommended processing temperature is +23 °C +/- 5 °C. As a rule, SONDERHOFF FERMAPOR CC components have a shelf-life for at least 6 months at storage temperatures from +10 up to +40 °C.

PHYSICAL AND CHEMICAL PROPERTIES	SONDERHOFF FERMAPOR CC
Appearance	Black, other colors on request
Hardness	From 40 to 70 Shore 00
Compression load deflection (at 25 % compression)	> 20 kPa
Density	From 0.30 to 0.50 g/cm³
Temperature resistance	From -40 to +80 °C (temporary up to +160 °C)
Tensile strength	From 150 to 500 kPa
Elongation at break	100 to 150 %
Resetting ability (compression set)	> 95 % (depending on test conditions)
Water absorption (gravimetric)	< 10 % (material is already hydrophobized), at room temperature and ice water (1 °C)

SONDERHOFF DM 402 CC

World novelty in the mixing and dosing technology

The SONDERHOFF DM 402 CC mixing and dosing machine produces a sealing foam that almost completely reveals its almost fully reacted dimension immediately after dosing – a great advantage for process-oriented quality control. The application process itself is based on the well-known FIPFG technology (Formed-In-Place-Foam-Gasket), which is the production standard in many industries.

Familiar FIPFG advantages and proven peripherals for high process reliability

Embedded in SONDERHOFF's proven system layout, the SONDERHOFF DM 402 CC operates with the usual precision and reliability. The traversing range, which can be individually dimensioned according to the robot type, and a standard output quantity of 0.5 to 2.0 g/s makes the technology change for many applications spontaneously possible and economical.

- Gentle, dynamic mixing of the material components in the mixing head
- The highly rigid linear robots offer the highest positioning and repeating accuracy
- Central control of additional peripherals and automation is possible through the open peripheral interface
- Remote maintenance via modem or TCP/IP

Innovative and economical through the CC process

The innovation lies in the mixing head and in the material processing. Thanks to the SONDERHOFF FIP CC foaming process, no material recirculation is necessary. This simplifies material changes and accelerates process adjustments. A so-called "shrinkage" of the foam bead can no longer occur. And there is no need for an oven – but it can be integrated if desired, to additionally accelerate the process up to component installation. In addition, the classic air loading via the storage tanks is no longer necessary, which enormously shortens the setup time.
The surface of the CC foam bead is even smoother and more resistant than conventional polyurethane foam seals, and the foam cell structure is also much finer.

The SONDERHOFF FIP CC Technology

For the application of closed-cell 2C polyurethane sealing foams

CONTROL CONCEPT

- Multifunctional mobile panel SONDERHOFF MP 2 with integrated 6,5“ touch screen
- Self-explaining operator guide with interactive menu-based programming using buttons and function and touch keys
- Modular IPC control fitted in the electrical switch cabinet with Powerlink
- EMERGENCY STOP deactivation with approved safety concept; real-time bus system
- Recipe management, programmable pot life monitoring, dosing quantity preselection, and automatic rinsing

MATERIAL PROCESSING

- Mixing ratio: from 1 : 2 to 1 : 4
- Output quantity: from 0.5 to 2.0 g/s (*)
- Material feeding: stub line

(*) depending on viscosity and mixing ratio / other output quantities on request

PRECISION GEAR PUMPS

- Component A: 1.2 ccm/rpm (typical for output quantity 0.5 – 2 g/s and mixing ratio 1 : 4)
- Component B: 0.3 ccm/rpm (typical for output quantity 0.5 – 2 g/s and mixing ratio 1 : 4)
- Drive speed: Pumps: 1 – 250 rpm/min
- Speed-controlled servo gear motor with speed display and adjustment through the display

MIXING HEAD

- SONDERHOFF MK 125 with high-pressure water or component rinsing
- 3 components
- Integrated tempering application
- Mixing head: 1 – 6,000 rpm/min

MATERIAL PREPARATION

- Material pressure tank with capacitive minimum fill-level sensors and shut-off valve, with compressed air fittings and compressed air reducer valves for controlling the tank pre-pressure
- Safety pressure valve, TÜV type-approved
- Novel material preparation for fast process adjustment and optimized foam results
- Direct adjustment of foaming degree possible
- Self-diagnosis of relevant wear components by the control system

PNEUMATICS

- Pneumatics with filter-pressure reducer, maintenance unit with pressure monitoring and valve connection plate to control the pneumatic loads

OPTIONAL HANDLING SYSTEMS

- Linear robots SONDERHOFF LR-HD or SONDERHOFF LR-HE plus
- 6-axis robots

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