

HighQSil® PT Sponge

Lutz Stoffels, Mirco Böken, BIW Isolierstoffe GmbH

HCR Excellence 2024, 16.-17.04.2024

biw

*When it comes
to competence*



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BIW at a glance



3

Company locations in Germany,
Poland and China



81 m€

Sales (2023) with 20% export
quota outside the EU



600

Employees
>24 trainees
> 35 different nationalities



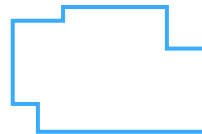
5.000

Customers



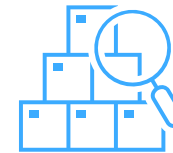
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Core industries supplied



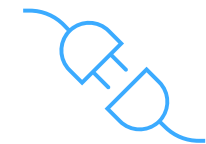
46.000 m²

Production area



175.000

Individual products



502.000 m

Manufactured cable
protection systems and
silicone profiles per day



One company, three core competencies combined under one roof

1

Silicone Extrusion

- High temperature resistant up to +300 °C
- Cold flexible down to -80 °C
- Permanently elastic and mechanically resilient
- Physiologically harmless



2

Cable protection systems

- High mechanical strength
- Temperature & fire resistance
- Dimensional stability
- Good chemical resistance



3

Silicone molded parts

- Heat stability up to +180°C (stabilized up to +280°C)
- Cold flexibility down to -50°C
- Constant mechanical and electrical properties
- Weathering, aging and UV resistance



Competence & quality convince >5000 customers from 8 industries

Automotive ~35%

Molded seals, high quality components & cable protection systems



Energy Technology ~20%

Efficient insulation systems for generators and transformers, LED design profiles



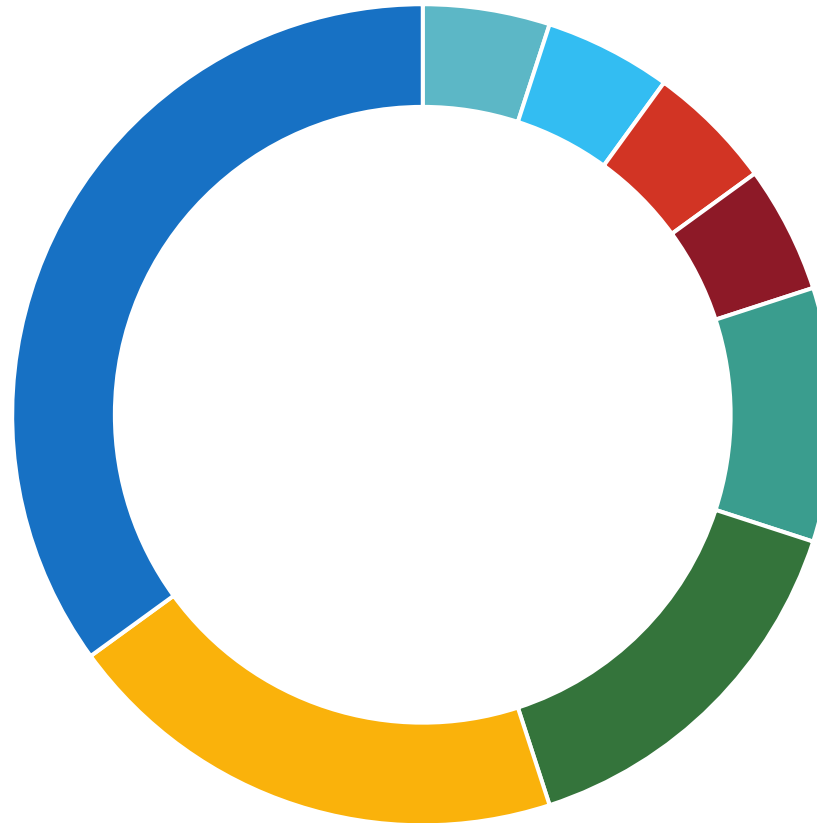
Household Appliances ~15%

High temperature, steam and grease resistant sealing systems



Medicine & Pharma ~10%

Hoses, molded parts and complex items such as ventilation hoses, also in clean room production



Sanitary ~5%

Seals, components and hose lines approved for drinking water



Aviation ~5%

Weight-saving and non-flammable system components



Heat Protection ~5%

Thermally resilient frame seals



Railway Technology ~5%

Fireproof functional elements, high-quality sealing systems and edge protection profiles

Silicone compounding and extrusion



- In-house compounding
- Development according to customer applications
- Sustainable proactive development



- Prototype construction with 5 separate extruders
- Process development and optimization



- Custom extrusion facility with high capacities
- Solid silicone rubber & silicone sponge extrusion
- Energy efficient production



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Why silicone sponge?

Advantages of silicone elastomer

- ✓ Low temperature flexibility
- ✓ Thermal resistance
- ✓ UV und ozone resistance
- ✓ Electrical insulation properties

Advantages of sponge

- ✓ Lightweight
- $\rho_{\text{solid silicone rubber}}: 1 - 1.2 \text{ g/cm}^3$
- $\rho_{\text{silicone sponge}}: 0.3 - 0.8 \text{ g/cm}^3$
- ✓ Damping effects
- ✓ Thermal and acoustic insulation

Silicone sponge extrusion (The balance)



If the expansion rate is too high:

- Irregular bubble structure
- Surface defects



If the vulcanization rate is too high:

- Difficult to obtain a well-structured and light-weighted material.

Silicone sponge extrusion (The perfect tool)



Same drawing but different compound

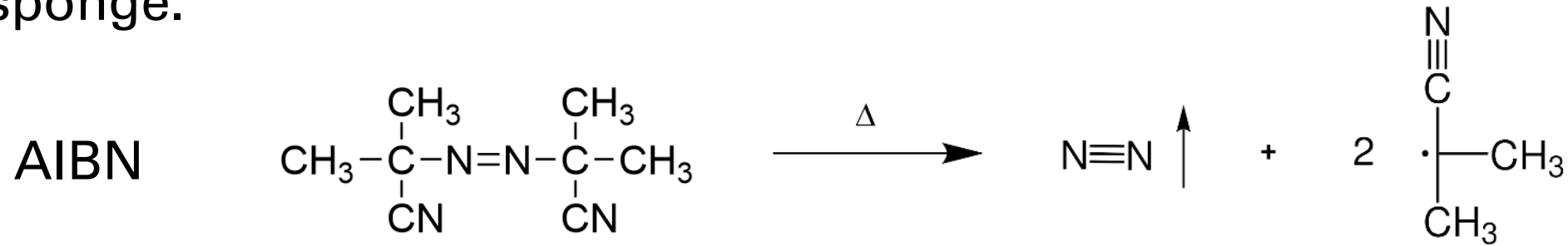


Different tools

Sponge process

Adding chemical blowing agent(s)

During vulcanization, heating causes the blowing agents to decompose, creating bubbles of gas extrapped in the rubber, which form the cells of the sponge.



Adding physical blowing agent(s)





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Advantages of HighQSil® PT Sponge

- ✓ BfR & FDA (food applications)
- ✓ Low density
- ✓ Odorless
- ✓ Excellent mechanical properties (elongation and tear strength)
- ✓ also available temper-free in certain application areas





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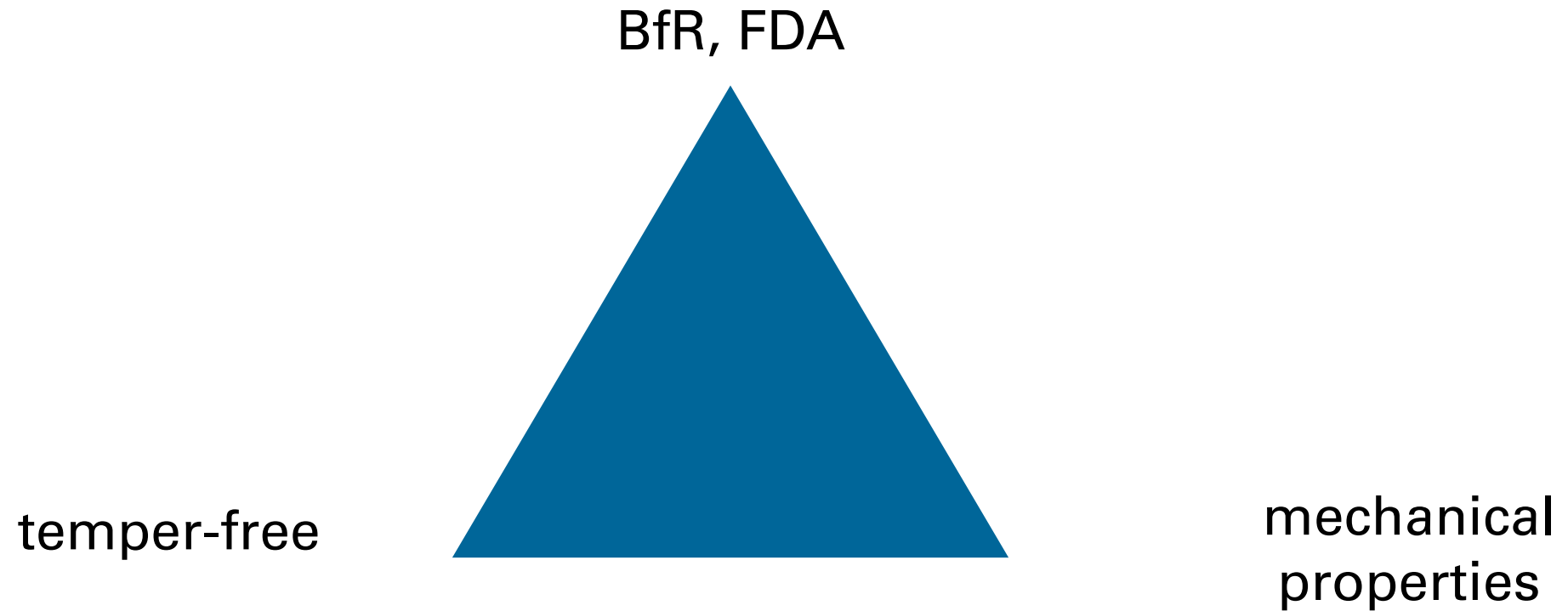
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Applications



For project inquiries or potential collaboration please contact us.

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Thank you