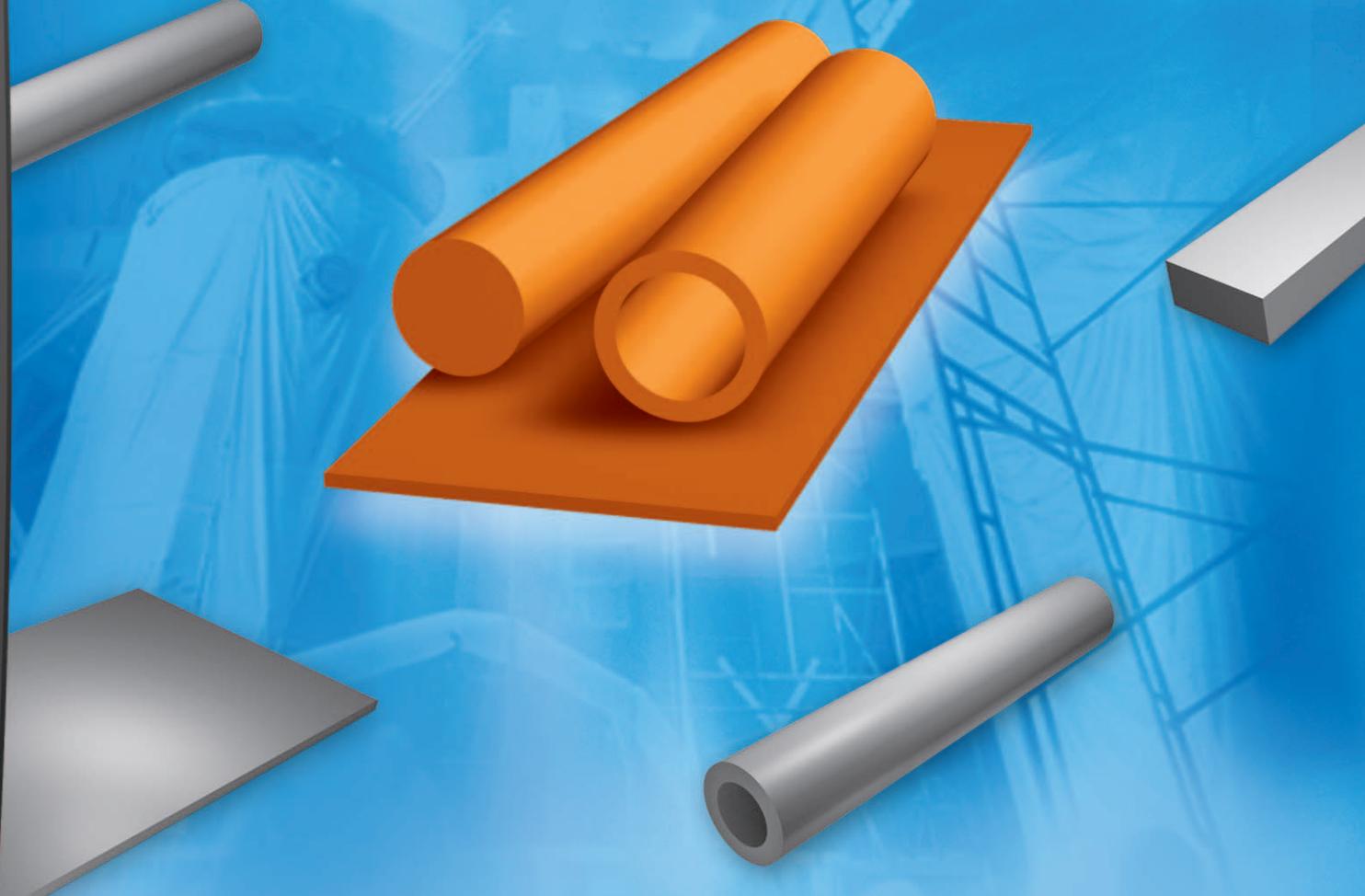


Semi-finished products range



SPÄH Customer Focus – For your benefit



In its role as a highly productive partner in the fields of elastomers, synthetic materials and sealing engineering, the SPÄH Group of Companies is ideally qualified in offering its "Semi-finished Product Range": It has, on the one hand, highly-productive manufacturing plants and, on the other hand, well-organised semi-finished products stores and this together with on-site quality management and logistical services.

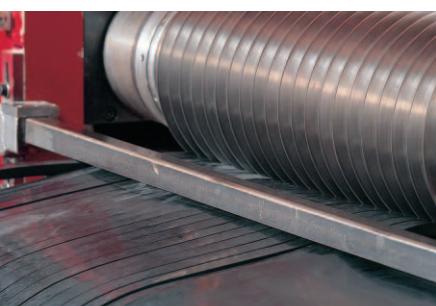
Within the SPÄH Group of Companies responsibility for the development of "Semi-finished Product

Range" rests with all of the members of the Group, the parent company in Scheer, Karl Popp GmbH & Co. KG in Bad Bevensen and Quadriga Dichtungs-GmbH in Norderstedt having altogether some 400 employees. The first two of the above-mentioned companies maintain well-organised semi-finished product stores and have the production equipment for strips and sections, etc. QUADRIGA's production uses all common casting methods for job-oriented, semi-finished products such as sheets, bars and tubes made from polyurethane elastomers. *For your benefit.*

Our material and processing experience – your added value.

Processors of semi-finished goods expect quick delivery times but also need the greatest assurance in terms of the material quality and measurement stability of the semi-finished products. Our "Technical Applications Advisory Service" is a highly knowledgeable and competent partner in this respect. This applies both to the material characteristics and to the standards and regulations that have to be met. Here you can take direct advantage of more than 30 years of our applications experience.

For sections and strips cut to measure from calendered sheeting, pressed sheets, rolls, blocks, tubes, round and square bars, according to the materials and dimensions, we utilise processes such as cutting, water jet cutting, cutting to length, sawing, milling, turning, grinding or splitting. You can depend on us for quality and delivery dates. *Your added value.*



Polyurethane materials to your specifications – Your step ahead

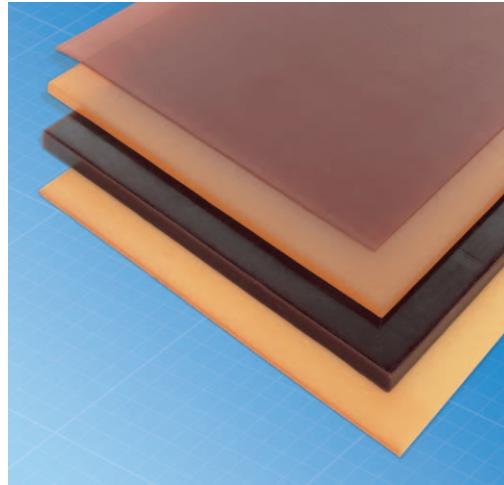
We produce polyurethane elastomers and in particular Vulkollan® and polyurethane in our own processing plant. We can modify the characteristics of a material as required in accordance with your needs. This "material

tuning" assists you in profiling your output. Amongst the things we provide as well is individual colouring in line with the growing market demands. *Service. Your step ahead.*

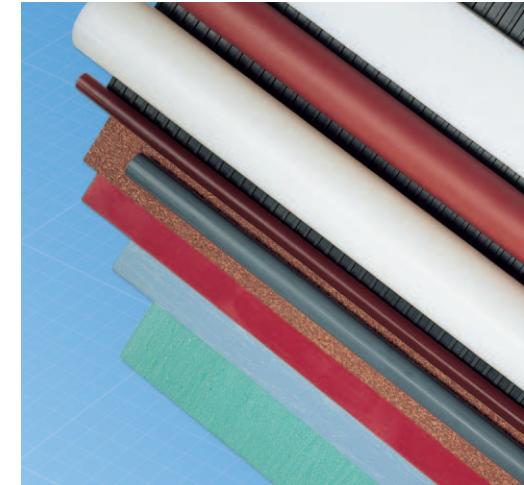




Bars, tubes, strips made of PUR



PUR sheets



Materials for all applications

More than 1000 types in stock – your security

A selection from our well-organised semi-finished products store in Scheer and in Bad Bevensen shows what we have in terms of the material groups:

Elastomers

Choice of materials: Butyl, CR, CSM, FKM, EPDM, HNBR, NR, NBR, PUR (Polyurethane, Vulkollan®), SBR, VMQ

The outstanding features of Vulkollan®/Polyurethane are: their adjustable characteristics, extremely high wear resistance and very low abrasion

Forms of supply of PUR are: sheets from 0.5 up to 50 mm thick, bars from 5 to

The outstanding features are: temperature and pressure resistance

Forms of supply: sheets, rolls, strips and sections also equipped on one side with self-adhesive or graphite coated on both sides – depending on the material from 0.3 up to around 5 mm thick

Approvals/registrations: BAM DVGW, KTW, WRC and the works standard specifications of numerous companies

Heavy duty materials

Choice of materials: Gore-Tex® (expanded PTFE), Klinger Top-Chem, Top-Graph, (flexible graphite), etc.

nies from plant and machinery engineering, the automotive industry and the electrical and electronics industries

Cellular materials

Choice of materials: open cell sponge and closed cell rubber based on CR, SBR, EPDM, NBR and NK, PE-foam, PUR-foam, cellular polyurethane, silicone sponge, cellular Vulkollan®

The outstanding features are: good age and weather resistant properties, elasticity

Forms of supply: sheets, rolls, strips and sections – depending on the material from 2 up to around 60 mm thick

Approvals/registrations: works standard specifications of numerous companies in the vehicle and electrical industries

Electro-insulation materials

Choice of materials: Hard vulcanised fibre, fibreglass laminate, chipboard, cloth fabric laminate, paper-base laminate, Hostaphan, presspahn

The outstanding features are: effectiveness as insulation and good electrical properties

Forms of supply: sheets, rolls, strips, sections – 0.1 to 5.0 mm thick, partly up to 10 mm thick

Approvals/registrations: works standard specifications of numerous companies within the electrical and electronics industries and from plant and machinery engineering and the automotive industry

Depending on the material, we supply these dimensions for your benefit from stock:

Calendered and pressed sheets: 0.01 to 280 mm thick, **round rods:** 2 to 700 mm diameter, **tubes:** 10 to 500 mm outside diameter

200 mm diameter, sheets sections in special formats 4,000 x 2,000 or 7,000 x 1,000 mm, strips or sections

The outstanding features of elastomers are: multi-functional usability and its long-lasting properties

Forms of supply: sheets, rolls strips and sections also equipped on one side with self-adhesive – depending on the material from 0.3 up to around 50 mm thick

Approvals/registrations: DVGW, FDA, KTW, WRC and the works standard specifications of numerous companies

High pressure sealing materials

Choice of materials: AFM, Armstrong, Centellen®, EWP, Klingsersil, Novapress, Tesnit BA and – RECENTLY – "UNITEC® 300 Grün" from SPÄH, which is an innovative material to meet a wide spectrum of requirements

The outstanding features are: High temperature range, good resistance to chemicals and aggressive media, extremely versatile

Forms of supply: sheets, strips and sections – 0.5 to 3 mm thick

Approvals/registrations: BAM, FDA, DVGW and for application in the fields of food-stuffs, pharmaceuticals and chemicals

Synthetic materials

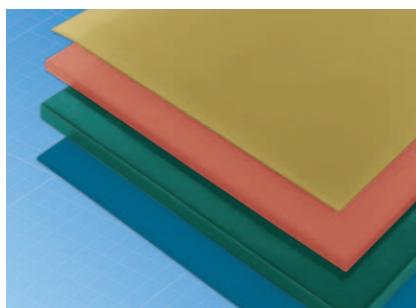
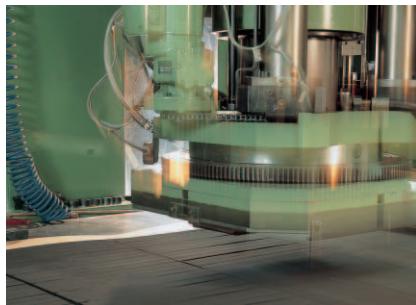
Choice of materials: ABS, PA, PBT, PC, PE, PEEK, PP, POM, PS, PTFE, PVC, PVDF, etc.

The outstanding features are: good up to very good mechanical, electrical and thermal properties depending on the material

Forms of supply: sheets, tubes bars, strips and in rolls

Approvals/registrations: the works standard specifications of numerous compa-

SPÄH's further operational areas within "Seals and more" are in:



There are special information write-ups available for each of these operational areas. Further information available on request.



SEALS AND MORE

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Our service – the bridge to partnership

Service and performance achievement are our no.1 priority. Thus, in addition to the activities mentioned above, we can offer you even more services, for example:

- ▶ Special sections for coverings requiring a large surface
- ▶ Equipping the sections with drillings, cut-outs or other things
- ▶ Drilling sections with aids to assembly
- ▶ Materials ground on one or both sides to meet pre-set tolerances or defined levels of surface roughness
- ▶ Grinding of round rods
- ▶ Sawing, planing and milling of synthetic material sheets
- ▶ Quality approval testing (material mass, surface area, etc.) on request
- ▶ Provision of special qualities, special colours with Vulkollan® or polyurethane and elastomers
- ▶ 24-hours-/48-hours delivery services

We always try to cater for your special needs and to be there when you need us. As it goes without saying in any successful partnership.

For those who are interested, there is a materials sample folder available with the most common materials and special data sheets for each material.