

Spotlight Mineral Fiber Filava

Gruschwitz Textilwerke AG



„Innovations by
Competence“

Structure

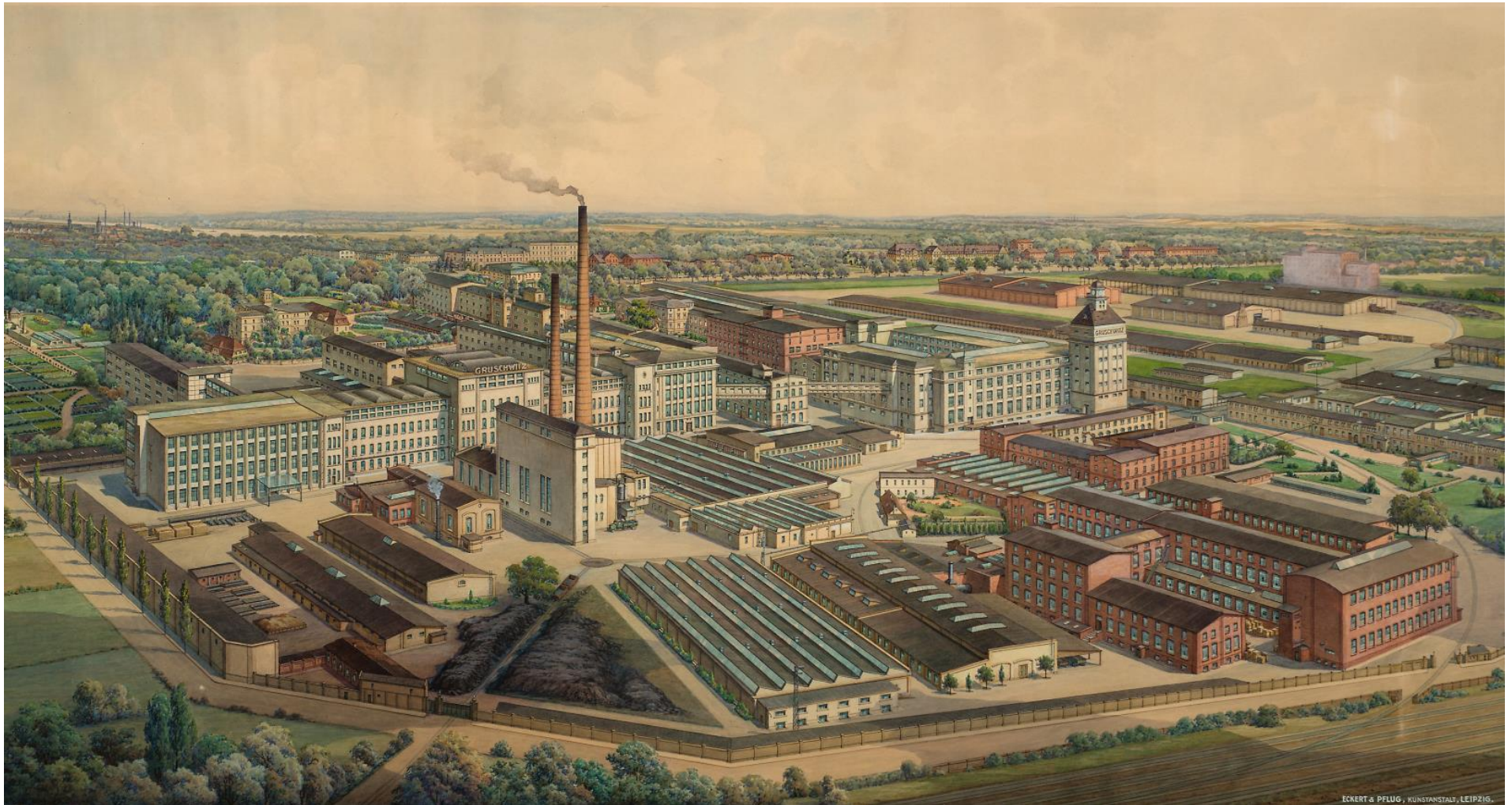
1. Basic company information

2. Our core competences

3. Products and applications

4. Mineral fiber Filava

Gruschwitz in Neusalz/Oder (1900)



Key figures

- Foundation : 1816 in Neusalz / Oder
- Structure : pdm Holding AG (holding)
Gruschwitz Textilwerke AG (operational unit)
- Location : Leutkirch /Allgäu (Germany)
- Turnover : 20 Mio. Euro (2018)
- Equity capital : 53% (2018)
- Investment : 15,5 Mio. Euro since 2008
- Employees : approx. 150
- Acquisitions : Fritz Zorn GmbH (1998), Lozetex GmbH (2003)

The location in Leutkirch/Germany



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Gruschwitz: leading manufacturer of high-tech twists

- Experts for twisting, winding and coating
- Wide range of machinery: several options for different customer needs
- Internal laboratory and technical center
- Highest quality level and maximum flexibility
- Close contact to suppliers and customers
- Pull approach
- Loyal team with long-lasting periods of service

The tool box

PRODUCTION PROCESSES



Twisting



Winding



Plying



Dyeing



Functionalising



Braiding

MATERIAL - KNOWHOW

Acryl Alkex® Antistatic Arselon Basalt Baumwolle

Bekintex® Belltron® Carbon Dyneema® Heracron®

Kevlar® Kuralon® LCP Leinen Negastat® Nomex®

P84 PBO PBT PEEK PEN POD Polyamid Polyester

Polyethylen Polypropylen PPS Procon® Profilen®

PTFE PVA PVDF Resistat® Q-Milk Shieldex®

Spectra® Stahl Technora® Teflon® Teijinconex®

Twaron® Torcon® Vectran® Viscose Zyex® Zylon®

Strategic cooperations

DSM Dyneema



DSM Dyneema recognizes
gruschwitz gmbh Tech-Twists
for being a reliable and technical proficient
distribution partner, committed to sustainabl
service and support to its customers.

Lenzing Plastics



SGL Group



SGL GROUP
THE CARBON COMPANY

Structure

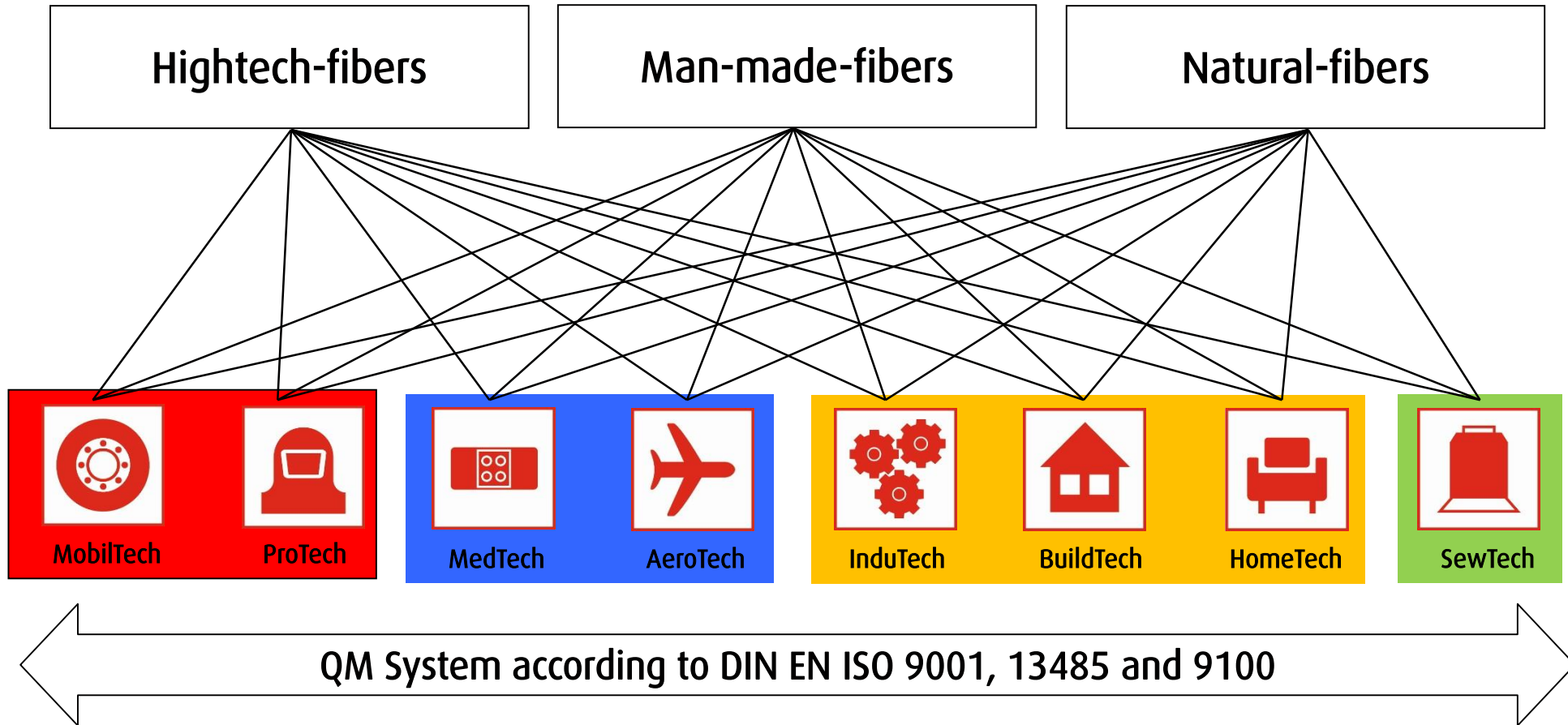
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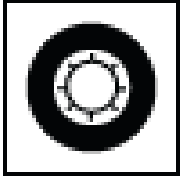
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Our products can be found in various applications:





MobilTech

Automotive Industry



Nomex®-Twist



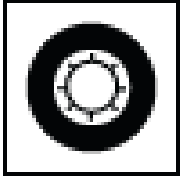
Cylindrical Spools



Reinforced Hoses



Supercharged Engines



MobilTech

Automotive Industry



Twaron®-Twist



Cylindrical Spools



Cam Belt



Engine



MedTech

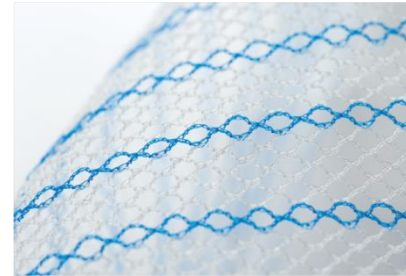
Medical Industry



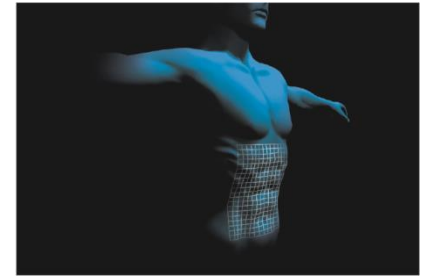
PP Monofilament-Twist



Cylindrical Spool



Mesh



Implant



InduTech

Industrial Textiles



Dyneema®-Yarn



Cylindrical Spool



Rope



Offshore



SewTech

Sewing Threads



PET-Braid



Double-Flenched Spool



Seam



Hiking Shoes



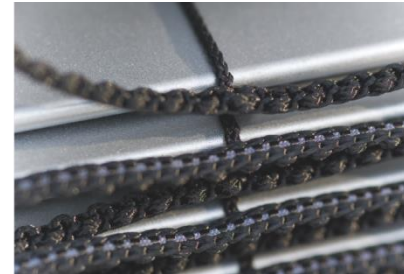
BuildTech
Building Textiles



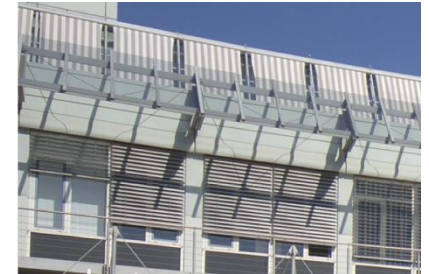
PET/Kevlar®-Cover Twist



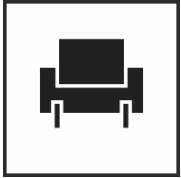
Cylindrical Spool



Guiding Cord



Horizontal Blinds



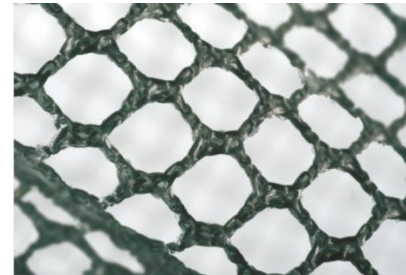
HomeTech
Hometextiles



Polyamid-Twist



Cylindrical Spool



Warp-Knitted Fabric

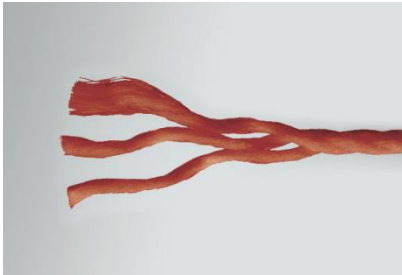


Office Chair



ProTech

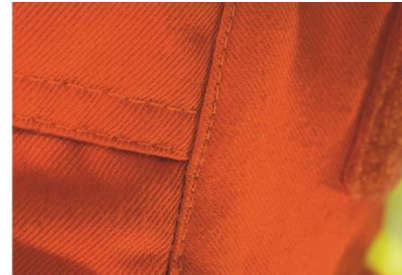
Protective Textiles



Nomex®-Twist



Cops



Seam



Protective Clothing



AeroTech

Textiles for the Aircraft Industry



Tega-Twist



Conical Spool



Textile Components



Aircraft Cabin

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What is Filava?

- Direct roving made of enhanced volcanic rock filaments
- Manufactured in a melt spinning process
- Raw material: basalt and various mineral additives
- Tailormade sizing compounds
- Properties
 - High strength
 - High elasticity compared to other mineralic fibers
 - Resistance to high temperature and temperature variation
 - Alkaline and chemical resistance
 - Better processability than conventional basalt

Additional arguments

- Stable quality and repeatability due to the use of an induction electric furnace for the melting.
- 100% recyclable
- High elongation at break compared to other mineral fibers
- Good stiffness
- Good sound absorption and sound insulation performances
- Low coefficient of linear thermal expansion
- Low coefficient of humidity absorption
- Outstanding resistance to impact
- Good resistance to aging and fatigue
- High resistance to UV
- High coefficients of electric as well as thermal insulation

Potential final applications

- Reinforcement of structural concrete
- Leading edge concrete
- Cabling insulation in engine compartments
- Reinforcements of public furniture textiles
- Bearing structures of constructions in saline environments (wind energy or naval constructions)
- Armored and bullet-proof material
- Fire & flame resistant clothes
- Ballistic weapons
- Fire resistant screens in transport
- Fuel, gas and propellant tanks
- Oil pipelines and piping
- Chemical filters at high temperature
- Medical and surgery room textiles
- Structural reinforcements of tires
- Bearing structures in aerospace
- Aircraft and automotive-related body structural parts and components

Product information

Linear density available (Single-End direct rovings)	680 dtex 810 dtex 1000 dtex Up to 24.000 dtex (multi end rovings)
Tensile Strength	660 - 800 cN/dtex 7,5 - 9,1 g/den 1,58- 2,0 GPa
Elongation at break	2,1%
E-modulus	34.615 - 38.462 cN/dtex 393,4 - 437,1 g/den 90 - 100 GPa
Density	2,6 gr/cm ³
Thermal properties (DIN ISO 7884) • Melting point • Transition temperature • Softening point • Annealing point	• 1.560 °C • 730 °C • 940 °C • 740 °C
Sizing Content (in % of weight)	0,4 - 1,0% (according to customer's request)
Moisture content (in % of weight)	< 0,1%

Sizing references for Filava

Compliance matrix		Downstream Processability and transformation				
		Woven fabrics/ Twisted yarns	Chopped strands	SMC / LFT	Continuous rovings	Non-Woven / Spread-tow
Thermosetting resins	Epoxy	IS65T	EXP-IS65(B02)	-	IS65Tor/and IS65P2	EXP-IS74
	Phenolic	IS72	EXP-IS72(B02)	-	IS72	IS73
	Vinyl/Unset. PEs	IS71	-	IS67	IS71	-
Thermoplastic polymers	PPS	IS59	IS40 (W)	-	IS59	EXP-IS74
	PPA, H-PA, PA	IS59	IS70 (B01W)	-	IS59	-
	PET, PBT	IS59	-	-	-	-
	TPU, PVC	IS51	IS54	-	IS51	-
	PP (polyolefins)	IS69	IS44 (W)	-	IS69	-
Ceramics	Concretes	IS29	IS29 (W)	-	IS29	-
	SiO ₂ -based	IS65T	-	-	IS65T	-
Technical Textiles		IS51	N/A	N/A	N/A	IS73

* New sizing formulae, dedicated for compliance with high-performance plastics (PEEK, TPI, PEI, PES, ...), are under development at the moment; being subject of collaboration for special needs.

Thank you for your attention!

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