



OUR MISSION

**FUN AND PASSION IN THE DEVELOPMENT
OF BETTER HIGH PERFORMANCE PLASTICS
FOR SLIDING ELEMENTS**



OUR GOAL

**WE WANT EVERYONE TO NOW THAT WE OFFER
THE BEST HIGH PERFORMANCE
PLASTIC SLIDING ELEMENTS**



HISTORY

1968 Founded as a technical distributor of plastic parts

1970 Experienced machinists had problems with the "new" plastics

1972 The use of plastic as a wear component required wear values for material selection

1978 The first "old" materials such as bronze were replaced by injection-molded plastic bushings in series production

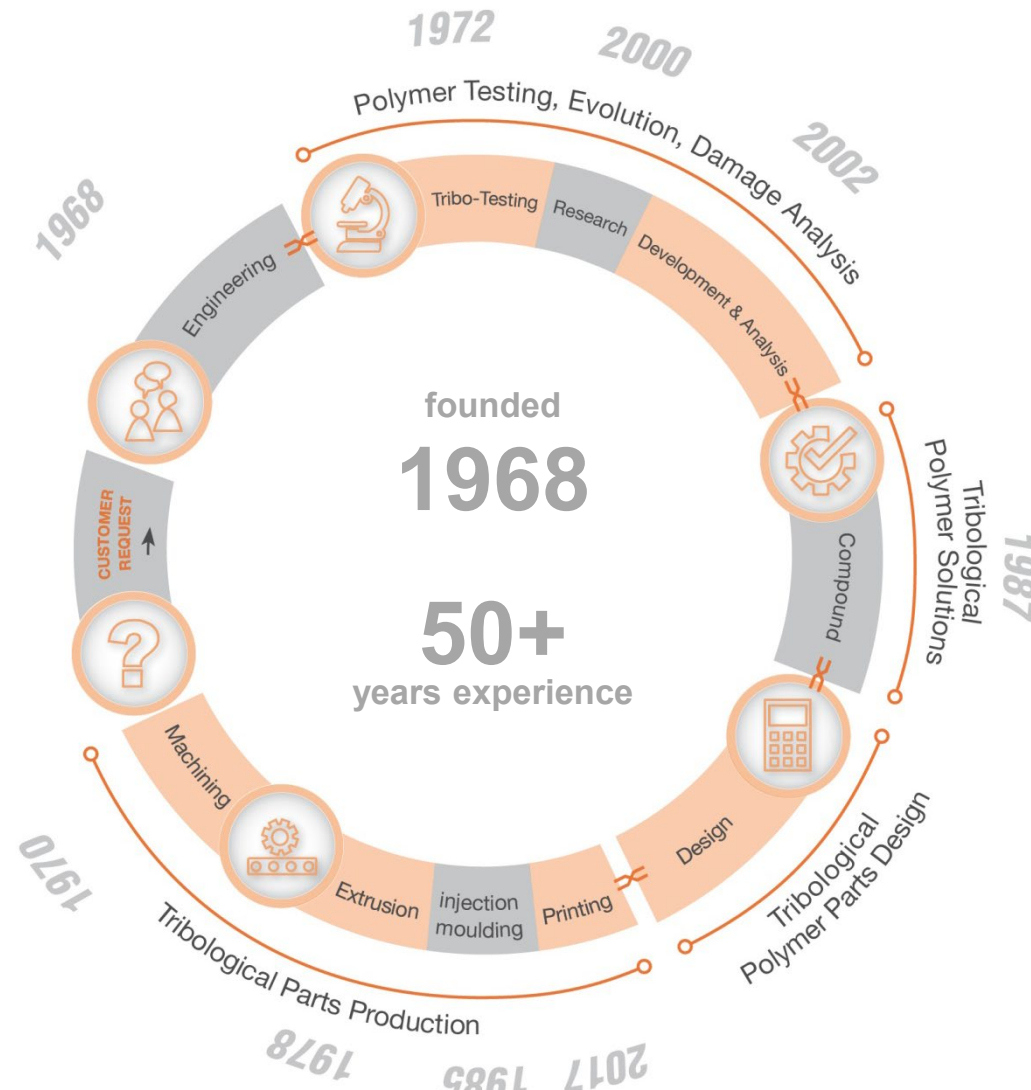
1985 Economically optimal shapes of semi-finished products for machining (tubes) were rare

1987 Formulations had to be adapted to the friction and wear requirements

2000 In order for service life predictions to become more accurate and reliable, Wolf compounds had to be studied in more detail

2002 To enable customers to solve problems based only on a failure part, procedures have been developed for root cause identification

2017 Development of customized ZEDEX materials for FDM/FFF printing with near-semi-finished properties



50 years
of tribology testing and plastic engineering

45 years
Component production in injection molding and machined

37 years
Extrusion

35 Years
Compounding

20 years
Plastics Lab at University Level



OUR EXPERIENCE IS YOUR PRODUCT

„From the idea to the finished product - everything from a single source.“



PRODUCT

A product goes through several phases in its development.

From the idea to the finished product, we map all process steps of product development and can react flexibly and creatively at any time to realize a successful product.



OUR EXPERIENCE IS YOUR PROFIT

„ Meeting requirements no more, but also no less.“

A machine element made of plastic should be designed in such a way that it meets the requirements but does not have any unnecessary safety features.

Only experience, knowledge and creativity can achieve this goal.



OUR EXPERIENCE IS YOUR SAFETY

„We offer 50 years of experience in the processing and dimensioning of high-performance plastics.“

ρ	kg/dm ³	ISO 1183	1.35	1.23	1.2	1.14	1.1	1.08	1.06	1.04	1.02	1.01	1.0
Ec	MPa	DIN EN ISO 604	3150	390	334	4570	4270	2980	78	122	123	111	111
σ _{el}	MPa	Werksnorm	75	20	14	98	130	145	145	145	145	145	145
σ _Y	MPa	DIN EN ISO 604	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.
σ _M	MPa	DIN EN ISO 604	30	15	6	97	32	145	90	38	90	38	90
σ _{3.5%}	MPa	Werksnorm	75	22	15	92	120	127	81	130	131	119	119
σ _M	MPa	Werksnorm	60	17	12	78	107	102	67	103	109	94	70
σ _M	MPa	DIN EN ISO 604	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.
σ _M	MPa	Werksnorm	30	8.5	5.5	45	58	43	35	40	39	43	35
σ _M	MPa	DIN EN ISO 604	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.
σ _M	MPa	Werksnorm	6	6.2	7.1	3.1	8.8	1.7	3.3	8.9	4.9	2.7	5.2
σ _B	%	DIN EN ISO 604	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.
E _{el}	%	DIN EN ISO 604	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.	k.Br.
E _{el}	%	DIN EN ISO 604	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.	n.v.
E _{el}	%	DIN EN ISO 527	2900	310	200	4854	3600	3500	3500	4400	7800	3098	5408
E _{el}	%	Werksnorm	65	5	4	53	61	74	78	78	84	71	42.4
E _{el}	MPa	DIN EN ISO 527	78	19	14	-	110	-	92	113	126	101	-
E _{el}	MPa	DIN EN ISO 527	78	38	37	67	110	117	90	98	2.7	82	71
E _{el}	MPa	DIN EN ISO 527	70	35	30	65	84	117	5	1.5	1.3	-	5.5
σ _{el}	MPa	DIN EN ISO 527	1.6	1.5	2	-	4.2	5	-	6.9	5	3.9	5.5
σ _M	MPa	Werksnorm	4	16	20	1.1	7	-	10.1	23.9	8	4.5	25
σ _B	%	DIN EN ISO 527	6	>300	>300	3	7	-	10.1	23.9	8	4.5	25
E _{el}	%	DIN EN ISO 527	9.5	>300	>300	5.3	12.6	-	3900	3900	2937	7030	680
E _{el}	%	DIN EN ISO 527	3300	400	350	3955	4000	3900	3900	4300	110	119	150
E _{el}	%	DIN EN ISO 527	96	12	11	103	126	143	127	189	210	-	-
E _{el}	MPa	DIN EN ISO 527	117	17	17	113	168	143	127	189	210	-	-
E _{el}	MPa	DIN EN ISO 527	8	9	9	4.5	6.3	6.2	6.7	6.8	6.8	-	-
E _{el}	MPa	DIN EN ISO 527	8.1	8	8	4.5	6.3	6.2	6.7	6.8	6.8	-	-
E _{el}	MPa	DIN EN ISO 527	3300	400	350	3955	4000	3900	3900	4300	110	119	150

Always one step ahead through experience. Our greatest source of knowledge is the characteristic values from over 50 years of materials and component testing.

You can benefit from our many years of success.



OUR DAILY BUSINESS RESEARCH

Research

PRODUCT

We constantly monitor new developments and trends on the market. We carry out basic research in order to understand plastics even better and to integrate the findings into our products so that our ZEDEX® high-performance plastics are always up to date



OUR DAILY BUSINESS DEVELOPMENT

Research

Development

PRODUCT

We are able to integrate your required properties into existing ZEDEX[®] high-performance plastics, through modification.



OUR DAILY BUSINESS YOUR REQUIREMENTS

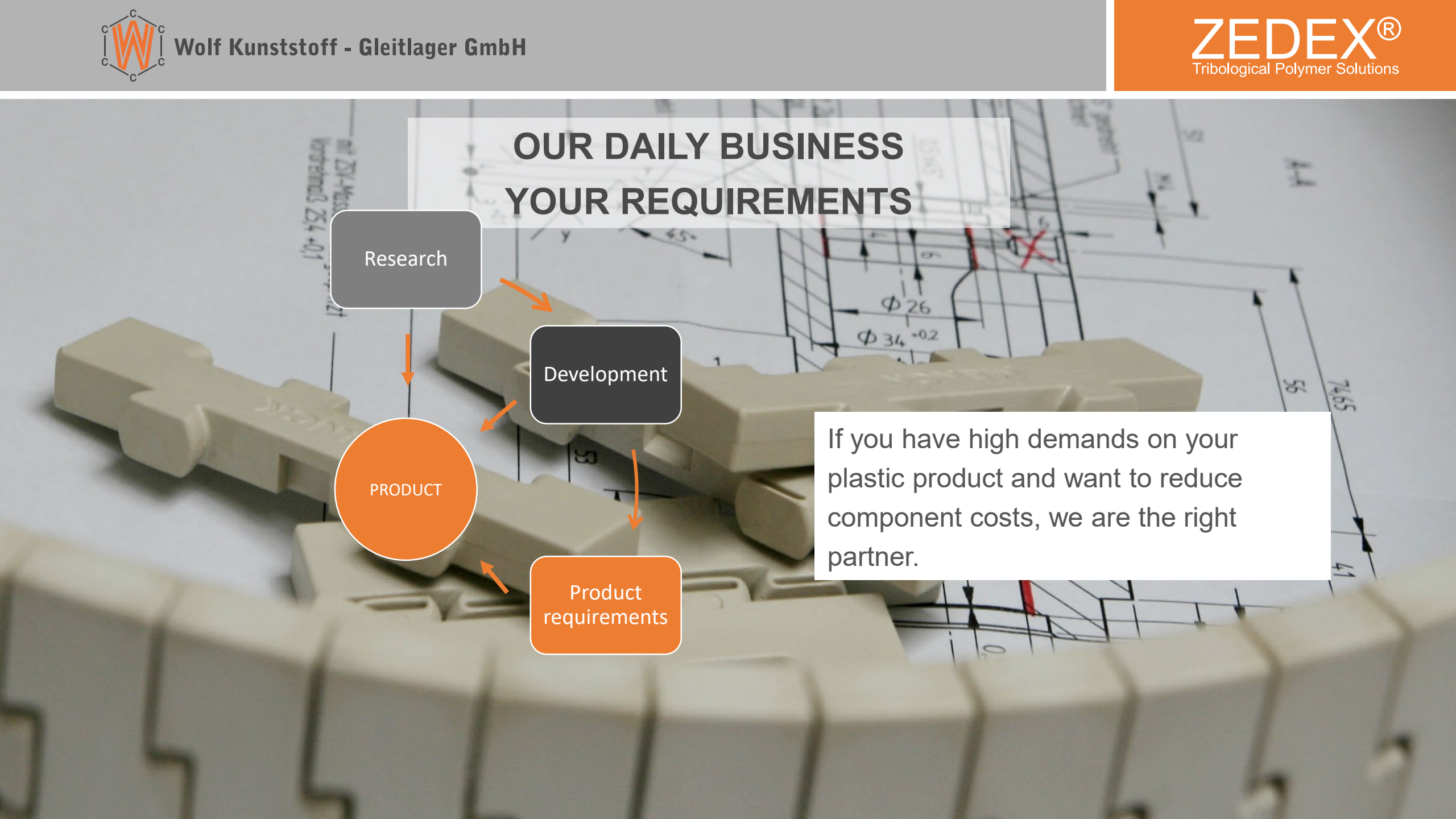
Research

Development

PRODUCT

Product
requirements

If you have high demands on your plastic product and want to reduce component costs, we are the right partner.





OUR DAILY BUSINESS CUSTOMER SERVICE

Research

Development

PRODUCT

Product
requirements

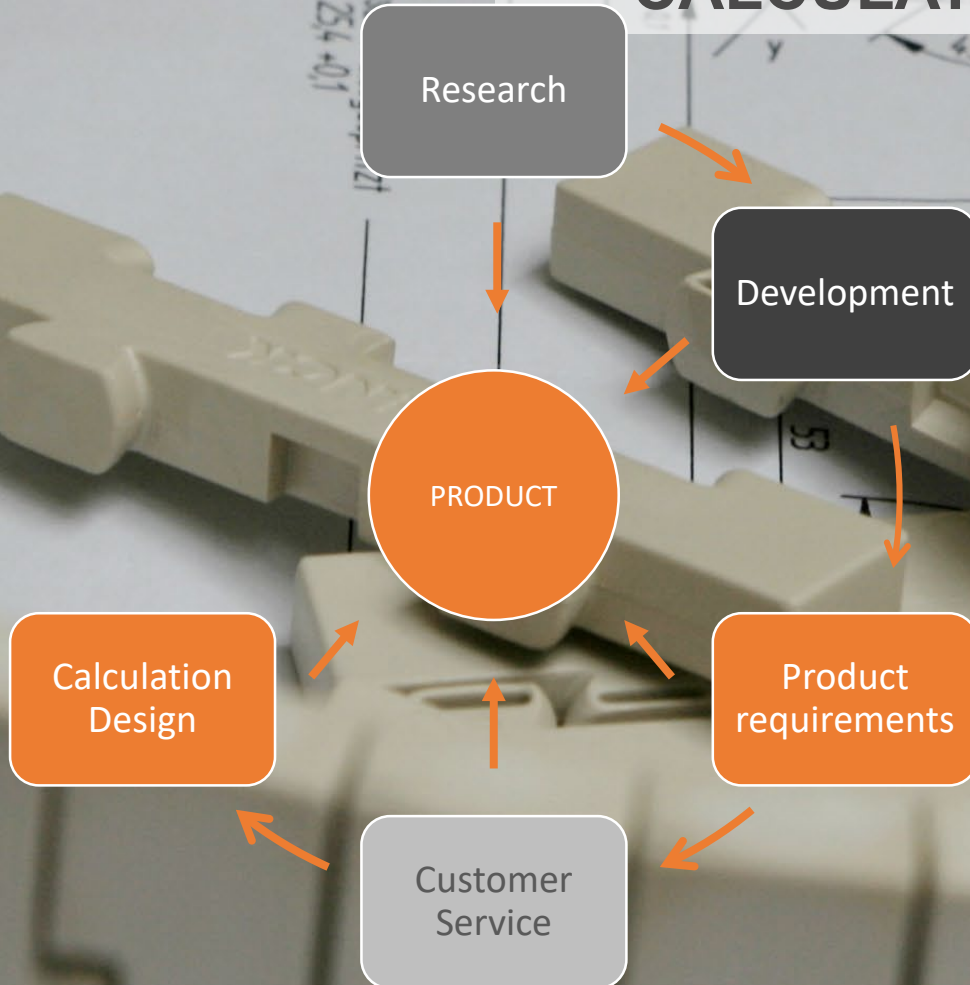
Customer
Service

We support you in the selection of materials and dimensioning of your components and design them appropriately for the material, processing and load.

no question remains unanswered.



OUR DAILY BUSINESS CALCULATION & DESIGN

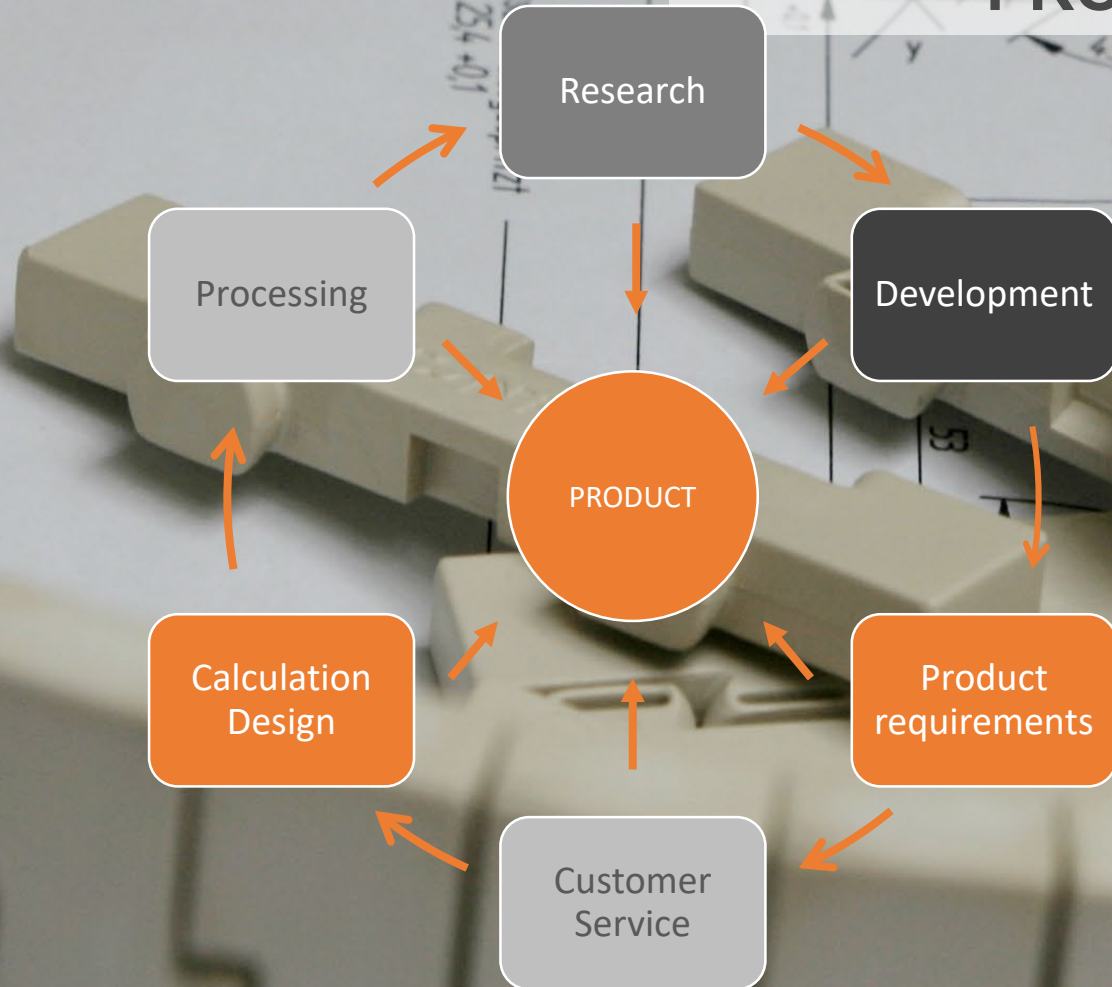


With the help of the latest technologies, we calculate the load capacity and service life for all sliding elements made of ZEDEX[®] polymers.

Accurately and without time-consuming attempts.



OUR DAILY BUSINESS PROCESSING



We manufacture finished parts from ZEDEX[®] polymers for you cost-effectively in any quantity using the optimum process.



THE WAY TO THE SOLUTION IS ZEDEX





WHAT IS ZX[®] OR ZEDEX[®]

ZEDEX[®] and the abbreviation ZX[®] are trademarks of Wolf Kunststoff-Gleitlager GmbH and identify the high-end products of Wolf Kunststoff-Gleitlager GmbH.

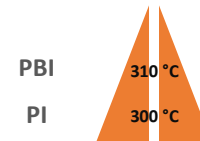
The ZEDEX[®] material families are based on engineering & high-performance polymers and are born from the experience gained in our over 50 years of activity in solving the problems deriving from the use of plastic materials as machine elements.



Classification of the **ZEDEX®** high-performance plastics

Made from **PET, PK, PPS, PEI, PEEK, TPI**

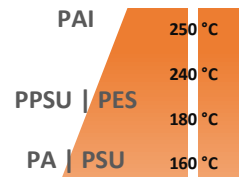
Imidized Materials



- Best physical properties above 260°C
- High temperature, high load bearing and wear capabilities (bearing graded)
- Best temperature resistance
- Good chemical resistance

Amorphous High Performance Materials

- High service temperature
- High strength
- Hot water and steam resistance
- Thermoformability



Semi-Crystalline High Performance Materials

- High service temperature
- Excellent chemical resistance
- High purity

Amorphous Engineering Plastics

- General purpose structural parts
- Moderate strength
- Moderate temperature
- Good dimensional stability
- Good izod impact
- Easily fabricated

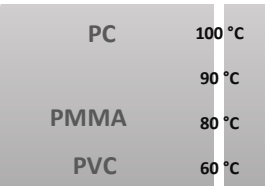


Semi-Crystalline Engineering Plastics

- General purpose structural parts
- Moderate strength
- Moderate temperature
- Good dimensional stability
- Good izod impact
- Easily fabricated

Amorphous Commodity Plastics

- Low temperature
- Low strength
- Good bondability
- Good machinability
- Good formability
- Low cost



Semi-Crystalline Commodity Plastics

- Low temperature
- Low strength
- Good chemical resistance
- Low moisture absorption
- Low cost

General Characteristics

- Softens over a wide temperature range
- Easy to thermoform
- Transparent
- Poor chemical resistance
- Bonds well using adhesives or solvents
- Prone to stress cracking
- Poor fatigue resistance
- Structural applications only (not suitable for bearing and wear)

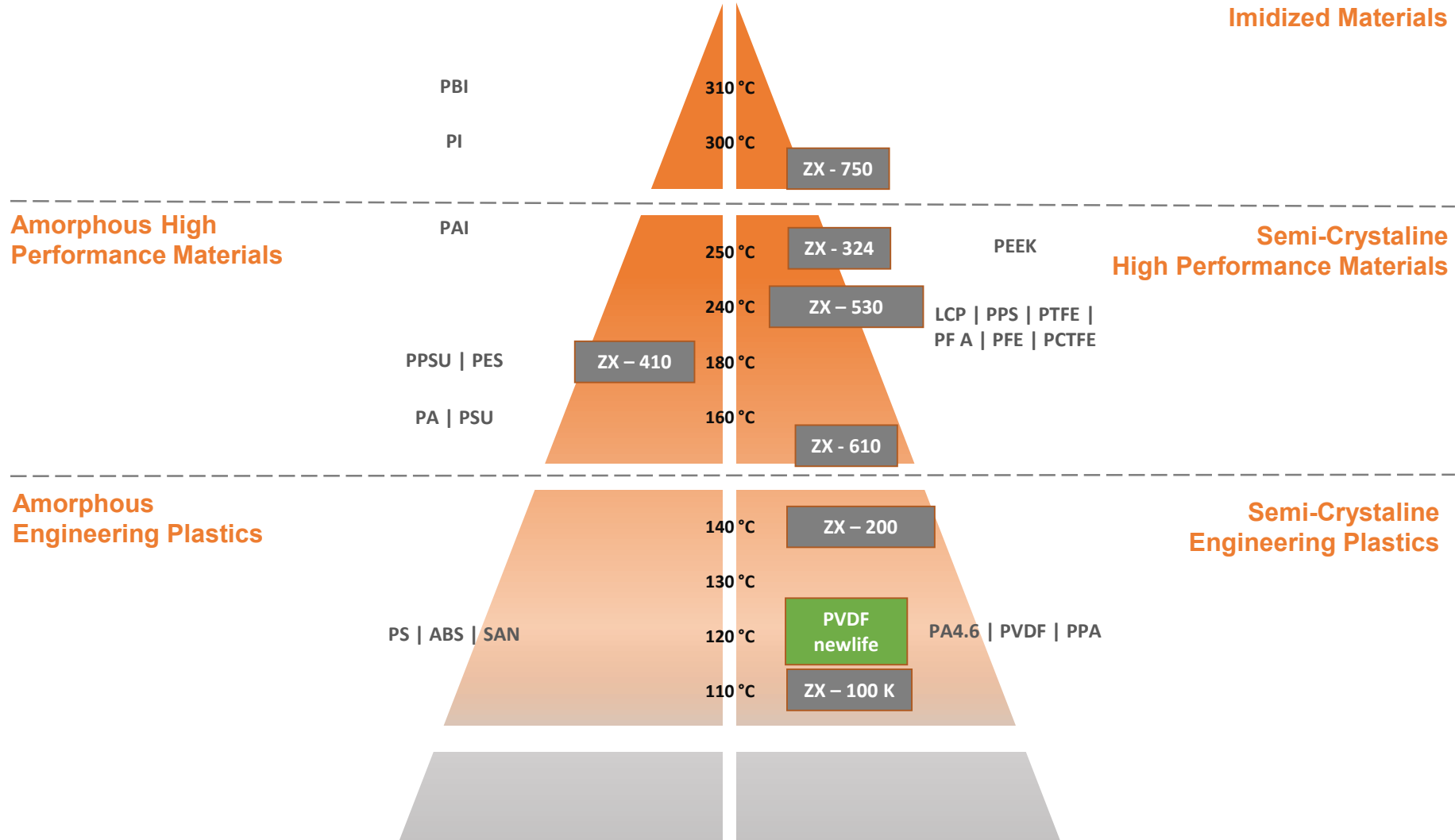
General Characteristics

- Sharp melting point
- Opaque
- Good chemical resistance
- Resistant to stress cracking
- Good fatigue resistance
- Good for bearing and wear (as well as structural applications)



Classification of the **ZEDEX[®]** high-performance plastics

Made from **PET, PK, PPS, PEI, PEEK, TPI**





ZEDEX® MATERIALS CAN BE

Basic Type

As a basis for our compounds, we use base polymers which have a suitable property profile for sliding elements.

ZX-324

(PEEK BASIS)

Modifications

We have developed successful tribocompounds for the individual base polymers over the last 50 years.

ZX-324V1T

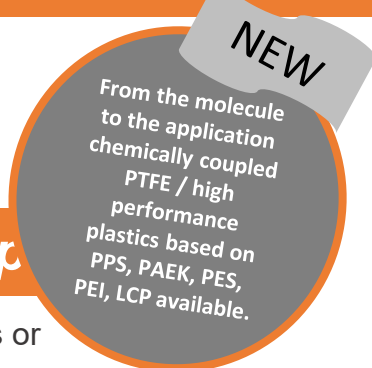
(Tribo and cost-optimized)

Special Comp

Based on the basic types or modifications, we manufacture customer or application-specific compounds with functional integration.

ZX-324V1CFG

(Base ZX-324V1T – additionally thermal conductive)



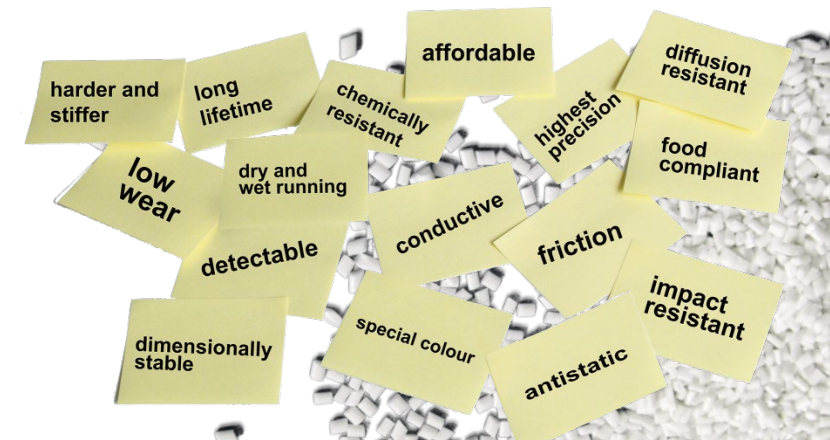
In some cases, an optimization is not necessary, so we also process commercially available polymers. Such as:

- PET
- PVDF
- ETFE
- PK
- PPS
- PEI
- PEEK
- TPI
- LCP
- PAI

The differences to the base polymer are mostly in:

- Higher elasticity and rigidity
- Reduction of friction and wear
- Higher precision

Possible modifications:





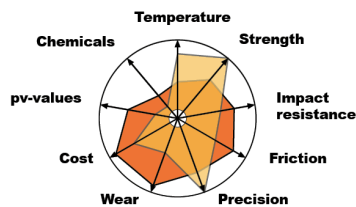
ZX-100

THE "LITTLE PEEK"

ZX-100 is the all-round solution for a wide variety of applications in the food sector or for rough outdoor applications.

It is designed for dry running and saves weight and costs compared to bronze.

ZX-100K vs. Bronze

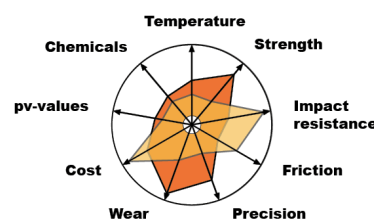


ZX-200

THE ELASTIC MOLDING WONDER

The ZX-200 family is based on PK and, like PEEK, belongs to the polyketone group. It has excellent elasticity, meaning it can be stretched greatly with very little permanent deformation and returns to its original state after relaxation.

ZX-200 vs. PA12



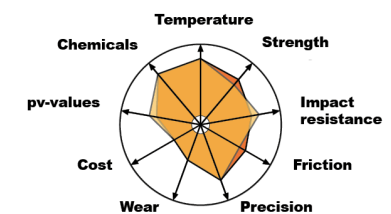
ZX-324

THE ALL-ROUNDER UP TO 250°C

Suitable for high temperatures combined with high surface pressure, because ZX-324 is based on PEEK.

The modified grades of the ZX-324 family have a higher wear resistance than PEEK.

ZX-324V1T vs. PEEK





ZX-410

THE PRECISE UP TO 180 °C



ZX-530

THE SPECIALIST FOR CHEMICALS



ZX-750

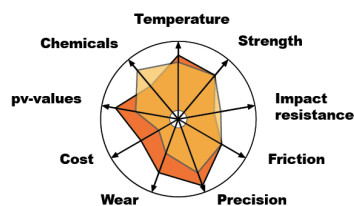
ALL-ROUNDER IN AREAS WITH HIGH TEMPERATURES

For the medium sliding speed range, large surface pressure and high precision - also ideally suited for high temperatures.

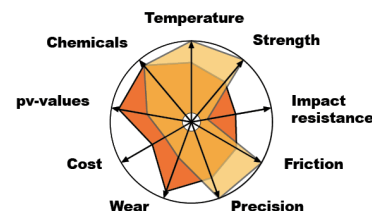
Ideally suited for applications with aggressive chemicals.
ZX-530 combines the advantages of PTFE and ceramics, convinces with low friction values and high wear resistance.
ZX-530 is stiffer than PTFE.

ZX-750 has the highest maximum pv values of the ZEDEX® materials.
Even temperatures up to 300 °C leave it cold.

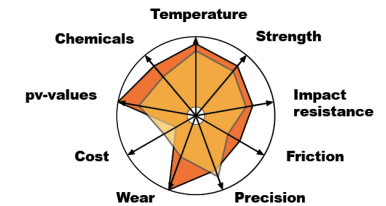
ZX-410VMT vs PEEK mod.



ZX-530 vs. Ceramics



ZX-750V5KF vs. PAI





Our contribution to sustainability

The new life family contributes significantly to the reduction of waste, the use of resources and primary energy. In comparison to thermal recycling, a considerable amount of CO₂ emissions is avoided.

The products of the ZEDEX[®] new life family are subject to the rigorous checks of process values & technical characteristics, which are also applied when processing virgin goods. The high quality standards should encourage our customers to opt for products with a new life cycle.



DELIVERY FORMS OF OUR PRODUCTS

PLASTIC GRANULES



SEMI FINISHED PRODUCTS

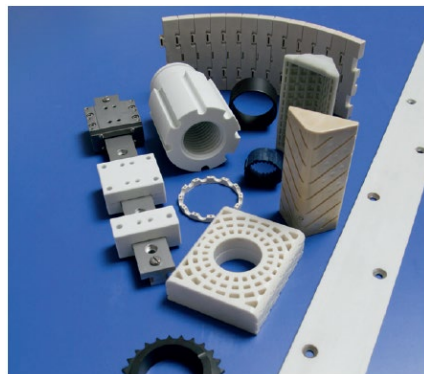


with
tubes up
to 75%
savings
possible

COATING, COATED PARTS



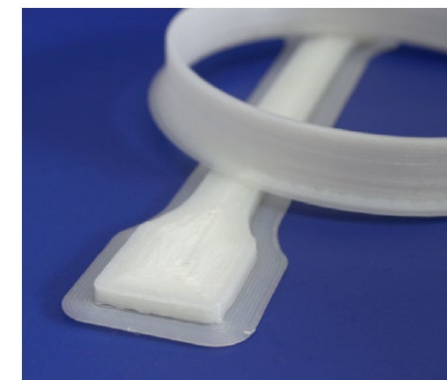
CUSTOMER SPECIFIC PARTS



INTERCHANGEABLE PARTS



3D PRINTING





OUR PRODUCTS



Semi-finished Products
Sheets, Rods, Tubes



3D Printing
Standard and Custom parts



3D Printing
Filaments



Tribo-Coating
Coating and coated parts



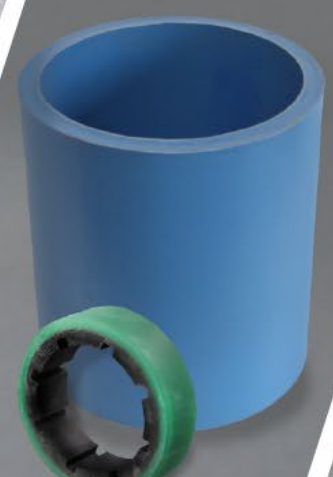
Granules
Standard and Special Compound

Laboratory tests
Research, Development and Analysis



Consulting
We deliver solutions

Pump & Marine
Bearings



Finished Parts
Standard and Custom parts



IF U WANT TO KNOW MORE



Tribological Polymer Solutions

- Semi-finished products, granules
- Special compounds



Tribological Part Production

- Machining
- Injection molding
- 3D printing



Polymer Parts Design

- Consulting, calculation
- Design



Polymer Testing, Evolution, Damage analysis

- Polymer testing, failure analysis
- Compound development



Tribological Polymer Parts

- Precision
plainbearings,
slideway bearings
- Movement nuts, gears



Onlineservice

- Calculation-tools
- Online Warehouse
- Online Shop