ZELL MATERIALS
ENGINEERING PLASTICS

ZELLAMID®

ENGINEERING PLASTIC STOCK SHAPES

EN.05.2020

ZELLAMID® | TABLE OF CONTENTS

ZELLAMID® | PRODUCT DESCRIPTION

ZELLAMID® Description	Product Range	Product colour	Density g/cm³	Termperature Air °C[1]	Page
PA 6 – Polyamid 6 extruded					
ZELLAMID® 202	PA 6, unfilled	natural	1,13	-40 – 100	14
ZELLAMID® 202 SW	PA 6, unfilled	black	1,13	-40 – 100	14
ZELLAMID® 202 MO	PA 6 + MoS_2	black	1,15	-40 – 100	14
ZELLAMID® 202 HV	PA 6, high impact, high viscosity	natural	1,13	-30 – 100	14
PA 6 C – Cast Nylon Products					
ZELLAMID® 1100	PA 6 Cast, unfilled	natural	1,15	-40 – 105	16
ZELLAMID® 1100 SW	PA 6 Cast, unfilled	black	1,15	-40 – 105	16
ZELLAMID® 1100 Oil	PA 6 Cast, Oil	white, yellow, green, black	1,14	-40 – 105	16
ZELLAMID® 1100 MO	PA 6 Cast + MoS_2	black	1,15	-40 – 105	16
ZELLAMID® 1100 T	PA 6 Cast, Tribotype	grey	1,14	-40 – 105	16
ZELLAMID® 1100 FR	PA 6 Cast, flame retardent	black	1,15	-40 – 105	16
ZELLAMID® 1100 blue	PA 6 Cast	blue	1,15	-40 – 105	16
ZELLAMID® 1100 HS	PA 6 Cast, heat stabilzed	black	1,15	-40 – 105	16
ZELLAMID® 1115	PA 6/12 Cast, high impact	natural	1,13	-40 – 105	16
ZELLAMID® 1120 FE	PA 6/12 Cast + metal core	natural	---	-40 – 105	16
ZELLAMID® 1200	PA 12 Cast	natural	1,03	-60 – 110	16
PA 6.6 – Polyamid 6.6					
ZELLAMID® 250	PA 6.6, unfilled	ivory	1,14	-30 – 100	18
ZELLAMID® 250 SW	PA 6.6, unfilled	black	1,14	-30 – 100	18
ZELLAMID® 250 MO	PA 6.6 + MoS_2	anthracite	1,15	-30 – 90	18
ZELLAMID® 250 GF30	PA 6.6 + 30% Glass fibre	black	1,35	-20 – 150	18
ZELLAMID® 250 PE	PA 6.6 + PE, solid lubricant	light green	1,12	-30 – 90	18
ZELLAMID® 250 HV-Frost	PA 6.6, high impact	natural	1,09	-30 – 100	18
POM – Polyoxymethylen					
ZELLAMID® 900	POM-C, unfilled	natural	1,41	-50 – 100	20
ZELLAMID® 900 SW	POM-C, unfilled	black	1,41	-50 – 100	20
ZELLAMID® 900 blue	POM-C, RAL 5002	blue	1,42	-50 – 100	20
ZELLAMID® 900 PE	POM-C + PE, solid lubricant	light blue	1,34	-50 – 80	20
ZELLAMID® 900 GF30	POM-C + 30% Glass fibre	natural	1,58	-20 – 100	20
ZELLAMID® 900 AS	POM-C, antistatic	white	1,35	-50 – 90	20
ZELLAMID® 900 XU ELS	POM-C ELS, Nano-Technology	black	1,41	-40 – 80	20
ZELLAMID® 900 XT	POM-C + PTFE, solid lubricant	grey	1,44	-40 – 100	20
PET – Thermoplastic Polyester					
ZELLAMID® 1400	PET, unfilled	natural	1,36	-20 – 100	23
ZELLAMID® 1400 SW	PET, unfilled	black	1,36	-20 – 100	23
ZELLAMID® 1400 T	PET, solid lubricant	light grey	1,39	-20 – 110	23
HPM's – High Performance Materials					
ZELLAMID® 1000	PEI, unfilled	amber	1,27	-50 – 170	24
ZELLAMID® 1000 SW	PEI, unfilled	black	1,27	-50 – 170	24
ZELLAMID® 1500 X	PEEK, unfilled	brown	1,30	-60 – 260	24
ZELLAMID® 1500 XSW	PEEK, unfilled	black	1,30	-60 – 260	24
ZELLAMID® 1500 XC20	PEEK + 20% Ceramic	white	1,49	-60 – 260	26
ZELLAMID® 1500 XCA30	PEEK + 30% Carbon fibre	anthracite	1,40	-20 – 260	26
ZELLAMID® 1500 XGF30	PEEK + 30% Glass fibre	brown	1,51	-20 – 260	25
ZELLAMID® 1500 XT	PEEK, modified	black	1,45	-30 – 260	25

[1] Values for orientation

Dimensional stability	Food contact	Wear resistance	Coefficient of friction	Chemical resistance	Rods in mm	Tubes in mm	Plates in mm
PA 6 – Polyamid 6 extruded							
medium	high	medium	high	high	6 – 300	25 – 310	0,3 – 100
medium	high	medium	high	high	6 – 200	25 – 310	0,3 – 100
medium	low	high	high	medium	6 – 100	25 – 310	1,5 – 6
medium	high	medium	high	high	6 – 300	---	---
PA 6 C – Cast Nylon Products							
medium	low	high	high	high	20 – 800	50 – 1000	8 – 165
medium	low	high	high	high	20 – 800	50 – 1000	8 – 165
medium	low	high	high	high	20 – 800	50 – 1000	8 – 165
medium	low	high	high	high	80 – 800	50 – 1000	8 – 100
medium	low	high	high	high	80 – 800	50 – 1000	8 – 165
medium	low	high	high	high	20 – 800	50 – 1000	8 – 165
medium	low	high	high	high	20 – 800	50 – 1000	8 – 165
medium	low	high	high	high	20 – 800	50 – 1000	8 – 165
medium	low	high	high	high	80 – 800	50 – 880	8 – 165
medium	low	high	high	high	80 – 400	---	---
medium	high	high	high	high	20 – 230	20 – 250	8 – 60
PA 6.6 – Polyamid 6.6							
medium	high	medium	high	high	6 – 150	25 – 265	2 – 60
medium	high	medium	high	high	6 – 150	25 – 265	8 – 60
medium	low	high	high	high	6 – 100	25 – 265	8 – 60
high	low	high	medium	high	6 – 160	---	8 – 100
medium	high	high	high	high	6 – 150	---	8 – 60
medium	high	high	high	high	10 – 100	---	---
POM – Polyoxymethylen							
high	high	low	high	high	6 – 500	25 – 500	0,5 – 150
high	high	low	high	high	6 – 500	25 – 500	2 – 150
high	high	low	high	high	6 – 500	25 – 500	0,5 – 150
medium	high	high	high	high	6 – 150	---	8 – 100
high	low	high	high	high	16 – 150	---	2 – 60
high	high	medium	medium	high	6 – 160	---	8 – 50
high	low	medium	medium	high	6 – 150	---	8 – 50
high	high	high	high	high	6 – 150	---	8 – 50
PET – Thermoplastic Polyester							
high	high	medium	high	high	6 – 200	25 – 210	3 – 100
high	high	medium	high	high	6 – 150	25 – 210	8 – 60
high	high	high	high	high	6 – 160	25 – 210	8 – 100
HPM's – High Performance Materials							
high	high	high	medium	high	6 – 200	---	6 – 100
high	low	high	medium	high	6 – 200	---	6 – 100
high	high	medium	medium	high	5 – 160	---	3 – 60
high	high	medium	medium	high	5 – 160	---	8 – 60
high	high	high	medium	high	8 – 90	---	10 – 50
high	low	high	medium	high	6 – 80	---	5 – 60
high	low	high	medium	high	6 – 100	---	5 – 80
high	low	high	high	high	6 – 100	---	5 – 80

ZELLAMID® | PRODUCT RANGE

ZELLAMID® | PRODUCT RANGE

Our internationally registered trade name ZELLAMID® defines consistent top quality, thoroughly annealed, stress released and easy machineable thermoplastic stock shapes.

Our quality is insured by rigorous control according to DIN ISO 9001 in combination with internally developed traceability systems and in house testing.

ZELLAMID® stands for ongoing research and development in the fields of new manufacturing technologies and innovative materials.

ZELLAMID® stands for customer service and reactivity to customer's needs. It is easy to do business with us.

ZELLAMID® Extruded stock shapes
In order to maintain technology leadership permanent research and development are the guarantee for our product advantage.

State of the art production facilities, quality and cost leadership, permanent training of our staff and the use of exclusively high value raw materials are the visible signs of this strategy. Our tight relationship with nature and the environment is documented in careful production processes.

ZELLAMID® | OVERVIEW

ZELLAMID® Extrusion

Since mid 1950´s we are manufacturing engineering plastic stock shapes by extrusion made from various formulations of PA, POM, PET, PEEK and HPMs.

We earn your business by providing you with exceptional high levels of quality, performance and production standards. Together with our strong creative drive for innovation, research and development, our exceptional service, ZELLAMID® rod, plate, tubular bar and flexible tubes offer the better alternative in respect of the future.

ZELLAMID® Cast Nylon Products

Our ZELLAMID® 1100 is available with different compositions in rods, plates or in over 2000 different tube dimensions (combination outer- to innerdiameter).

ZELLAMID® Near-Netshape high performance materials

This revolutionary proprietary manufacturing technology combines the advantages of extrusion, compression and injection moulding.

For the first time the application engineer is offered the unique ability to choose from virtually all commercially available resin grades, even proprietary formulations. Blanks, discs, rings, tubes and even unique shapes are the base shapes for parts with large geometries, cross sections and different wall thicknesses.

ZELLAMID® Machined Parts

Many decades of experience in parts design are helping us to assist you focusing on machining the semifinished products that we produce. Machining is the best method to produce small quantities of finished plastic parts or parts with configurations which cannot be injection moulded.

Either giving you machining advice or helping you purchase a part you cannot do yourself, we can supply your needs. From consulting through to serial production we guarantee our clients the best solution for their applications.

more information: ZELL PARTS by KLEPSCH

www.ZELLPARTS.com

ZELLAMID® Injection Moulding

Since 1955 we have agglomerated a level of experience second to none.

SELETEC Plastic Products GmbH & Co KG, the company focuses on injection moulding technology, will accompany our clients from idea to finish product, from design to construction and from simulation to commercial production.

The own tool-making department in combination with modern CAD/CAM techniques form the basis for the production of custom made and cost-effective injection moulded parts from engineering, special- and high-performance polymers. SELETEC has injection capabilities from micro parts to 4,5 kg in mono- and multi-component technology as well as back-injection technology.

For further information please ask for our special literature on injection moulded ZELLAMID® or visit www.SELETEC.com

more information: seletec®

ZELLAMID® | 3Ps, SPMs and HPMs

General Purpose Materials are also known as the 3Ps (Polyamide, POM and thermoplastic Polyester).

In general these are unfilled polymers. Special Performance Plastics, also known as SPMs are innovative materials tailored for specific needs, by blending polymers, adding fillers and using break-through technologies in order to advance the performance of general purpose Engineering Plastics.

In 2006 Zell Materials Engineering Plastics was the first manufacturer worldwide to introduce Nanotechnology to the stock shape industry.

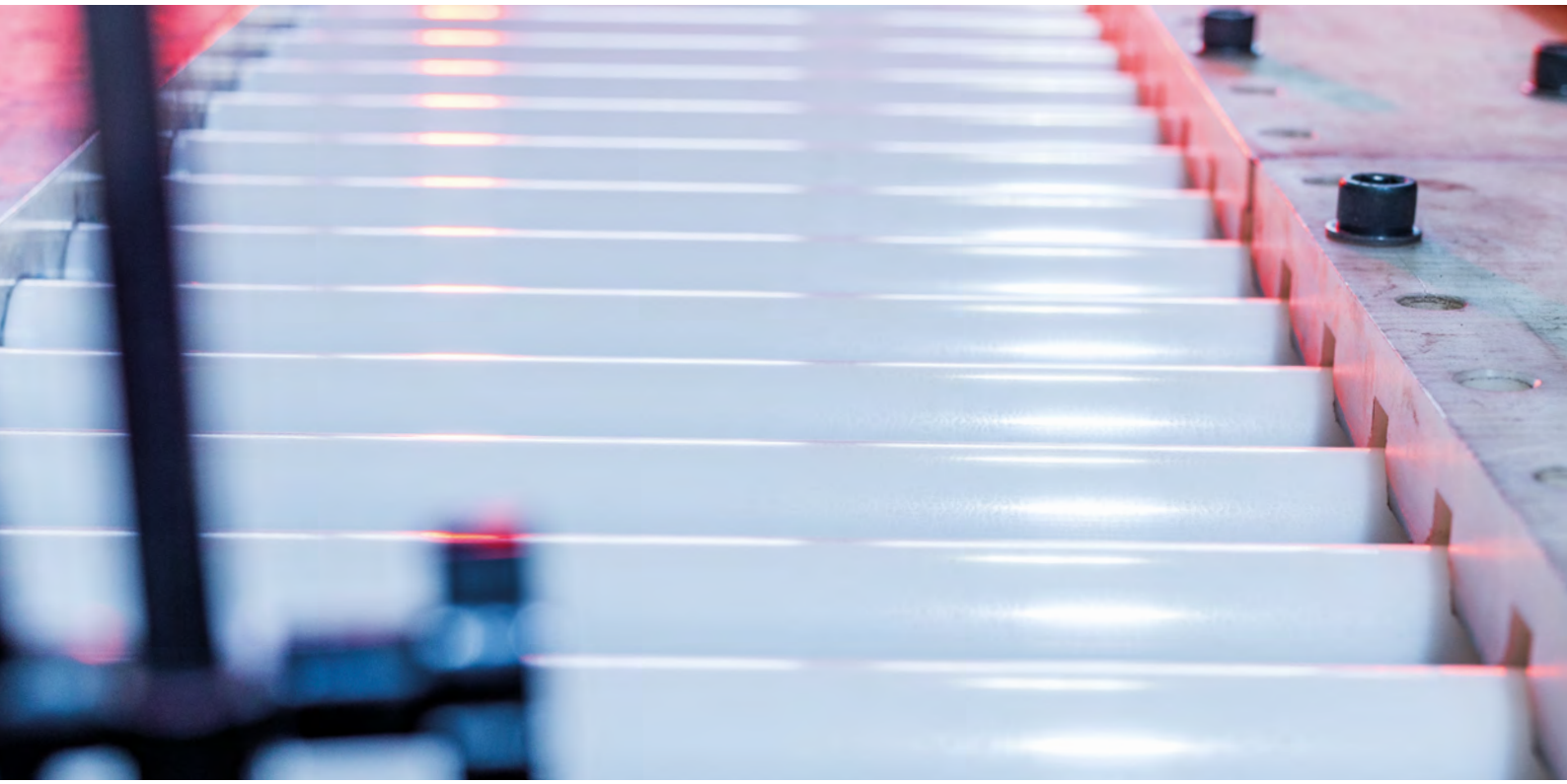
High Performance Materials, also known as HPMs, are materials which have a temperature resistance of over 150 °C maintaining very similar properties over a broad range of temperatures and chemical environments.

ZELLAMID® extruded is available in following shapes:		Pages:
ZELLAMID® Rods	5 or 6 – 500 mm diameter	41 - 49
ZELLAMID® Sheets and Plates	0,3 – 150 mm thickness	50 - 55
ZELLAMID® Tubes	25 - 500 mm outer diameter	56 - 69

ZELLAMID® | GENERAL AND SPECIAL

PERFORMANCE ENGINEERING PLASTICS

ZELLAMID® | PA 6 EXTRUDED



ZELLAMID® 202 – natural
ZELLAMID® 202 SW – black

ZELLAMID® 202 extruded is a tough material with high resistance to abrasion and impact.

PA 6 is commonly used as a substitution material for bronze, aluminium and other non-ferrous metals, as it has significant weight advantages.

ZELLAMID® 202 has a specific gravity of 1,13 g/cm^3 and bronze has 8,8 g/cm^3 making the comparative volume price very attractive.

Using PA 6 also reduces lubrication requirements and is non-abrasive to mating surfaces. It features good mechanical properties.

Nylons can absorb up to 8% water (by weight) under humidity or submerged in water.

This increases the excellent shock and vibration resistance but can also lead to dimensional changes.

Mechanical, electrical and dimensional properties are accordingly influenced by moisture absorption.

ZELLAMID® 202 is approved for contact with food (EU 10/2011 and FDA).

Product attribute – Overview	
ZELLAMID® 202	PA 6, natural, tough material, high impact resistance
ZELLAMID® 202 SW	PA 6, black, tough material, high impact resistance
ZELLAMID® 202 MO	PA 6 + MoS_2, black, improved sliding properties, high compressive strength
ZELLAMID® 202 HV	PA 6, natural, high impact resistance, high viscosity

ZELLAMID® 202 can also be custom made in various colours.

Quick facts:
Material for general purpose wear and structural parts which need a good balance of strength and toughness.

Applications:
Pulp and paper industry, offshore and marine, textile, general machine building, food industry, material handling, electronics, construction, mining, aerospace and many more.

ZELLAMID® 202 MO – black, Nylon 6 filled with Molybdenum Disulfide

In comparison with unfilled PA 6 improved sliding properties and slightly higher compressive strength.

UV-radiation resistance is enhanced by its black colour.

It has also improved wear resistance and lower surface friction than unfilled PA 6, moisture absorption is also a bit lower.

Applications:
Slide bearings with low coefficient of friction, sleeves, cams, gears, pinions, thrust washers, valve seats and bearings.

ZELLAMID® 202 HV – natural, Polyamid 6 high viscosity

ZELLAMID® 202 HV is an unreinforced, high viscosity Polyamid 6.

ZELLAMID® 202 HV has a higher impact resistance, also at very low temperatures. The charpy impact strength test has a result with no break at room temperature, the notched test has a value of 9 kJ/m^2.

ZELLAMID® 202 HV is tested according to UL 94 with HB. Humidity absorption and dimensional stability is nearly the same as ZELLAMID® 202.

ZELLAMID® 202 HV is suitable for various engineering elements and building machine parts. Especially applications which require high impact strength at lower temperatures are designated for the use of ZELLAMID® 202 HV.

This material is also perfect for applications, when recoil or split-off is a critical issue.

ZELLAMID® | CAST NYLON PA 6 C

Product attribute – Overview	
ZELLAMID® 1100	PA 6 C, natural, black, blue and custom colours
ZELLAMID® 1100 MO	PA 6 C + MoS_2, black, UV-resistance
ZELLAMID® 1100 Oil	PA 6 C + Oil, yellow, green, black, white
ZELLAMID® 1100 T	PA 6 C, grey, filled with a solid lubricant, coefficient of friction 0,15
ZELLAMID® 1100 HS	PA 6 C, black, heat stabilized
ZELLAMID® 1115	PA 6/12 C, natural, impact modified
ZELLAMID® 1120 FE	PA 6/12 C, natural, metal core, optimal and reliable power transmission
ZELLAMID® 1200	PA 12 C, natural

ZELLAMID® 1100 – natural, black, blue and custom colours

This material is a heavy duty, high impact and chemical resistant material appropriate for larger parts.

It has high wear resistance at low and middle speeds and performs especially well under harsh conditions such as contact with sand or dust.

Due to its balanced mechanical properties and its exceptional machineability it is the ideal engineering material for a wide range of applications.

ZELLAMID® 1100 MO – black, filled with Molybdenum Disulfide

Molybdenum Disulfide (MoS_2) is added evenly throughout the PA 6 polymer matrix to improve its load carrying capabilities. It offers improved UV-resistance and good sliding characteristics. The impact and fatigue resistance inherent to unmodified ZELLAMID® 1100 remains unchanged.

ZELLAMID® 1100 Oil – different colours, yellow, green, black, white

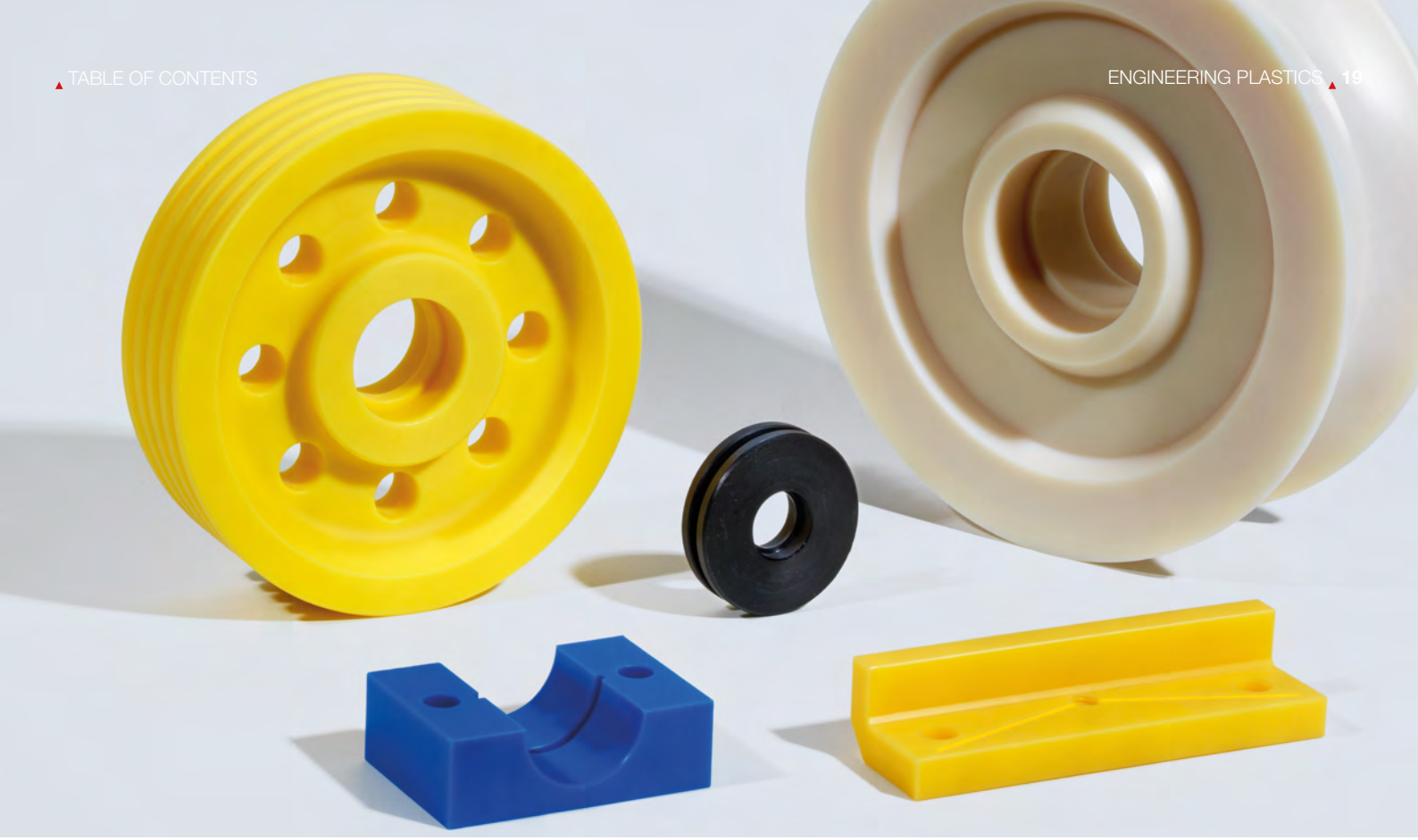
Our company was world-wide the first manufacturer to develop a really usable cast nylon in which a special oil is embedded homogeneously into the molecular structure giving the stock shapes a superior wear resistance and a lower coefficient of friction.

These advantages are particularly noticeable when there is a combination of static and dynamic friction.

ZELLAMID® 1100 T – grey, filled with a solid lubricant

A cast nylon with special additives and solid lubricants with a focus on the sliding properties of the material, making a low friction coefficient of just 0,15 possible.

Additionally, the tendency towards unwanted stick-slip effect can be reliably reduced to a minimum.



- **ZELLAMID® 1100 HS – black, Cast Nylon 6 heat stabilized**

  Basically the properties are to be compared with those of ZELLAMID® 1100 but better protected against thermal oxidative degradation by a heat aging stabilizer. Therefore, this material is mechanically resistant for longer service temperatures.

- **ZELLAMID® 1115 – natural, Cast Nylon 6/12 impact modified**

  This copolymer has higher impact strength, lower moisture absorption and better creep resistance than Cast Nylon 6.

- **ZELLAMID® 1120 FE – natural, Cast Nylon 6/12 with a metal core**

  The combination of ZELLAMID® 1120 with a metal core unites the advantages and special properties of both materials into one exceptional product which assures optimal and reliable power transmission.

Following metals are used typically:
- 1.4305 (stainless steel)
- 9SMn28K (free-cutting steel)
- C45 (carbon-steel)

- **ZELLAMID® 1200 C – natural, Cast Nylon 12**

  Cast Nylon 12 is manufactured from the raw material Laurinlactam in a pressureless monomer moulding process.

  The seamless transition from polymerisation to crystallisation creates a high crystalline structure for rigid applications.

  Applications:
  Vibration dampeners, tie fasteners for high speed rail roads, shock absorbers in bumpers and crash buffers in railway-wagons, mobile phone antennas.

ZELLAMID® | PA 6.6 EXTRUDED

ZELLAMID® 250 – ivory
ZELLAMID® 250 SW – black

PA 6.6 noted for its high temperature resistance and high tensile strength. It is the hardest and most rigid type of extruded Nylon.

Main characteristics are high resistance to fuels, oils, greases, most organic solvents and alkalis.

Moisture absorption is lower than for Polyamid 6.

Applications:
Parts exposed to mechanical stress and strain under elevated temperatures.

ZELLAMID® 250 MO – anthracite, filled with Molybdenum Disulfide

Polyamid 6.6 filled with Molybdenum Disulfide (MoS_2) offers improved strength, rigidity and friction ratio.

Applications:
Gears and sheaves.

Product attribute – Overview	
ZELLAMID® 250	PA 6.6, ivory, temperature resistant, high tensile strength
ZELLAMID® 250 SW	PA 6.6, black, temperature resistant, high tensile strength
ZELLAMID® 250 MO	PA 6.6 + MoS_2, anthracite, improved strength and rigidity
ZELLAMID® 250 GF30	PA 6.6 + 30% Glass fibre, black, increased rigidity and dimensional stability
ZELLAMID® 250 PE	PA 6.6 + PE, light green, improved strength
ZELLAMID® 250 HI	PA 6.6, ivory, impact modified

ZELLAMID® 250 GF30 – black, Nylon 6.6 + 30 % Glass fibre

It offers increased compressive strength and rigidity, stiffness, creep resistance and dimensional stability whilst retaining good wear resistance. It also allows higher maximal service temperatures.

ZELLAMID® 250 GF30 is used when improved load capacity or better frictional characteristics are requested.

In order to machine parts in larger dimensions, it is necessary to preheat the material to 120°C before cutting and use diamond tipped saw blades.

Λ Please consult our machining guidelines.

Λ Applications:
Transport and conveyer, mechanical and automotive engineering, precision engineering, paper and packaging processing machinery.

ZELLAMID® 250 HI – ivory, Nylon 6.6 impact modified

This special performance material is a super tough Polyamide 6.6 which provides high impact resistance even at low temperatures.

Λ Applications:
Recoilless hammer heads and bumper pads.

ZELLAMID® 250 PE – light green, Nylon 6.6 with a solid lubricant

This material has a very low coefficient of friction combined with very little wear.

It is resistant to high loads and has virtually no slip stick.

Λ Applications:
Gripper rods in weaving machines, bushes for brake linkages of bogies for freight wagons, gliding and wear pads in the crane industry.

ZELLAMID® | POM EXTRUDED

Product attribute – Overview	
ZELLAMID® 900	POM-C, natural
ZELLAMID® 900 SW	POM-C, black
ZELLAMID® 900 blue	POM-C, blue, RAL 5002
ZELLAMID® 900 AS	POM-C, white, antistatic
ZELLAMID® 900 XU ELS	POM-C ELS, black, filled with Carbon Nanotubes
ZELLAMID® 900 XT	POM-C + PTFE, light grey, with a solid lubricant
ZELLAMID® 900 PE	POM-C + PE, light blue, POM-C with a solid lubricant
ZELLAMID® 900 GF30	POM-C + 30% Glass fibre, natural

ZELLAMID® 900 – natural
ZELLAMID® 900 SW – black
ZELLAMID® 900 blue – RAL 5002

POM-C is a semicrystalline thermoplastic and is characterized by a low coefficient of friction and good wear properties, unaffected by wet environments. POM offers good resistance to a wide range of chemicals including many solvents.

POM-C provides high strength and stiffness coupled with easy machineability.

ZELLAMID® 900 is also noted for its high mechanical strength, heat resistance and good antifriction properties.

ZELLAMID® 900 is manufactured in accordance to DIN EN 15860, most formulations are approved for contact with food (FDA and EU 10/2011 compliant).

For parts which need to be dimensionally stable even exposed to humidity or wet environments, POM-C offers better hot water, thermal and chemical resistance than POM-H.

ZELLAMID® 900 can also be custom made in various colours.

Applications:
Food processing, agriculture, medical, electric, electronic, automotive, general machine building, transport and logistics, bottle and car washing equipment, sports equipment, office machinery, textile.

ZELLAMID® 900 AS – white, antistatic POM Copolymer

Static electricity is dissipated along the surface and this product does not need humidity or other surface treatments to achieve the antistatic performance.

The excellent technical value of surface resistivity of 10^{10} Ω and volume resistivity of 10^{9} Ω.cm are offering cutting edge properties for new applications in various industries. The permanently antistatic property is not influ-

enced by humidity and there is no migration taking place. The product does not contain carbon and is therefore prepared for clean room applications.

The excellent POM-C (Acetal Copolymer) properties such as high impact strength, low wear and dimensional stability are not much changed.

Applications:
Electrical conductive and antistatic Acetals parts are used where electrical discharge in operation is a problem.

ZELLAMID® 900 XU ELS – black, POM-C filled with Carbon Nanotubes

Zell Materials Engineering Plastic's groundbreaking Nanotechnology insures that the important properties of POM-C (Acetal Copolymer) remain unchanged, outperforming commonly available grades which are using up to 40% of carbon fillers which reduce the stiffness and yield strength as much as 50%.

The very low surface resistivity of 10^3 Ω to 10^4 Ω and the volume resistivity of 10^4 Ω.cm are achieved by adding Nanoparticles.

ZELLAMID® 900 XT – light grey, POM-C with a solid lubricant

This solid lubricated Copolymer Acetal displays outstanding tribological properties. Parts can operate at higher speeds while exhibiting reduced wear. The "slip-stick" behaviour is reduced.

Applications:
Bearings and moving parts where low friction and long wear life are important.

ZELLAMID® 900 PE – light blue, POM copolymer with a solid lubricant

The ZELLAMID® 900 PE series has been created for demanding sliding applications and is used in mechanical systems and apparatus engineering. These polymer alloys are suitable for structural parts.

ZELLAMID® 900 PE products have to withstand the highest loads. Both formulations have outstanding tribological properties. They are wear resistant with minimal coefficients of friction.

Applications:
Highly stressed sliding and guide elements.

ZELLAMID® 900 GF30 – natural, POM-C + 30% Glass fibre

Due to reinforcement with 30% Glass fibre this special POM-C grade offers increased stiffness and dimensional stability, reduced humidity absorption, increased hardness, significant increased modulus of elasticity.

ZELLAMID® | POM EXTRUDED

Product attribute – Overview	
ZELLAMID® 900 H	POM-H, natural
ZELLAMID® 900 H SW	POM-H, black

ZELLAMID® 900 H – natural
ZELLAMID® 900 H SW – black

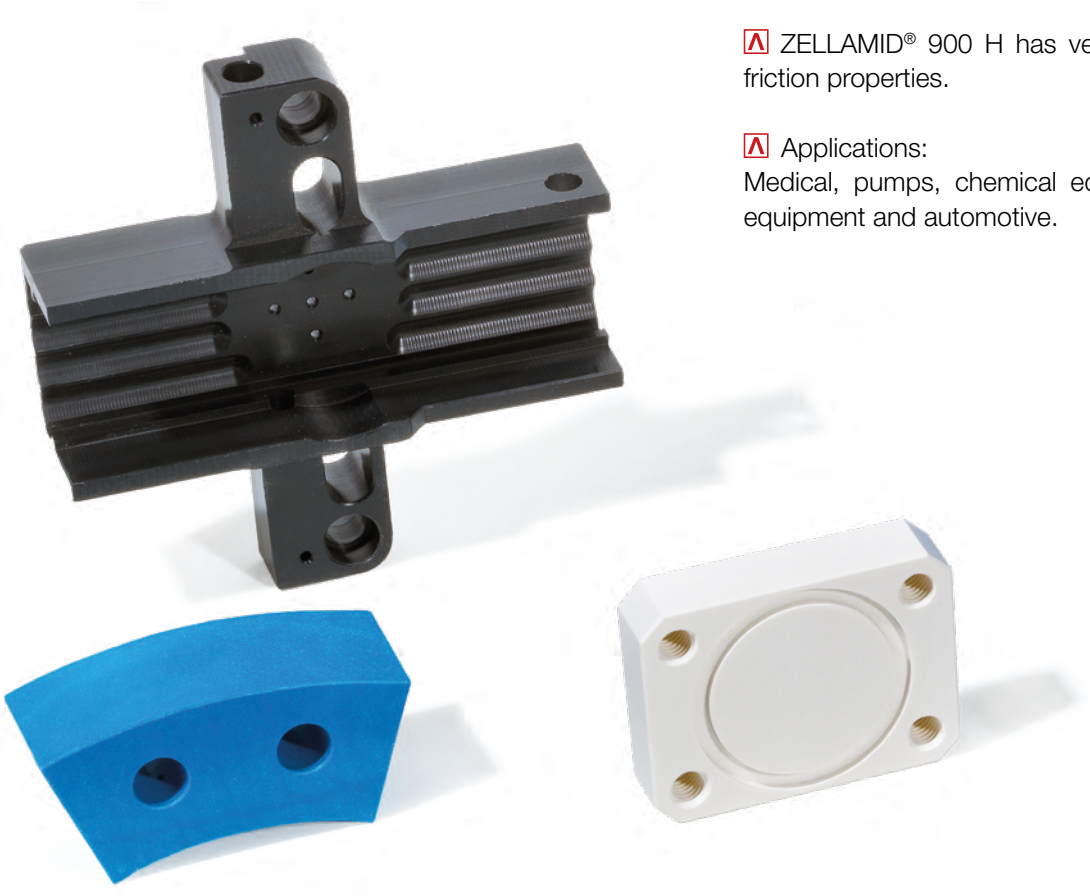
POM Homopolymers have a higher density, hardness, strength and better creep resistance due to their higher degree of crystallinity.

ZELLAMID® 900 H has also a lower thermal expansion rate. However, POM Homopolymer has a higher impact resistance and better abrasion resistance.

POM-H offers additional strength and rigidity and slightly higher mechanical properties than POM-C and delivers outstanding fatigue and impact resistance.

ZELLAMID® 900 H has very good kinetic friction properties.

Applications:
Medical, pumps, chemical equipment, sport equipment and automotive.



ZELLAMID® | THERMOPLASTIC POLYESTER

Product attribute – Overview	
ZELLAMID® 1400	PET, white
ZELLAMID® 1400 SW	PET, black
ZELLAMID® 1400 T	PET, light grey, with a solid lubricant
ZELLAMID® 1400 PBT	PBT, ivory

ZELLAMID® 1400 – white
ZELLAMID® 1400 SW – black

PET is a partly crystalline thermoplastic Polyester based on Polyethylene-Terephthalate. This material features outstanding dimensional stability as it is virtually unaffected by ambient moisture. A low coefficient of friction and excellent wear resistance combined with low creep and high E-modulus of elasticity in tension makes it the choice material for moving parts. Hot water resistance is low but it has better resistance to acids than Nylon or Acetal. ZELLAMID® 1400 is produced without centreline porosity and is approved for contact with food (FDA and EU 10/2011). As it is more rigid than other thermoplastics, please consult our machining guidelines.

Applications:
Bushings and bearings, gears, cams, mandrels, manifolds, wear strips, hamburger and nugget dies, food piston pumps, valves and valve bodies, feeder blocks, filter tracks, electrical insulators, etc.

ZELLAMID® 1400 T – light grey, PET Copolymer with a solid lubricant

This internally lubricated material shows a significantly reduced coefficient of friction and increased resistance to wear compared to unfilled PET. It even outperforms materials such as wax or oil filled Cast Nylon products or other lubricated materials such as Delrin® AF blends. It is also a material of choice for applications involving soft metal and plastic mating surfaces.

Parts exposed to high pressure and velocity. ZELLAMID® 1400 T is produced without centreline porosity and is approved for contact with food (BfR, FDA and EU 1935 2004/2011).

Applications:
Rollers, precision plain bearings, toothed gears, valves, distribution valves, etc.

ZELLAMID® 1400 PBT – ivory, Polybutylene Terephthalate

This thermoplastic Polyester is based on the Butylene molecule instead of the Ethylene molecule (PET). PBT offers excellent mechanical properties combined with good chemical resistance. ZELLAMID® 1400 PBT has good impact resistance and toughness, low coefficient of friction combined with good sliding and wear characteristics. High strength and durability with good dimensional stability due to low water absorption are some of the other properties. ZELLAMID® 1400 PBT is approved in USA for medical applications (USP VI).

Applications:
Plug connector strips, cams, control discs and medical devices.

ZELLAMID® | HIGH PERFORMANCE MATERIALS

Product attribute – Overview	
ZELLAMID® 1000	PEI, amber
ZELLAMID® 1500 X	PEEK, brown
ZELLAMID® 1500 XSW	PEEK, black
ZELLAMID® 1500 XT	PEEK + 10% Carbon fibre + 10% Graphite + 10% PTFE, black
ZELLAMID® 1500 XGF30	PEEK + 30% Glass fibre, brown

ZELLAMID® 1000 – amber, Polyetherimid

PEI is a high strength amorphous thermoplastic polymer and performs in continuous use up to 170 °C paired with an excellent flame resistance (UL 94 V-0) and low smoke generation.

ZELLAMID® 1000 is ideal for high strength plus high heat applications and those requiring excellent electrical insulating properties which are stable over wide ranges of temperature and frequency. It is hydrolysis resistant, highly resistant to a broad range of chemicals, though chemical resistance is strongly dependent on stress.

ZELLAMID® 1000 is capable of withstanding repeated autoclaving cycles.

PEI is also resistant to gamma radiation. It excels in medical reusable applications requiring repeated sterilization and dimensional stability and low creep.

Good impact resistance, although chemical attack under stress might lead to cracking.

Industries:
Medical, electrical, electronic and semiconductor, automotive, aerospace and specialty applications.

Applications:
Load-bearing components, structural probes, microwave applications, replacing glass in medical lamps, reusable medical devices, manifolds resistant to daily sanitation, high voltage circuitbreaker housings, electrical insulators, electrical hardware components, integrated-circuit chip carriers for accelerated testing at high temperatures, non-combustible plenum connectors, high-temperature bobbins, coils and fuse blocks, under the hood automotive components, connector clamps for printed-wiring boards, jet-engine components.

ZELLAMID® 1500 X – brown
ZELLAMID® 1500 XSW – black

PEEK is a high-temperature-resistant thermoplastic and can be used continuously up to 260 °C also in hot water or steam. It displays outstanding mechanical performance in both high temperature and cryogenic conditions.

ZELLAMID® 1500 X offers advantages in the electric and electronic industries as well as in the semiconductor industries.

This special PEEK product displays high temperature resistance and impact strength. In addition it is a superior material when it comes to costeffectiveness. When exposed to a flame there is very low smoke and toxic gas emission.

Unfilled ZELLAMID® 1500 X stock shapes are compliant for food contact (FDA and EU 10/2011).

The material also resists a wide range of solvents and organic solvents. It is selfextinguishing and carries a flammability UL 94 V-0 rating.

ZELLAMID® 1500 X has a balanced profile of properties such as low level of creep combined with high modulus of elasticity. PEEK is a high strength alternative to Fluorpolymers featuring better performance in wear and abrasion applications. It is a material with outstanding tribological properties.

Applications:
Food processing, aerospace, automotive, defence, electronics and semiconductor, oil and gas, nuclear- and hydropower, vacuum, medical, wire and cable production.

Industries:
Plastic valves and rings in compressor applications, bearings, seals, precision cutting blades, energy efficient pumps, piston units, washers, bearings, transmission components, braking and air-conditioning systems, actuators, gears and electronic sensors, impeller wheels for pumps, centrifugal pump wear parts, CMP rings, wafer carriers, etch rings, gaskets, wafer chucks, backend components, test sockets, fasteners and wands grips.

ZELLAMID® 1500 XT – black, 10% Carbon fibre, 10% Graphite, 10% PTFE

High performance tribological properties and very low wear are further characteristics of this modified PEEK with high pressure-velocity capabilities.

The material has good engineering properties, as it is tough, strong, rigid and creep resistant.

Applications:
Friction bearings under high load and at the same time exposed to high temperatures.

ZELLAMID® 1500 XGF30 – brown, PEEK filled with 30% Glass fibre

This glass fibre filled material significantly reduces the rate of thermal expansion and increases the flexural modulus of unfilled PEEK.

This grade is ideal for structural applications that require improved strength, stiffness or dimensional stability, especially at temperatures above 150 °C.

victrex
MADE WITH VICTREX PEEK

ZELLAMID® | HIGH PERFORMANCE MATERIALS

Product attribute – Overview	
ZELLAMID® 1500 XCA30	PEEK + 30% Carbon fibre, anthracite
ZELLAMID® 1500 XC20	PEEK + 20% Ceramic, white

ZELLAMID® 1500 XCA30 – anthracite, PEEK filled with 30% Carbon Fibre

Stiffness and compressive strength are superior to unfilled PEEK. This carbon fibre filled material features improved dimensional stability and offers excellent wear resistance as well as a very low coefficient of friction.

The carbon fibres dramatically reduce the thermal expansion and the much higher thermal conductivity helps to keep the surface of a bearing cool.

ZELLAMID® 1500 XC20 – white, PEEK filled with 20% Ceramic

This product, blended with ceramic fillers, has excellent dimensional stability across a broad range of temperature and humidity conditions and has good dielectric properties for isolative applications.

When compared to PAI or other imidized polymers, this grade has greater hydrolytic stability. When compared with ceramics, it is half the weight and offers greater impact resistance and toughness.

Following products (and more) might be produced on request for you:	
ZELLAMID® 202 RAL Colours	PA 6, different colours
ZELLAMID® 900 RAL Colours	POM-C, different colours
ZELLAMID® 900 H Colours	POM-H, different colours
ZELLAMID® 1400 RAL Colours	PET, different colours
ZELLAMID® 1900 GF40 SW	PPS + 40% Glass fibre, black

More products upon request:

If you do not see your desired product or your desired dimension, please contact us.

Legal notes: page 88 ▸

ZELLAMID® | DIMENSIONS AND TECHNICAL DATA

ZELLAMID® | TECHNICAL PROPERTIES

ZELLAMID®	Unit	Test Method	202 | SW	202 MO	202 HV	250 | SW
Specimen dry, Room temperature			**PA 6**	**PA 6 + MoS_2**	**PA 6 HV**	**PA 6.6**
Mechanical Properties						
Yield stress	Mpa	ISO 527	79	90	85	86
Tensile strength	Mpa	ISO 527	80	90	---	80
Elongation at break	%	ISO 527	> 70	27	> 50	> 50
Modulus of elasticity in tension	MPa	ISO 527	3200	3600	3000	3300
Bending Modulus (flexural test)	MPa	ISO 178	3000	3400	2800	3200
Flexural Strength	MPa	ISO 178	110	130	---	120
Charpy Impact strength +23°C	kJ/m²	ISO 179/1eU	no break	no break	no break	no break
Charpy notched Impact strength +23°C	kJ/m²	ISO 179/1eA	6,0	2,5	9	5
Shore D Hardness	---	ISO 868	82	80	75	82
Ball indentation hardness	N/mm²	ISO 2039-1	172	172	---	155
Compressive Modulus	MPa	ISO 604	2400	2400	---	2600
Compressive stress at 1/2/5% nominal strain[1]	MPa	ISO 604	25/49/79	22/46/92	---	27/53/88
Thermal Properties						
Heat distortion temperature, Method A	°C	ISO 75	70	100	65	80
Melting temperature	°C	ISO 3146	220	220	220	260
Glass transition temperature	°C	ISO 3146	---	---	---	60
Max. service temperature for few hours operation	°C	---	170	160	180	160
Service Temperature long term	°C	---	100	90	100	90
Minimum Service temperature	°C	---	-40	-40	-30	-30
Thermal coefficient of linear expansion	1/K.10 - 5	DIN 53752	7 - 10	9	7 - 10	8
Thermal conductivity, Method A	W/(K.m)	---	0,33	0,37	0,23	0,3
Specific heat capacity	J/(g.K)	IEC 1006	1,7	1,7	1,7	1,6
Dielectric Properties						
Dielectric constant at 1MHZ	---	IEC 250	3,5	---	3,3	3,3
Dissipation factor tan δ at 1 MHZ	---	IEC 250	0,03	---	0,02	0,02
Dielectric strength	KV/mm	IEC 243	25	25	25	25
Volume resistivity	Ω.cm	IEC 93	10^{13}	> 10^{12}	10^{14}	10^{13}
Surface resistivity	Ω	IEC 93	10^{13}	> 10^{12}	---	10^{12}
Resistance to Tracking (CTI)	---	DIN EN 60112	---	---	---	---
Additional Data						
Mass density	g/cm³	ISO 1183	1,13	1,15	1,13	1,14
Moisture absorption at 23°C, 50% RH	%	ISO 62	3	3	2,8	2,7
Water absorption at 23 °C	%	ISO 62	9	8	9,5	8,5
Flammability according to UL Standard	---	UL 94	HB	HB	HB	HB
Resistance to wear 2[2]	µm/km	ISO 7148-2	---	---	---	---

[1](1mm/min) [2] Ra=0,35 -0,45 µm (steel disc), v=0,3 m/s, p=3 N/mm² time T>16 h

250 HV-Frost	250 PE	250 GF 30	250 MO	900 | SW	900 PE	900 AS	900 XU ELS
PA 6.6 HI	PA 6.6 + PE	PA 6.6 + 30% Glass fibre	PA 6.6 + MoS_2	POM-C	POM-C + PE	POM antistatic	POM conductive
Mechanical Properties							
60	64	---	---	65	40	42	---
---	---	110	90	65	40	42	70
32	12	8	31	40	7	15	11
2000	2700	5500	3400	2900	2100	1600	3100
2300	2600	5300	---	2800	---	1600	---
110	100	170	---	95	---	60	---
no break	35	37	no break	no break	17	no break	70
80	3	5,8	7	7	2,5	---	3,4
80	80	85	82	81	77	74	80
165	---	252	160	125	---	84	---
2800	2200	3500	---	2400	---	1900	---
---	19/42/74	33/70/115	---	23/44/82	---	18/29/50	---
Thermal Properties							
70	80	150	80	110	---	---	125
263	---	260	255	164	---	165	175
60	---	---	---	-60	-60	-60	-60
160	120	200	160	140	100	130	100
90	85	130	90	100	80	90	90
-30	-30	-20	-30	-50	-50	-50	-40
10	9	5	---	11	14	15	13
---	---	0,27	0,3	0,336	---	---	0,4
---	1,7	1,5	1,6	1,5	---	---	---
Dielectric Properties							
2,9	3,3	---	3,3	3,8	4,4	---	---
0,014	---	---	---	0,005	0,003	---	---
27	25	30	---	> 20	---	14	---
10^{14}	10^{15}	> 10^{12}	---	10^{14}	10^{13}	10^{9} - 10^{10}	10^{4}
10^{14}	10^{13}	10^{11}	10^{12}	10^{13}	10^{13}	10^{9} - 10^{10}	10^{4}
600	600	475	---	600	---	---	---
Additional Data							
1,09	1,12	1,35	1,15	1,41	1,34	1,35	1,41
2,2	2,2	1,5	2,8	0,2	0,2	0,8	0,2
7	8,5	5,5	8,5	0,8	0,8	6,3	0,8
---	HB	HB	HB	HB	HB	HB	HB
---	4,3	---	---	---	2,1	---	---

All information is without warranty and liability. The legal notes can be found on page 88.

ZELLAMID® | TECHNICAL PROPERTIES

ZELLAMID® Specimen dry, Room temperature	Unit	Test Method	900 XT POM-C + PTFE	900 GF30 POM-C + 30% Glass fibre	900 H POM-H
Mechanical Properties					
Yield stress	Mpa	ISO 527	---	---	76
Tensile strength	Mpa	ISO 527	63	135	76
Elongation at break	%	ISO 527	22	2,5	38
Modulus of elasticity in tension	MPa	ISO 527	2800	9200	3400
Bending Modulus (flexural test)	MPa	ISO 178	2200	---	3000
Flexural Strength	MPa	ISO 178	---	---	---
Charpy Impact strength +23°C	kJ/m²	ISO 179/1eU	---	30	no break
Charpy notched Impact strength +23°C	kJ/m²	ISO 179/1eA	---	8	11
Shore D Hardness	---	ISO 868	80	---	84
Ball indentation hardness	N/mm²	ISO 2039-1	---	---	---
Compressive Modulus	MPa	ISO 604	---	---	---
Compressive stress at 1/2/5% nominal strain[1]	MPa	ISO 604	---	---	---
Thermal Properties					
Heat distortion temperature, Method A	°C	ISO 75	98	---	100
Melting temperature	°C	ISO 3146	165	---	178
Glass transition temperature	°C	ISO 3146	---	---	---
Max. service temperature for few hours operation	°C	---	140	140	150
Service Temperature long term	°C	---	100	100	90
Minimum Service temperature	°C	---	-40	-20	-50
Thermal coefficient of linear expansion	1/K.10 - 5	DIN 53752	---	4 - 8	10
Thermal conductivity, Method A	W/(K.m)	---	---	---	---
Specific heat capacity	J/(g.K)	IEC 1006	---	---	---
Dielectric Properties					
Dielectric constant at 1MHZ	---	IEC 250	3,7	---	3,8
Dissipation factor tan δ at 1 MHZ	---	IEC 250	---	---	---
Dielectric strength	KV/mm	IEC 243	33	50	---
Volume resistivity	Ω.cm	IEC 93	10^{13}	10^{14}	10^{14}
Surface resistivity	Ω	IEC 93	10^{13}	10^{12}	10^{14}
Resistance to Tracking (CTI)	---	DIN EN 60112	---	---	---
Additional Data					
Mass density	g/cm³	ISO 1183	1,44	1,58	1,42
Moisture absorption at 23°C, 50% RH	%	ISO 62	0,2	---	0,2
Water absorption at 23 °C	%	ISO 62	0,6	---	0,8
Flammability according to UL Standard	---	UL 94	HB	HB	HB
Resistance to wear 2[2]	µm/km	ISO 7148-2	3	---	---

[1](1mm/min) [2] Ra=0,35 -0,45 µm (steel disc), v=0,3 m/s, p=3 N/mm² time T>16 h

1000 | SW	1000 GF30	1400 | SW	1400 T	1500 X | XSW	1500 XT	1500 XGF30	1500 XCA30	1500 XC20
PEI	PEI + 30% Glass fibre	PET	PET + solid lubricant	PEEK	PEEK modified	PEEK + 30% Glass fibre	PEEK + 30% Carbon fibre	PEEK + 20% Ceramic
Mechanical Properties								
105	165	88	80	105	120	150	124	105
---	---	88	80	105	---	150	120	105
30	2	10	6	20	2	4	9	17
3200	9300	3400	3300	4200	9000	8700	7100	4900
3300	8500	3300	3000	3900	9100	---	---	---
160	225	130	115	160	190	---	200	---
no break	40	82	60	no break	40	55	85	no break
10	10	3,0	3,0	3,5	5,0	5,0	6	2,1
86	93	81	81	86	85	88	---	---
140	165	177	175	229	242	305	346	246
---	---	2400	2800	3500	2800	9950	11000	6900
---	---	28/53/100	27/55/97	35/69/130	33/66/115	85/135/175	100/150/190	60/100/160
Thermal Properties								
190	210	100	100	160	315	312	315	---
---	---	255	---	340	340	340	340	340
---	---	---	---	150	---	150	150	---
200	200	160	160	300	300	300	300	300
170	170	100	110	260	250	240	240	250
-50	-30	-20	-20	-60	-30	-20	-20	---
5	2 - 6	6	6	5,8	2,2	3	1 - 4	4,5
0,24	0,29	---	---	---	0,24	---	0,92	---
---	---	---	---	---	---	---	---	---
Dielectric Properties								
3,0	3,4	3,3	3,3	3,05	4,9	3,3	17	3,9
---	0,0023	0,02	---	0,003	0,02	0,003	0,23	0,0014
---	15 - 35	20	20	15	---	17	---	---
10^{15}	10^{15}	10^{15}	---	10^{15}	10^{3} - 10^{7}	10^{15}	10^{5}	---
> 10^{15}	> 10^{15}	---	10^{13}	10^{14}	10^{5}	10^{14}	10^{5}	---
---	---	---	600	---	---	---	---	---
Additional Data								
1,27	1,51	1,36	1,39	1,30	1,45	1,51	1,40	1,49
0,7	0,5	0,23	0,23	---	0,06	0,1	0,1	---
1,25	0,9	0,5	0,5	0,4	0,4	0,4	0,4	0,2
V0	V0	HB	HB	V0	V0	V0	V0	V0
---	---	2,5	1,1	2,3	1,27	---	---	---

All information is without warranty and liability. The legal notes can be found on page 88.

ZELLAMID® | TECHNICAL PROPERTIES

ZELLAMID® Specimen dry, Room temperature	Unit	Test Method	1100 PA 6 C natural	1100 SW PA 6 C black
Mechanical Properties				
Yield stress	Mpa	ISO 527	80	80
Tensile strength	Mpa	ISO 527	---	---
Elongation at break	%	ISO 527	40	40
Modulus of elasticity in tension	MPa	ISO 527	3100	3100
Bending Modulus (flexural test)	MPa	ISO 178	3400	3400
Flexural Strength	MPa	ISO 178	140	140
Charpy Impact strength +23°C	kJ/m²	ISO 179/1eU	no break	no break
Charpy notched Impact strength +23°C	kJ/m²	ISO 179/1eA	> 4	> 4
Shore D Hardness	---	ISO 868	---	---
Ball indentation hardness	N/mm²	ISO 2039-1	160	160
Compressive Modulus	MPa	ISO 604	---	---
Compressive stress at 1/2/5% nominal strain[1]	MPa	ISO 604	---	---
Thermal Properties				
Heat distortion temperature, Method A	°C	ISO 75	---	---
Melting temperature	°C	ISO 3146	220	220
Glass transition temperature	°C	ISO 3146	---	---
Max. service temperature for few hours operation	°C	---	170	170
Service Temperature long term	°C	---	105	105
Minimum Service temperature	°C	---	-40	-40
Thermal coefficient of linear expansion	1/K.10 - 5	DIN 53752	7 - 8	7 - 8
Thermal conductivity, Method A	W/(K.m)	---	0,23	0,23
Specific heat capacity	J/(g.K)	IEC 1006	1,7	1,7
Dielectric Properties				
Dielectric constant at 1MHZ	---	IEC 250	3,7	3,7
Dissipation factor tan δ at 1 MHZ	---	IEC 250	0,03	0,03
Dielectric strength	KV/mm	IEC 243	50	50
Volume resistivity	Ω.cm	IEC 93	10^{15}	10^{15}
Surface resistivity	Ω	IEC 93	10^{13}	10^{13}
Resistance to Tracking (CTI)	---	DIN EN 60112	600	600
Additional Data				
Mass density	g/cm³	ISO 1183	1,15	1,15
Moisture absorption at 23°C, 50% RH	%	ISO 62	2,2	2,2
Water absorption at 23 °C (saturation)	%	ISO 62	6,5	6,5
Flammability according to UL Standard	---	UL 94	HB	HB
Resistance to wear 2[2]	µm/km	ISO 7148-2	---	---

[1](1mm/min) [2] Ra=0,35 -0,45 µm (steel disc), v=0,3 m/s, p=3 N/mm² time T>16 h

1100 MO	1100 HS	1100 Oil	1100 T	1115	1200
PA 6 C + MoS_2	PA 6 C heatstabilized	PA 6 C + Oil	PA 6 C Tribotype	PA C 6/12	PA 12 C
Mechanical Properties					
85	90	80	80	80	60
---	---	---	---	---	---
40	30	50	40	55	55
3200	2500	2500	3100	2500	2200
3500	3000	2800	3300	2800	2400
130	120	135	110	135	90
no break	no break	no break	no break	no break	no break
> 5	> 4	> 5	> 4	> 12	> 15
---	---	---	---	---	---
150	170	140	160	140	---
---	---	---	---	---	---
---	---	---	---	---	---
Thermal Properties					
---	---	---	---	---	---
220	220	220	220	220	190
---	---	---	---	---	---
160	180	160	160	160	150
105	105	105	105	105	110
-40	-40	-40	-40	-40	-60
7 - 8	7 - 8	7 - 8	7 - 8	7 - 8	10 - 11
0,23	0,23	0,23	0,23	0,23	0,23
1,7	1,7	1,7	1,7	1,7	1,7
Dielectric Properties					
3,7	3,7	3,7	3,7	3,7	3,7
0,03	0,03	0,03	0,03	0,03	0,03
50	50	50	50	50	50
10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}
10^{13}	10^{13}	10^{13}	10^{13}	10^{13}	10^{13}
600	600	600	600	600	600
Additional Data					
1,15	1,15	1,14	1,14	1,12	1,03
2,2	2,2	1,8	2,2	1,9	0,9
6,5	7	5,5	6,5	5,8	1,4
HB	HB	HB	HB	HB	HB
---	---	---	---	---	---

All information is without warranty and liability. The legal notes can be found on page 88.

ZELLAMID® | RESISTANCE TO CHEMICALS

ZELLAMID® Description	ZELLAMID® 202 | SW ZELLAMID® 202 MO ZELLAMID® 250 ZELLAMID® 250 GF30 ZELLAMID® 250 PE ZELLAMID® 1100	ZELLAMID® 900 ZELLAMID® 900 SW ZELLAMID® 900 PE ZELLAMID® 900 GF30	ZELLAMID® 1400 ZELLAMID® 1400 SW ZELLAMID® 1400 T ZELLAMID® 1400 PBT	ZELLAMID® 1500 X ZELLAMID® 1500 XSW ZELLAMID® 1500 XT ZELLAMID® 1500 XC20 ZELLAMID® 1500 XCA30 ZELLAMID® 1500 XGF30

Chemical substance	%	Resistances capacity and material stability			
Acetone	TR	A	A	C	A
Acetylchloride	TR	D	D	---	---
Acetylene	TR	A	A	A	A
Alkylbenzoic	TR	A	A	---	---
Alu. salts of min.acids	20	B	B	A	A
Formic acid	10	B	D	A	B
Ammonia	TR	B	A	D	A
Benzene, Benzaldehyde	H	A	A	D	A
Chlorine moist	H	D	D	B	D
Boric acid	10	A / B	A	A	A
Bromwater	GL	D	D	---	A
Butadien	TR	A	A	A	---
n-Butyleneglycol	TR	A	A	A	A
Calcium chloride alcoholic	20	---	A	---	---
Chlorine, Chlorine moist	H	D	D	D	D
Chlorobenzene	TR	A	A	D	A
Chloroform	TR	B	C	D	A
Citric acid	10	A	A	A	A
aqueous	20	A	---	---	---
Cyclohexane/Cyclopetone	TR	A	A	A	A
Dichlortrehylene	TR	D	D	D	A
Dichlortetrafluorethan	TR	A	A	A	A
Dimethyleter	TR	---	---	A	A
Inert Gas	TR	A	A	A	A
Developing liquid	H	A	A	A	A
Mineral oil, Natural gas	H	A	A	A	A
Acetic acid aqueous	95	D	D	C	A
Ethanol	96	A	A	A	A
Essential oils	H	A	A	A	A
Alcoholic fat	H	A	A	A	---
Fatty acid	TR	A	A	A	A
Flurinated hydrocarbons	H	A	A	A	---
Flurinated hydroacid aq.	40	D	D	D	---
Fixer solution	H	A	A	A	---
Galvanic baths	H	D	D	---	---
Glycerine	TR	A	A	A	A
Glyceral	TR	A	A	A	A
Glyceral acid aqueous	30	---	---	---	---
Glysantin	H	A	A	D	---
Uric acid aqueous	10	A	A	A	A
Helium and rare gas	TR	A	A	A	A
Heptan Hexan	TR	A	A	A	A
Hydraulic oils	H	A	A	A	A
Impregnating oils	H	A	A	A	A
Isooctan	80	A	A	A	A
Isocyante	H	A	A	A	---
Cold machine oil	H	A	A	A	A
Potash lye	50	A	A	D	A
Potasiumchloride	10	A	A	A	A
Hydrofluoristic acid	30	---	---	D	---
Carbon dioxide	---	A	A	A	A
Super Otto-fuel	H	A	A	---	A
Diesel fuel	H	A	A	A	A
Turbine aircraft fuel	H	A	A	A	A
Kerosene	H	A	A	A	A

ZELLAMID® Description	ZELLAMID® 202 | SW ZELLAMID® 202 MO ZELLAMID® 250 ZELLAMID® 250 GF30 ZELLAMID® 250 PE ZELLAMID® 1100	ZELLAMID® 900 ZELLAMID® 900 SW ZELLAMID® 900 PE ZELLAMID® 900 GF30	ZELLAMID® 1400 ZELLAMID® 1400 SW ZELLAMID® 1400 T ZELLAMID® 1400 PBT	ZELLAMID® 1500 X ZELLAMID® 1500 XSW ZELLAMID® 1500 XT ZELLAMID® 1500 XC20 ZELLAMID® 1500 XCA30 ZELLAMID® 1500 XGF30
Chemical substance	**%**	**Resistances capacity and material stability**		
Soldering solution	H	D	D	A	A
Magnesium salt aqueous	10	A	A	A	A
Seawater	---	A	A	A	A
Methan	TR	A	A	A	A
Methyl acetate	TR	A	B	B	A
Methylene Chloride	TR	B / C	D	D	A
Methylene Glycol	TR	A	---	---	A
Methylenglycolacetate	TR	A	---	---	---
Mixed acids	---	D	D	D	---
Engine oil	H	A	A	A	---
Naphtalene	H	A	A	A	A
Naphtalenesulfanacids	TR	D	D	D	C
Sodium salts aqueous	10	A	A	A	A
Sodium salts hypophosphit aqu	10	A	A	A	---
Sodium bisulfit aqueous	10	A	A	A	A
Caustic soda solution	10	A	D	D	---
Nitrobenzene	TR	B	A	A	A
Octane Octene	TR	A	A	A	A
Oleric acid	H	A	A	A	A
Ozon	TR	B / C	B / C	B / C	A / B
Petroleum	TR	A	A	A	A
Phenylethylalcohol	TR	A / B	---	---	---
Phosphoric acid	10	D	A	A	A
Phosphoric acid	85	---	---	---	---
Propane	TR	A	A	A	A
Mercury	TR	A	A	A	A
Mercury chlorid aqueous	GL	D	---	---	A
Nitric acid	>50	D	C	C	B
Hydrochloric aqueous	>20	D	B	B	A
Oxygen under pressure	TR	A	A	A	A
Sulphurdioxid dry	TR	A	---	---	A
Sulphurdioxid moist	TR	B	---	---	A
Sulphereous acid	GL	B	A	A	A
Sulphuric acid	>80	D	D	D	A
Sodium Carbonate	10	A	A	A	A
Nitrogen gas	TR	A	A	A	A
Styrol	TR	A	A	A	A
Turpentine oil	H	A	A	A	A
Tetrachloride-carbon	TR	A	A	A	---
Transformer oil	H	A	A	A	A
Trichlorethylene	TR	A / B	D	D	A
Uraniumfloride	TR	D	D	D	---
Urin	---	A	A	A	A
Vinylchloride	TR	A	A	A	A
Steam	>100	B / D	D	D	A
Hydrogen	TR	A	A	A	A
Hydreogensuperoxid	---	A	A	A	---
Acidity of Wine	10	A	---	---	A
Acidity of Wine	50	B	---	---	---
Xylol	TR	A	B	B	A
Xylol	TR / 10	A	D	D	---
Zincchloride	10	B	---	A	A
Zincchloride	37,5	D	---	---	---
Zinc	---	A	A	A	A

H: commercially **GL:** saturated aqueous solution [at 23 ° C] **TR:** technically pure **A:** resistant: only low weight and dimensional changes **B:** not resistant: significant weight, dimensions and property changes of the molding material **C:** inconstant: at long exposure **D:** unstable: within a short time strong attack Λ The legal notes can be found on page 88.

ZELLAMID® | RODS

ZELLAMID® Quality	202	202 SW	202 MO	202 HV	250	250 SW	250 GF30
	PA6 natural	PA6 black	PA 6 + MoS_2	PA 6 high impact	PA6.6 natural	PA 6.6 black	PA 6.6 + 30% Glass fibre

Ø mm	Tolerance mm	Length mm	Weight (kg/m)						
6	+0,1/+0,6	3000	[+] 0,037	[–] 0,037	[–] 0,037	---	[–] 0,037	[–] 0,037	---
8	+0,1/+0,7	3000	[+] 0,060	[–] 0,060	[–] 0,067	---	[+] 0,067	[–] 0,067	---
10	+0,1/+0,7	3000	[+] 0,097	[–] 0,097	[–] 0,097	---	[+] 0,090	[–] 0,090	[–] 0,120
12	+0,2/+0,8	3000	[+] 0,143	[–] 0,143	[–] 0,143	---	[–] 0,143	[–] 0,143	[+] 0,177
15	+0,2/+0,8	3000	[+] 0,217	[+] 0,217	[+] 0,227	---	[–] 0,217	[–] 0,217	[–] 0,267
16	+0,2/+0,8	3000	[+] 0,25	[–] 0,25	[–] 0,25	---	[–] 0,25	[–] 0,25	[–] 0,31
18	+0,2/+0,8	3000	[+] 0,32	[–] 0,32	[–] 0,31	---	[–] 0,31	[–] 0,31	[–] 0,70
20	+0,2/+0,8	3000	[+] 0,38	[+] 0,38	[+] 0,39	---	[+] 0,39	[–] 0,39	[+] 0,46
22	+0,2/+1,0	3000	[–] 0,48	[–] 0,48	[–] 0,49	---	[–] 0,48	[–] 0,48	---
25	+0,2/+1,0	3000	[+] 0,59	[+] 0,59	[+] 0,60	---	[+] 0,60	[–] 0,60	[+] 0,70
28	+0,2/+1,0	3000	[–] 0,76	[–] 0,76	---	---	[–] 0,76	[–] 0,76	---
30	+0,2/+1,0	3000	[+] 0,86	[+] 0,86	[+] 0,86	[–] 0,86	[+] 0,85	[–] 0,85	[+] 1,03
32	+0,2/+1,2	3000	[–] 0,99	[–] 0,99	[–] 1,01	---	[–] 0,99	[–] 0,99	[–] 1,15
35	+0,2/+1,2	3000	[+] 1,16	[+] 1,16	[+] 1,16	[–] 1,16	[+] 1,16	[–] 1,16	[+] 1,40
38	+0,2/+1,2	3000	[–] 1,46	[–] 1,46	---	---	[–] 1,36	[–] 1,36	---
40	+0,2/+1,2	3000	[+] 1,50	[+] 1,50	[+] 1,50	---	[+] 1,52	[–] 1,52	[+] 1,81
45	+0,3/+1,3	3000	[+] 1,91	[+] 1,91	[+] 1,91	[–] 1,91	[+] 1,91	[–] 1,91	[–] 2,26
50	+0,3/+1,3	3000	[+] 2,34	[+] 2,34	[+] 2,38	---	[+] 2,34	[–] 2,34	[+] 2,78
55	+0,3/+1,3	3000	[+] 2,86	[–] 2,86	[–] 2,89	---	[+] 2,90	[–] 2,90	[–] 3,35
60	+0,3/+1,6	3000	[+] 3,41	[+] 3,41	[+] 3,43	[–] 3,41	[+] 3,42	[–] 3,42	[+] 4,00
65	+0,3/+1,6	3000	[+] 4,00	[+] 4,00	[+] 4,01	[–] 4,00	[+] 3,95	[–] 3,95	[–] 4,68
70	+0,3/+1,6	3000	[+] 4,57	[+] 4,57	[+] 4,64	[–] 4,57	[+] 4,65	[–] 4,65	[+] 5,51
75	+0,4/+2,0	3000	[+] 5,27	[+] 5,27	[+] 5,33	---	[–] 4,97	[–] 4,97	[–] 6,25
80	+0,4/+2,0	3000	[+] 6,06	[+] 6,06	[+] 6,11	---	[+] 6,10	[–] 6,10	[+] 7,19
85	+0,5/+2,2	3000	[–] 6,77	[–] 6,77	[–] 6,77	---	[–] 6,77	[–] 6,77	[–] 8,02
90	+0,5/+2,2	3000	[+] 7,67	[+] 7,67	[+] 7,72	[–] 7,67	[+] 7,58	[–] 7,58	[–] 8,98
95	+0,6/+2,5	3000	[–] 8,47	[–] 8,47	[–] 8,47	---	---	---	---
100	+0,6/+2,5	3000	[+] 9,47	[+] 9,47	[+] 9,52	---	[+] 9,37	[–] 9,37	[+] 11,09
110	+0,7/+3,0	3000	[+] 11,57	[–] 11,57	---	---	[–] 11,69	[–] 11,69	[–] 13,53
120	+0,8/+3,5	3000	[+] 13,74	[–] 13,74	---	---	[+] 13,75	[–] 13,75	[+] 16,05
125	+0,8/+3,5	3000	[–] 15,13	[–] 15,13	---	---	[–] 14,68	[–] 14,68	---
130	+0,9/+3,8	3000	[+] 16,11	[–] 16,11	---	---	[–] 16,35	[–] 16,35	[–] 18,84
140	+0,9/+3,8	3000	[+] 18,74	[–] 18,74	---	[–] 18,74	[–] 18,63	[–] 18,63	[–] 21,80
150	+1,0/+4,2	3000	[+] 21,46	[–] 21,46	---	---	[+] 21,15	[–] 21,15	[+] 25,05
160	+1,1/+4,5	3000	[+] 24,33	[–] 24,33	---	[–] 24,33	---	---	---
170	+1,2/+5,0	3000	[+] 27,86	[–] 27,86	---	---	---	---	---
180	+1,2/+5,0	3000	[+] 30,99	[–] 30,99	---	---	---	---	---
190	+1,3/+5,5	3000	[–] 34,60	[–] 34,60	---	---	---	---	---
200	+1,3/+5,5	3000	[+] 38,15	[–] 38,15	---	---	---	---	---
210	+1,3/+5,8	3000	[–] 41,87	---	---	---	---	---	---
220	+1,3/+5,8	3000	[+] 46,48	---	---	---	---	---	---
230	+1,5/+6,2	3000	[+] 50,63	---	---	---	---	---	---
250	+1,5/+6,2	3000	[+] 59,71	---	---	---	---	---	---
260	+1,5/+6,6	3000	[+] 63,33	---	---	---	---	---	---
280	+1,5/+6,6	3000	[+] 73,29	---	---	---	---	---	---
300	+1,5/+7,5	3000	[+] 84,22	---	---	---	---	---	---

[+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions and intermediate sizes on request.

ZELLAMID® | RODS

ZELLAMID® Quality			1100 / 1100 SW	1100 Oil	1100 MO	1100 T
			PA 6 C natural / black	PA 6 C, Oil	PA 6 C + MoS_2	PA 6 C Tribotype
Ø mm	Tolerance mm	Length mm	Weight (kg/m)			
30	+0,2/+1,4	1000	[–] 0,85	[–] 0,85	[–] 0,85	[–] 0,85
35	+0,2/+1,4	1000	[–] 1,20	[–] 1,20	[–] 1,20	[–] 1,20
40	+0,2/+1,4	1000	[–] 1,50	[–] 1,50	[–] 1,50	[–] 1,50
45	+0,3/+1,9	1000	[–] 1,90	[–] 1,90	[–] 1,90	[–] 1,90
50	+0,3/+1,9	2000	[–] 4,80	[–] 4,80	[–] 4,80	[–] 4,80
55	+0,3/+1,9	2000	[–] 6,20	[–] 6,20	[–] 6,20	[–] 6,20
60	+0,3/+2,5	2000	[+] 6,80	[+] 6,80	[–] 6,80	[–] 6,80
65	+0,3/+2,5	1000	[–] 8,46	[–] 8,46	[–] 8,46	[–] 8,46
70	+0,3/+2,5	2000	[+] 9,60	[–] 9,60	[–] 9,60	[–] 9,60
75	+0,4/+2,8	1000	[–] 5,60	[–] 5,60	[–] 5,60	[–] 5,60
80	+0,4/+2,8	2000	[+] 12,40	[–] 12,40	[–] 12,40	[–] 12,40
85	+0,5/+3,2	2000	[–] 14,00	[–] 14,00	[–] 14,00	[–] 14,00
90	+0,5/+3,2	2000	[+] 15,60	[+] 15,60	[–] 15,60	[–] 15,60
95	+0,6/+3,5	2000	[–] 8,70	[–] 8,70	[–] 8,70	[–] 8,70
100	+0,6/+3,5	2000	[+] 9,64	[+] 9,64	[–] 9,64	[–] 9,64
110	+0,7/+3,9	2000	[+] 11,60	[–] 11,60	[–] 11,60	[–] 11,60
115	+0,8/+4,3	2000	[–] 12,90	[–] 12,90	[–] 12,90	[–] 12,90
120	+0,8/+4,3	2000	[+] 13,65	[+] 13,65	[–] 13,65	[–] 13,65
125	+0,8/+4,3	2000	[+] 15,35	[–] 15,35	[–] 15,35	[–] 15,35
130	+0,8/+5,0	2000	[+] 16,40	[+] 16,40	[–] 16,40	[–] 16,40
135	+0,8/+5,0	2000	[–] 17,70	[–] 17,70	[–] 17,70	[–] 17,70
140	+0,8/+5,0	2000	[+] 18,97	[+] 18,97	[–] 18,97	[–] 18,97
145	+0,8/+5,3	1000	[–] 20,45	[–] 20,45	[–] 20,45	[–] 20,45
150	+0,8/+5,3	2000	[+] 21,60	[+] 21,60	[–] 21,60	[–] 21,60
155	+0,8/+6,0	1000	[–] 23,90	[–] 23,90	[–] 23,90	[–] 23,90
160	+0,8/+6,0	2000	[+] 24,60	[–] 24,60	[–] 24,60	[–] 24,60
165	+1,0/+6,5	1000	[–] 26,00	[–] 26,00	[–] 26,00	[–] 26,00
170	+1,0/+6,5	2000	[+] 27,40	[–] 27,40	[–] 27,40	[–] 27,40
175	+1,0/+6,5	1000	[–] 29,70	[–] 29,70	[–] 29,70	[–] 29,70
180	+1,0/+6,5	2000	[+] 30,60	[–] 30,60	[+] 30,60	[–] 30,60
190	+1,0/+7,5	2000	[–] 34,50	[–] 34,50	[–] 34,50	[–] 34,50
200	+1,0/+7,5	2000	[+] 38,20	[+] 38,20	[–] 38,20	[–] 38,20
210	+1,0/+8,5	1000	[–] 42,20	[–] 42,20	[+] 42,20	[–] 42,20
220	+1,0/+8,5	1000	[+] 46,90	[–] 46,90	[–] 46,90	[–] 46,90
230	+1,0/+9,5	1000	[+] 50,00	[–] 50,00	[–] 50,00	[–] 50,00
240	+1,0/+9,5	1000	[+] 55,00	[–] 55,00	[–] 55,00	[–] 55,00
250	+1,0/+9,5	1000	[+] 60,40	[+] 60,40	[–] 60,40	[–] 60,40
260	+1,0/+11,0	1000	[+] 65,20	[–] 65,20	[–] 65,20	[–] 65,20
270	+1,0/+11,0	1000	[+] 70,00	[–] 70,00	[–] 70,00	[–] 70,00
280	+1,0/+11,0	1000	[+] 75,00	[–] 75,00	[–] 75,00	[–] 75,00
290	+1,5/+12,0	1000	[–] 80,70	[–] 80,70	[–] 80,70	[–] 80,70
300	+1,5/+12,0	1000	[+] 86,30	[+] 86,30	[–] 86,30	[–] 86,30
310	+1,5/+12,0	1000	[–] 92,00	[–] 92,00	[–] 92,00	[–] 92,00
320	+1,5/+12,0	1000	[+] 98,00	[–] 98,00	[–] 98,00	[–] 98,00
330	+1,5/13,5	1000	[–] 104,00	[–] 104,00	[–] 104,00	[–] 104,00
340	+1,5/13,5	1000	[–] 113,00	[–] 113,00	[–] 113,00	[–] 113,00
350	+1,5/13,5	1000	[+] 117,50	[–] 117,50	[–] 117,50	[–] 117,50
360	+1,5/13,5	1000	[+] 124,00	[–] 124,00	[–] 124,00	[–] 124,00
370	+1,5/15,0	1000	[+] 131,00	[–] 131,00	[–] 131,00	[–] 131,00
380	+1,5/15,0	1000	[+] 140,00	[–] 140,00	[–] 140,00	[–] 140,00
390	+1,5/15,0	1000	[–] 144,00	[–] 144,00	[–] 144,00	[–] 144,00
400	+1,5/15,0	1000	[+] 152,17	[–] 152,17	[–] 152,17	[–] 152,17
410	+1,5/16,5	1000	[–] 165,00	[–] 165,00	[–] 165,00	[–] 165,00
420	+1,5/16,5	1000	[–] 173,80	[–] 173,80	[–] 173,80	[–] 173,80
430	+1,5/16,5	1000	[–] 183,00	[–] 183,00	[–] 183,00	[–] 183,00
440	+1,5/16,5	1000	[+] 187,00	[–] 187,00	[–] 187,00	[–] 187,00
450	+1,5/16,5	1000	[–] 195,00	[–] 195,00	[–] 195,00	[–] 195,00

ZELLAMID® Quality	1100 / 1100 SW	1100 Oil	1100 MO	1100 T
	PA 6 C natural / black	PA 6 C, Oil	PA 6 C + MoS_2	PA 6 C Tribotype

Ø mm	Tolerance mm	Length mm	Weight (kg/m)			
460	+1,5/18,0	1000	[–] 205,00	[–] 205,00	[–] 205,00	[–] 205,00
470	+1,5/18,0	1000	[–] 216,60	[–] 216,60	[–] 216,60	[–] 216,60
480	+1,5/18,0	1000	[–] 221,00	[–] 221,00	[–] 221,00	[–] 221,00
490	+1,5/18,0	1000	[–] 233,00	[–] 233,00	[–] 233,00	[–] 233,00
500	+1,5/18,0	1000	[+] 242,00	[–] 242,00	[–] 242,00	[–] 242,00
510	+3,0/21,0	1000	[–] 251,00	[–] 251,00	[–] 251,00	[–] 251,00
520	+3,0/21,0	1000	[–] 262,40	[–] 262,40	[–] 262,40	[–] 262,40
530	+3,0/21,0	1000	[–] 268,00	[–] 268,00	[–] 268,00	[–] 268,00
540	+3,0/21,0	1000	[–] 276,50	[–] 276,50	[–] 276,50	[–] 276,50
550	+3,0/21,0	1000	[–] 294,00	[–] 294,00	[–] 294,00	[–] 294,00
560	+3,0/21,0	1000	[–] 309,00	[–] 309,00	[–] 309,00	[–] 309,00
570	+3,0/21,0	1000	[–] 311,00	[–] 311,00	[–] 311,00	[–] 311,00
580	+3,0/21,0	1000	[–] 316,00	[–] 316,00	[–] 316,00	[–] 316,00
590	+3,0/21,0	1000	[–] 331,00	[–] 331,00	[–] 331,00	[–] 331,00
600	+3,0/21,0	1000	[–] 346,00	[–] 346,00	[–] 346,00	[–] 346,00
610	+3,0/25,0	1000	[–] 348,00	[–] 348,00	[–] 348,00	[–] 348,00
620	+3,0/25,0	1000	[–] 365,00	[–] 365,00	[–] 365,00	[–] 365,00
625	+3,0/25,0	1000	[–] 367,00	[–] 367,00	[–] 367,00	[–] 367,00
630	+3,0/25,0	1000	[–] 376,00	[–] 376,00	[–] 376,00	[–] 376,00
640	+3,0/25,0	1000	[–] 385,00	[–] 385,00	[–] 385,00	[–] 385,00
650	+3,0/25,0	1000	[–] 400,00	[–] 400,00	[–] 400,00	[–] 400,00
660	+3,0/25,0	1000	[–] 408,00	[–] 408,00	[–] 408,00	[–] 408,00
670	+3,0/25,0	1000	[–] 425,00	[–] 425,00	[–] 425,00	[–] 425,00
690	+3,0/25,0	1000	[–] 449,00	[–] 449,00	[–] 449,00	[–] 449,00
700	+3,0/25,0	1000	[–] 470,00	[–] 470,00	[–] 470,00	[–] 470,00
710	+3,0/25,0	1000	[–] 483,00	[–] 483,00	[–] 483,00	[–] 483,00
720	+3,0/25,0	1000	[–] 492,00	[–] 492,00	[–] 492,00	[–] 492,00
730	+3,0/25,0	1000	[–] 506,00	[–] 506,00	[–] 506,00	[–] 506,00
750	+3,0/25,0	1000	[–] 535,00	[–] 535,00	[–] 535,00	[–] 535,00
770	+3,0/25,0	1000	[–] 560,00	[–] 560,00	[–] 560,00	[–] 560,00
790	+3,0/25,0	1000	[–] 591,00	[–] 591,00	[–] 591,00	[–] 591,00
800	+3,0/25,0	1000	[–] 601,00	[–] 601,00	[–] 601,00	[–] 601,00

ZELLAMID® Quality	1120 FE
	PA 6 / 12 C + Metal core

Nominal-Ø mm	Steel core-Ø alternatively mm	
80	30	35
90	35	40
100	35	40
110	35	40
115	40	45
120	40	50
125	40	50
130	45	55
135	45	55
140	50	60
145	50	60
150	50	60
155	60	70
160	60	70
165	60	70

Nominal-Ø mm	Steel core-Ø alternatively mm	
170	70	80
180	80	90
190	80	90
200	90	100
210	90	100
220	90	100
230	100	120
240	100	120
255	100	120
280	100	120
305	100	120
325	100	120
350	100	120
375	100	120
400	100	120

Following metals are used typically:

- 1.4305 (stainless steel)
- 9SMn28K (free-cutting steel)
- C45 (carbon-steel)

[+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions and intermediate sizes on request.

ZELLAMID® | RODS

ZELLAMID® Quality			1100 FR	1100 blue	1100 HS	1115	1200
			PA 6 C flame retardent	PA 6 C blue	PA 6 C heat stabilized	PA 6 C / 12 C high impact	PA 12 C natural
Ø mm	Tolerance mm	Length mm	Weight (kg/m)				
30	+0,2/+1,4	1000	[–] 0,85	[–] 0,85	[–] 0,85	[–] 0,85	[–] 0,78
35	+0,2/+1,4	1000	[–] 1,20	[–] 1,20	[–] 1,20	[–] 1,20	[–] 1,06
40	+0,2/+1,4	1000	[–] 1,50	[–] 1,50	[–] 1,50	[–] 1,50	[–] 1,37
45	+0,3/+1,9	1000	[–] 1,90	[–] 1,90	[–] 1,90	[–] 1,90	[–] 1,73
50	+0,3/+1,9	1000	[–] 2,40	[–] 2,40	[–] 2,40	[–] 2,40	[–] 2,15
55	+0,3/+1,9	1000	[–] 3,10	[–] 3,10	[–] 3,10	[–] 3,10	---
60	+0,3/+2,5	1000	[–] 3,40	[+] 3,40	[–] 3,40	[–] 3,40	[–] 3,09
65	+0,3/+2,5	1000	[–] 4,23	[–] 4,23	[–] 4,23	[–] 4,23	---
70	+0,3/+2,5	1000	[–] 4,80	[–] 4,80	[–] 4,80	[–] 4,80	[–] 4,42
75	+0,4/+2,8	1000	[–] 5,60	[–] 5,60	[–] 5,60	[–] 5,60	---
80	+0,4/+2,8	1000	[–] 6,20	[–] 6,20	[–] 6,20	[–] 6,20	[–] 5,74
85	+0,5/+3,2	1000	[–] 7,00	[–] 7,00	[–] 7,00	[–] 7,00	---
90	+0,5/+3,2	1000	[–] 7,80	[+] 7,80	[–] 7,80	[–] 7,80	[–] 7,22
95	+0,6/+3,5	1000	[–] 8,70	[–] 8,70	[–] 8,70	[–] 8,70	---
100	+0,6/+3,5	2000	[–] 9,64	[+] 9,64	[–] 9,64	[–] 9,64	[–] 8,96
110	+0,7/+3,9	2000	[–] 11,60	[–] 11,60	[–] 11,60	[–] 11,60	[–] 10,20
115	+0,8/+4,3	2000	[–] 12,90	[–] 12,90	[–] 12,90	[–] 12,90	---
120	+0,8/+4,3	2000	[–] 13,65	[+] 13,65	[–] 13,65	[–] 13,65	[–] 12,92
125	+0,8/+4,3	2000	[–] 15,35	[–] 15,35	[–] 15,35	[–] 15,35	---
130	+0,8/+5,0	2000	[–] 16,40	[+] 16,40	[–] 16,40	[–] 16,40	[–] 15,10
135	+0,8/+5,0	2000	[–] 17,70	[–] 17,70	[–] 17,70	[–] 17,70	---
140	+0,8/+5,0	2000	[–] 18,97	[+] 18,97	[–] 18,97	[–] 18,97	[–] 17,44
145	+0,8/+5,3	1000	[–] 20,45	[–] 20,45	[–] 20,45	[–] 20,45	---
150	+0,8/+5,3	2000	[–] 21,60	[+] 21,60	[–] 21,60	[–] 21,60	[–] 19,78
155	+0,8/+6,0	1000	[–] 23,90	[–] 23,90	[–] 23,90	[–] 23,90	---
160	+0,8/+6,0	2000	[–] 24,60	[–] 24,60	[–] 24,60	[–] 24,60	[–] 22,82
165	+1,0/+6,5	1000	[–] 26,00	[–] 26,00	[–] 26,00	[–] 26,00	---
170	+1,0/+6,5	2000	[–] 27,40	[–] 27,40	[–] 27,40	[–] 27,40	[–] 25,68
175	+1,0/+6,5	1000	[–] 29,70	[–] 29,70	[–] 29,70	[–] 29,70	---
180	+1,0/+6,5	2000	[–] 30,60	[–] 30,60	[–] 30,60	[–] 30,60	[–] 28,74
190	+1,0/+7,5	2000	[–] 34,50	[–] 34,50	[–] 34,50	[–] 34,50	[–] 31,96
200	+1,0/+7,5	2000	[–] 38,20	[+] 38,20	[–] 38,20	[–] 38,20	[–] 35,34
210	+1,0/+8,5	1000	[–] 42,20	[–] 42,20	[–] 42,20	[–] 42,20	[–] 37,50
220	+1,0/+8,5	1000	[–] 46,90	[–] 46,90	[–] 46,90	[–] 46,90	[–] 38,96
230	+1,0/+9,5	1000	[–] 50,00	[–] 50,00	[–] 50,00	[–] 50,00	[–] 42,58
240	+1,0/+9,5	1000	[–] 55,00	[–] 55,00	[–] 55,00	[–] 55,00	[–] 46,36
250	+1,0/+9,5	1000	[–] 60,40	[+] 60,40	[–] 60,40	[–] 60,40	[–] 50,32
260	+1,0/+11,0	1000	[–] 65,20	[–] 65,20	[–] 65,20	[–] 65,20	---
270	+1,0/+11,0	1000	[–] 70,00	[–] 70,00	[–] 70,00	[–] 70,00	---
280	+1,0/+11,0	1000	[–] 75,00	[–] 75,00	[–] 75,00	[–] 75,00	---
290	+1,5/+12,0	1000	[–] 80,70	[–] 80,70	[–] 80,70	[–] 80,70	---
300	+1,5/+12,0	1000	[–] 86,30	[+] 86,30	[–] 86,30	[–] 86,30	---
310	+1,5/+12,0	1000	[–] 92,00	[–] 92,00	[–] 92,00	[–] 92,00	---
320	+1,5/+12,0	1000	[–] 98,00	[–] 98,00	[–] 98,00	[–] 98,00	---
330	+1,5/13,5	1000	[–] 104,00	[–] 104,00	[–] 104,00	[–] 104,00	---
340	+1,5/13,5	1000	[–] 113,00	[–] 113,00	[–] 113,00	[–] 113,00	---
350	+1,5/13,5	1000	[–] 117,50	[–] 117,50	[–] 117,50	[–] 117,50	---

ZELLAMID® Quality			1100 FR	1100 blue	1100 HS	1115
			PA 6 C flame retardent	PA 6 C blue	PA 6 C heat stabilized	PA 6 C / 12 C high impact
Ø mm	Tolerance mm	Length mm	Weight (kg/m)			
360	+1,5/13,5	1000	[–] 124,00	[–] 124,00	[–] 124,00	[–] 124,00
370	+1,5/15,0	1000	[–] 131,00	[–] 131,00	[–] 131,00	[–] 131,00
380	+1,5/15,0	1000	[–] 140,00	[–] 140,00	[–] 140,00	[–] 140,00
390	+1,5/15,0	1000	[–] 144,00	[–] 144,00	[–] 144,00	[–] 144,00
400	+1,5/15,0	1000	[–] 152,17	[–] 152,17	[–] 152,17	[–] 152,17
410	+1,5/16,5	1000	[–] 165,00	[–] 165,00	[–] 165,00	[–] 165,00
420	+1,5/16,5	1000	[–] 173,80	[–] 173,80	[–] 173,80	[–] 173,80
430	+1,5/16,5	1000	[–] 183,00	[–] 183,00	[–] 183,00	[–] 183,00
440	+1,5/16,5	1000	[–] 187,00	[–] 187,00	[–] 187,00	[–] 187,00
450	+1,5/16,5	1000	[–] 195,00	[–] 195,00	[–] 195,00	[–] 195,00
460	+1,5/18,0	1000	[–] 205,00	[–] 205,00	[–] 205,00	[–] 205,00
470	+1,5/18,0	1000	[–] 216,60	[–] 216,60	[–] 216,60	[–] 216,60
480	+1,5/18,0	1000	[–] 221,00	[–] 221,00	[–] 221,00	[–] 221,00
490	+1,5/18,0	1000	[–] 233,00	[–] 233,00	[–] 233,00	[–] 233,00
500	+1,5/18,0	1000	[–] 242,00	[–] 242,00	[–] 242,00	[–] 242,00
510	+3,0/21,0	1000	[–] 251,00	[–] 251,00	[–] 251,00	[–] 251,00
520	+3,0/21,0	1000	[–] 262,40	[–] 262,40	[–] 262,40	[–] 262,40
530	+3,0/21,0	1000	[–] 268,00	[–] 268,00	[–] 268,00	[–] 268,00
540	+3,0/21,0	1000	[–] 276,50	[–] 276,50	[–] 276,50	[–] 276,50
550	+3,0/21,0	1000	[–] 294,00	[–] 294,00	[–] 294,00	[–] 294,00
560	+3,0/21,0	1000	[–] 309,00	[–] 309,00	[–] 309,00	[–] 309,00
570	+3,0/21,0	1000	[–] 311,00	[–] 311,00	[–] 311,00	[–] 311,00
580	+3,0/21,0	1000	[–] 316,00	[–] 316,00	[–] 316,00	[–] 316,00
590	+3,0/21,0	1000	[–] 331,00	[–] 331,00	[–] 331,00	[–] 331,00
600	+3,0/21,0	1000	[–] 346,00	[–] 346,00	[–] 346,00	[–] 346,00
610	+3,0/25,0	1000	[–] 348,00	[–] 348,00	[–] 348,00	[–] 348,00
620	+3,0/25,0	1000	[–] 365,00	[–] 365,00	[–] 365,00	[–] 365,00
625	+3,0/25,0	1000	[–] 367,00	[–] 367,00	[–] 367,00	[–] 367,00
630	+3,0/25,0	1000	[–] 376,00	[–] 376,00	[–] 376,00	[–] 376,00
640	+3,0/25,0	1000	[–] 385,00	[–] 385,00	[–] 385,00	[–] 385,00
650	+3,0/25,0	1000	[–] 400,00	[–] 400,00	[–] 400,00	[–] 400,00
660	+3,0/25,0	1000	[–] 408,00	[–] 408,00	[–] 408,00	[–] 408,00
670	+3,0/25,0	1000	[–] 425,00	[–] 425,00	[–] 425,00	[–] 425,00
690	+3,0/25,0	1000	[–] 449,00	[–] 449,00	[–] 449,00	[–] 449,00
700	+3,0/25,0	1000	[–] 470,00	[–] 470,00	[–] 470,00	[–] 470,00
710	+3,0/25,0	1000	[–] 483,00	[–] 483,00	[–] 483,00	[–] 483,00
720	+3,0/25,0	1000	[–] 492,00	[–] 492,00	[–] 492,00	[–] 492,00
730	+3,0/25,0	1000	[–] 506,00	[–] 506,00	[–] 506,00	[–] 506,00
750	+3,0/25,0	1000	[–] 535,00	[–] 535,00	[–] 535,00	[–] 535,00
770	+3,0/25,0	1000	[–] 560,00	[–] 560,00	[–] 560,00	[–] 560,00
790	+3,0/25,0	1000	[–] 591,00	[–] 591,00	[–] 591,00	[–] 591,00
800	+3,0/25,0	1000	[–] 601,00	[–] 601,00	[–] 601,00	[–] 601,00

[+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions and intermediate sizes on request.

ZELLAMID® | RODS

ZELLAMID® Quality	900	900 SW	900 blau	900 PE	900 GF30	900 AS	900 XU ELS
	POM-C natural	POM-C black	POM-C RAL 5002	POM-C + PE	POM-C+30% Glass fibre	POM-C antistatic	POM-C conductive

Ø mm	Tolerance mm	Length mm	Weight (kg/m)						
6	+0,1/+0,6	3000	[+] 0,043	[–] 0,043	[–] 0,047	---	---	[–] 0,043	[–] 0,045
8	+0,1/+0,7	3000	[+] 0,077	[+] 0,077	[–] 0,077	---	---	[–] 0,079	[–] 0,079
10	+0,1/+0,7	3000	[+] 0,120	[+] 0,120	[–] 0,120	---	---	[–] 0,116	[–] 0,122
12	+0,2/+0,8	3000	[+] 0,170	[+] 0,170	[–] 0,173	---	---	[–] 0,168	[–] 0,178
14	+0,2/+0,8	3000	[+] 0,217	[+] 0,217	[–] 0,217	---	---	[–] 0,226	[–] 0,236
15	+0,2/+0,8	3000	[+] 0,273	[+] 0,273	[–] 0,273	---	---	[–] 0,258	[–] 0,258
16	+0,2/+0,8	3000	[+] 0,30	[+] 0,30	[–] 0,30	[–] 0,28	[–] 0,32	[–] 0,29	[–] 0,30
18	+0,2/+0,8	3000	[+] 0,39	[+] 0,39	[–] 0,39	---	---	[–] 0,37	[–] 0,38
20	+0,2/+0,8	3000	[+] 0,48	[+] 0,48	[+] 0,48	[+] 0,45	[–] 0,53	[–] 0,45	[–] 0,47
22	+0,2/+1,0	3000	[+] 0,57	[+] 0,57	[–] 0,57	---	---	[–] 0,55	[–] 0,57
25	+0,2/+1,0	3000	[+] 0,74	[+] 0,74	[–] 0,74	[+] 0,71	[+] 0,83	[–] 0,70	[–] 0,74
28	+0,2/+1,0	3000	[–] 0,91	[–] 0,91	[–] 0,94	---	---	[–] 0,88	[–] 0,92
30	+0,2/+1,0	3000	[+] 1,06	[+] 1,06	[+] 1,06	[+] 1,02	[+] 1,20	[–] 1,01	[–] 1,05
32	+0,2/+1,2	3000	[+] 1,21	[+] 1,21	[–] 1,21	---	---	[–] 1,15	[–] 1,20
35	+0,2/+1,2	3000	[+] 1,45	[+] 1,45	[–] 1,46	[–] 1,38	[–] 1,63	[–] 1,37	[–] 1,43
40	+0,2/+1,2	3000	[+] 1,88	[+] 1,88	[+] 1,88	[+] 1,79	[+] 2,10	[–] 1,78	[–] 1,86
45	+0,3/+1,3	3000	[+] 2,40	[+] 2,40	[–] 2,40	[–] 2,28	[–] 2,65	[–] 2,26	[–] 2,36
50	+0,3/+1,3	3000	[+] 2,95	[+] 2,95	[+] 2,96	[+] 2,80	[+] 3,30	[–] 2,78	[–] 2,90
55	+0,3/+1,3	3000	[+] 3,54	[+] 3,54	[–] 3,56	[–] 3,38	[–] 4,25	[–] 3,35	[–] 3,50
60	+0,3/+1,6	3000	[+] 4,21	[+] 4,21	[+] 4,20	[+] 4,03	[–] 4,75	[–] 4,00	[–] 4,17
65	+0,3/+1,6	3000	[+] 4,95	[+] 4,95	[–] 4,95	[–] 4,72	[–] 5,55	[–] 4,68	[–] 4,89
70	+0,3/+1,6	3000	[+] 5,77	[+] 5,77	[–] 5,77	[–] 5,46	[–] 6,90	[–] 5,41	[–] 5,66
75	+0,4/+2,0	3000	[+] 6,63	[+] 6,63	[–] 6,63	[–] 6,30	[–] 7,60	[–] 6,25	[–] 6,52
80	+0,4/+2,0	3000	[+] 7,49	[+] 7,49	[+] 7,57	[–] 7,15	[–] 8,40	[–] 7,09	[–] 7,41
85	+0,5/+2,2	3000	[+] 8,52	[+] 8,52	[–] 8,52	[–] 8,10	[–] 9,70	[–] 8,02	[–] 8,38
90	+0,5/+2,2	3000	[+] 9,52	[+] 9,52	[–] 9,52	[–] 9,05	[–] 10,65	[–] 8,98	[–] 9,38
95	+0,6/+2,5	3000	[–] 10,68	[–] 10,68	[–] 10,68	---	---	[–] 9,95	[–] 10,47
100	+0,6/+2,5	3000	[+] 11,65	[+] 11,65	[+] 11,68	[–] 11,20	---	[–] 11,01	[–] 11,59
110	+0,7/+3,0	3000	[+] 14,35	[+] 14,35	[–] 14,46	[–] 13,60	---	[–] 13,53	[–] 14,13
120	+0,8/+3,5	3000	[+] 16,99	[+] 16,99	[+] 17,25	[–] 16,10	---	[–] 16,05	[–] 16,76
125	+0,8/+3,5	3000	[+] 18,60	[+] 18,60	[–] 18,60	---	---	[–] 17,39	[–] 18,16
130	+0,9/+3,8	3000	[+] 19,86	[+] 19,86	[–] 19,95	[–] 19,00	---	[–] 18,84	[–] 19,68
140	+0,9/+3,8	3000	[+] 23,26	[+] 23,26	[–] 23,46	[–] 22,00	---	[–] 21,80	[–] 22,77
150	+1,1/+4,2	3000	[+] 26,50	[+] 26,50	[+] 26,81	[–] 25,30	---	[–] 25,05	[–] 26,16
160	+1,1/+4,5	3000	[+] 30,28	[+] 30,28	[–] 30,50	---	---	[–] 29,39	---
170	+1,2/+5,0	3000	[+] 34,62	[+] 34,62	[–] 34,73	[–] 35,00	---	---	---
180	+1,2/+5,0	3000	[+] 38,67	[+] 38,67	[–] 38,67	---	---	---	---
190	+1,3/+5,5	3000	[+] 43,26	[+] 43,26	[–] 43,27	---	---	---	---
200	+1,3/+5,5	3000	[+] 47,77	[+] 47,77	[–] 47,87	[–] 44,90	---	---	---
210	+1,3/+5,8	3000	[+] 53,38	[+] 53,38	[–] 52,56	---	---	---	---
220	+1,3/+5,8	3000	[+] 57,41	[+] 57,41	[–] 56,97	---	---	---	---
230	+1,5/+6,2	3000	[+] 62,83	[+] 62,83	[–] 62,83	---	---	---	---
250	+1,5/+6,2	3000	[+] 74,83	[+] 74,83	[–] 74,83	[–] 49,80	---	---	---
260	+1,5/+6,6	3000	[+] 79,83	[+] 79,83	[–] 79,83	---	---	---	---
280	+1,5/+6,6	3000	[+] 93,39	[+] 93,39	[–] 93,39	---	---	---	---
300	+1,5/+7,5	3000	[+] 105,83	[+] 105,83	[–] 105,83	---	---	---	---
310	+1,5/+7,5	3000	[–] 114,00	[–] 114,00	---	---	---	---	---
350	+1,5/+8,5	1000	[+] 145,23	[–] 145,23	---	---	---	---	---
400	+1,5/+10,5	1000	[+] 187,79	[+] 187,79	---	---	---	---	---
450	+1,5/+10,5	1000	[–] 236,64	[–] 236,64	---	---	---	---	---
500	+1,5/+11,5	1000	[+] 296,50	[–] 296,50	---	---	---	---	---

ZELLAMID® Quality	1000
	PEI amber

Ø mm	Tolerance mm	Length mm	Weight (kg/m)
6	+0,1/+0,6	3000	[–] 0,040
8	+0,1/+0,7	3000	[–] 0,070
10	+0,1/+0,7	3000	[–] 0,110
12	+0,2/+0,8	3000	[–] 0,160
15	+0,2/+0,8	3000	[–] 0,250
16	+0,2/+0,8	3000	[–] 0,28
18	+0,2/+0,8	3000	[–] 0,35
20	+0,2/+0,8	3000	[–] 0,44
22	+0,2/+1,0	3000	[–] 0,53
25	+0,2/+1,0	3000	[–] 0,69
28	+0,2/+1,0	3000	[–] 0,85
30	+0,2/+1,0	3000	[–] 0,97
32	+0,2/+1,2	3000	[–] 1,11
35	+0,2/+1,2	3000	[–] 1,32
40	+0,2/+1,2	3000	[–] 1,72
45	+0,3/+1,3	3000	[–] 2,19
50	+0,3/+1,3	3000	[–] 2,69
55	+0,3/+1,3	3000	[–] 3,24
60	+0,3/+1,6	3000	[–] 3,87
65	+0,3/+1,6	3000	[–] 4,53
70	+0,3/+1,6	3000	[–] 5,23
75	+0,4/+2,0	3000	[–] 6,04
80	+0,4/+2,0	3000	[–] 6,85
90	+0,5/+2,2	3000	[–] 8,68
100	+0,6/+2,5	3000	[–] 10,73
110	+0,7/+3,0	3000	[–] 12,98
120	+0,8/+3,5	3000	[–] 15,41
125	+0,8/+3,5	3000	[–] 16,35
130	+0,9/+3,8	3000	[–] 17,99
135	+0,9/+3,8	3000	[–] 19,36
140	+0,9/+3,8	3000	[–] 20,79
150	+1,1/+4,2	3000	[–] 23,90
160	---	---	---
170	---	---	---
175	---	---	---
180	---	---	---

ZELLAMID® Quality	1400	1400 SW	1400 T
	PET natural	PET black	PET + solid lubricant

Ø mm	Tolerance mm	Length mm	Weight (kg/m)		
6	+0,1/+0,6	3000	[–] 0,044	[–] 0,044	[–] 0,045
8	+0,1/+0,7	3000	[–] 0,082	[–] 0,077	[–] 0,078
10	+0,1/+0,7	3000	[+] 0,120	[–] 0,120	[+] 0,123
12	+0,2/+0,8	3000	[+] 0,175	[–] 0,173	[–] 0,176
15	+0,2/+0,8	3000	[+] 0,269	[–] 0,267	[+] 0,270
16	+0,2/+0,8	3000	[–] 0,30	[–] 0,30	[–] 0,31
18	+0,2/+0,8	3000	[–] 0,38	[–] 0,38	[–] 0,38
20	+0,2/+0,8	3000	[+] 0,47	[–] 0,46	[+] 0,48
22	+0,2/+1,0	3000	[–] 0,58	[–] 0,58	[–] 0,59
25	+0,2/+1,0	3000	[+] 0,71	[–] 0,71	[+] 0,73
28	+0,2/+1,0	3000	[–] 0,91	[–] 0,90	[–] 0,92
30	+0,2/+1,0	3000	[+] 1,05	[–] 1,04	[+] 1,06
35	+0,2/+1,2	3000	[+] 1,42	[–] 1,40	[+] 1,43
40	+0,2/+1,2	3000	[+] 1,85	[+] 1,83	[+] 1,86
45	+0,3/+1,3	3000	[+] 2,34	[–] 2,33	[–] 2,36
50	+0,3/+1,3	3000	[+] 2,88	[+] 2,86	[+] 2,92
55	+0,3/+1,3	3000	[–] 3,51	[–] 3,50	[–] 3,45
60	+0,3/+1,6	3000	[+] 4,15	[+] 4,10	[+] 4,20
65	+0,3/+1,6	3000	[–] 4,87	[–] 4,90	[–] 4,92
70	+0,3/+1,6	3000	[+] 5,63	[–] 5,68	[+] 5,68
75	+0,4/+2,0	3000	[–] 6,33	[–] 6,36	[–] 6,43
80	+0,4/+2,0	3000	[+] 7,40	[+] 7,39	[+] 7,46
85	+0,5/+2,2	3000	[–] 8,34	[–] 8,40	[–] 8,26
90	+0,5/+2,2	3000	[+] 9,20	[–] 9,04	[+] 9,35
100	+0,6/+2,5	3000	[+] 10,97	[+] 11,55	[+] 11,67
110	+0,7/+3,0	3000	[+] 14,04	[–] 14,05	[–] 14,22
120	+0,8/+3,5	3000	[+] 16,74	[–] 16,74	[–] 16,89
130	+0,9/+3,8	3000	[+] 19,57	[–] 19,65	[+] 19,78
140	+0,9/+3,8	3000	[+] 22,59	[–] 22,85	[–] 22,94
150	+1,0/+4,2	3000	[+] 25,41	[–] 25,96	[+] 26,00
160	+1,1/+4,5	1000	[+] 29,73	---	[–] 30,07
170	+1,2/+5,0	1000	[+] 33,55	---	---
175	+1,2/+5,0	1000	---	---	---
180	+1,2/+5,0	1000	[+] 37,69	---	---
190	+1,3/+5,5	1000	---	---	---
200	+1,3/+5,5	1000	[+] 46,34	---	---

[+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions and intermediate sizes on request.

ZELLAMID® | RODS

ZELLAMID® Quality	1500 X	1500 XSW	1500 XC20	1500 XCA30	1500 XGF30	1500 XT
	PEEK brown	PEEK black	PEEK + 20% Ceramic	PEEK + 30% Carbon fibre	PEEK + 30% Glass fibre	PEEK modified

Ø mm	Tolerance mm	Length mm	Weight (kg/m)					
6	+0,1/+0,6	3000	[+] 0,043	[–] 0,043	[–] 0,049	[–] 0,045	[–] 0,047	[–] 0,047
8	+0,1/+0,7	3000	[+] 0,073	[–] 0,073	[–] 0,084	[–] 0,079	[–] 0,066	[–] 0,080
10	+0,1/+0,7	3000	[+] 0,113	[+] 0,113	[–] 0,130	[+] 0,121	[–] 0,127	[–] 0,123
12	+0,2/+0,8	3000	[+] 0,163	[–] 0,163	[+] 0,183	[–] 0,174	[–] 0,193	[–] 0,183
14	+0,2/+0,8	3000	---	---	[–] 0,187	---	[–] 0,257	[–] 0,246
15	+0,2/+1,0	3000	[+] 0,257	[–] 0,257	[–] 0,294	[–] 0,267	[–] 0,293	[–] 0,283
16	+0,2/+1,0	3000	[+] 0,29	[+] 0,29	[–] 0,329	[–] 0,30	[–] 0,33	[–] 0,32
18	+0,2/+1,0	3000	[+] 0,36	[–] 0,36	[–] 0,416	[–] 0,38	[–] 0,42	[–] 0,40
20	+0,2/+1,0	3000	[+] 0,44	[+] 0,44	[–] 0,510	[+] 0,47	[–] 0,51	[–] 0,49
22	+0,2/+1,0	3000	[–] 0,53	[–] 0,53	[–] 0,607	[–] 0,57	[–] 0,63	[–] 0,60
25	+0,2/+1,0	3000	[+] 0,69	[–] 0,69	[–] 0,791	[–] 0,73	[–] 0,80	[–] 0,77
28	+0,2/+1,0	3000	[–] 0,85	[–] 0,85	[–] 0,974	[–] 0,91	[–] 0,99	[–] 0,96
30	+0,2/+1,0	3000	[+] 0,99	[+] 0,99	[–] 1,139	[+] 1,04	[–] 1,14	[–] 1,09
32	+0,2/+1,2	3000	---	---	---	[–] 1,18	[–] 1,29	[–] 1,24
35	+0,2/+1,2	3000	[+] 1,35	[–] 1,35	[–] 1,547	---	[–] 1,56	[–] 1,49
40	+0,2/+1,2	3000	[+] 1,76	[+] 1,76	[–] 2,013	[+] 1,85	[–] 2,02	[–] 1,94
45	+0,3/+1,3	3000	[+] 2,23	[–] 2,23	[–] 2,560	[–] 2,35	[–] 2,57	[–] 2,47
50	+0,3/+1,3	3000	[+] 2,74	[+] 2,74	[–] 3,20	[+] 2,89	[–] 3,16	[–] 3,03
55	+0,3/+1,3	3000	[–] 3,32	[–] 3,32	[–] 3,80	---	[–] 3,87	[–] 3,78
60	+0,3/+1,6	3000	[+] 3,96	[+] 3,96	[–] 4,53	[–] 4,17	[–] 4,55	[–] 4,37
65	+0,3/+1,6	3000	[–] 4,67	[–] 4,67	[–] 5,35	[–] 4,87	[–] 5,32	[–] 5,10
70	+0,3/+1,6	3000	[+] 5,39	[–] 5,39	[–] 6,18	[–] 5,64	[–] 6,41	[–] 5,90
75	+0,4/+2,0	3000	[–] 6,17	[–] 6,17	[–] 7,07	---	[–] 7,10	[–] 6,81
80	+0,4/+2,0	3000	[+] 7,02	[+] 7,02	[–] 8,04	[–] 7,38	[–] 8,17	[–] 7,73
85	+0,5/+2,2	3000	[–] 7,72	[–] 7,72	[–] 8,85	---	---	---
90	+0,5/+2,2	3000	[+] 8,93	[–] 8,93	[–] 10,24	[–] 9,35	[–] 10,20	[–] 9,79
95	+0,6/+2,5	3000	[–] 9,66	[–] 9,66	[–] 11,07	---	---	---
100	+0,6/+2,5	3000	[+] 11,13	[–] 11,13	[–] 12,53	---	[–] 12,60	[–] 12,10
110	+0,7/+3,0	3000	[–] 13,03	[–] 13,03	---	---	---	---
120	+0,8/+3,5	3000	[–] 15,45	[–] 15,45	---	---	---	---
125	+0,8/+3,5	3000	[–] 16,75	[–] 16,75	---	---	---	---
130	+0,9/+3,8	3000	[–] 18,14	[–] 18,14	---	---	---	---
135	+0,9/+3,8	3000	[–] 19,54	[–] 19,54	---	---	---	---
140	+1,1/+4,2	3000	[+] 21,47	[–] 21,47	---	---	---	---
150	+1,1/+4,5	3000	[–] 24,12	[–] 24,12	---	---	---	---
160	+1,1/+4,5	1000	[–] 27,88	[–] 27,88	---	---	---	---

[+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions and intermediate sizes on request.

ZELLAMID® | SHEETS

ZELLAMID® Quality	202* PA 6 natural		900 POM-C natural	
Width (mm) x Reel length (m)	1000 x 50	1000 x 100	1000 x 50	1000 x 100

Thickness mm	Tolerance mm	kg/Reel			
0,3	+/-0,05	---	[+] 36,00	---	---
0,5	+/-0,05	[−] 30,00	[+] 60,00	[−] 39,00	[+] 78,00
0,8	+/-0,10	[+] 48,00	[−] 96,00	[−] 58,50	---
1,0	+/-0,10	[+] 61,50	[−] 123,00	[+] 73,50	---
1,5	+/-0,15	[+] 90,00	[−] 180,00	---	---

ZELLAMID® | PLATES

ZELLAMID® Quality	202* PA 6 natural	250 PA 6.6 natural			250 SW PA 6.6 black	250 GF30 PA 6.6 + 30% GF	250 PE PA 6.6 + PE
Width x Length (mm)	1000 x 2000	610 x 3000	1000 x 2000	1220 x 3000	610 x 3000	610 x 3000	1000 x 2000

Thickness mm	Tolerance mm	kg/Plate						
2	+/-0,15	[−] 4,80	---	[−] 4,80	---	---	---	---
2,5	+/-0,15	[−] 5,94	---	---	---	---	---	---
3	+/-0,20	[+] 7,12	---	[−] 7,12	---	---	---	---
4	+/-0,20	[+] 9,70	---	[−] 9,70	---	---	---	---
5	+/-0,25	[+] 12,10	---	[+] 12,10	---	---	---	---
5	+0,2/+0,7	---	---	---	---	---	---	---
6	+/-0,25	[+] 14,24	---	[+] 14,24	---	---	---	---
6	+0,2/+0,7	---	---	---	---	---	---	---
8	+0,2/+1,1	[+] 20,47	[−] 18,96	---	[−] 37,47	[−] 18,96	[−] 22,18	[−] 20,60
10	+0,2/+1,1	[+] 25,20	[+] 23,93	---	[−] 46,12	[−] 23,93	[−] 29,05	[−] 24,70
12	+0,3/+1,5	[+] 30,52	[−] 29,15	---	[−] 58,19	[−] 29,15	[−] 33,08	[−] 29,92
15	+0,3/+1,5	[+] 37,62	[+] 35,99	---	[−] 72,50	[−] 35,99	[+] 42,24	[−] 36,87
20	+0,3/+1,5	[+] 49,46	[+] 46,50	---	[−] 90,50	[−] 46,50	[+] 55,76	[−] 48,47
25	+0,3/+1,5	[+] 61,29	[+] 57,21	---	[−] 115,00	[−] 57,21	[+] 69,99	[−] 60,06
30	+0,5/+2,5	[+] 74,54	[−] 68,19	---	[−] 136,40	[−] 68,19	[+] 82,23	[−] 73,05
35	+0,5/+2,5	[+] 86,73	[−] 81,77	---	[−] 158,06	[−] 81,77	[−] 99,57	[−] 84,65
40	+0,5/+2,5	[+] 98,20	[+] 89,85	---	[−] 182,97	[−] 89,85	[+] 108,93	[−] 96,24
50	+0,5/+2,5	[+] 121,86	[+] 113,36	---	[−] 226,60	[−] 113,36	[+] 135,85	[−] 119,43
60	+0,5/+3,5	[+] 146,71	[−] 134,25	---	[−] 268,48	[−] 134,25	[+] 162,83	[−] 145,78
70	+0,5/+3,5	[+] 170,37	---	---	---	---	[−] 184,61	---
80	+0,5/+5,0	[+] 195,81	---	---	---	---	[−] 214,40	---
90	+0,5/+5,0	[−] 219,47	---	---	---	---	[−] 237,81	---
100	+0,5/+5,0	[+] 243,13	---	---	---	---	[−] 268,67	---

***On demand:** all plates available in the widths of 500 mm, 610 mm and 1220 mm as well as plates ZELLAMID® 202 SW and ZELLAMID® 202 MO.

ZELLAMID® Quality	900 POM-C natural				
Width x Length (mm)	1000 x 2000	610 x 2000	610 x 3000	1220 x 2000	1220 x 3000
Thickness mm / Tolerance mm	kg/Plate				
1 / +/-0,10	[−] 3,00	---	---	---	---
1,5 / +/-0,15	[−] 4,48	---	---	---	---
2 / +/-0,15	[+] 5,98	---	---	---	---
2,5 / +/-0,15	[−] 7,48	---	---	---	---
3 / +/-0,20	[+] 8,98	---	---	---	---
4 / +/-0,20	[+] 11,96	---	---	---	---
5 / +/-0,25	[+] 14,96	---	---	---	---
6 / +/-0,25	[+] 17,94	---	---	---	---
8 / +0,2/+1,1	[+] 25,50	[−] 15,17	[+] 22,75	[−] 32,01	[+] 48,01
10 / +0,2/+1,1	[+] 31,39	[−] 19,66	[−] 29,49	[−] 39,36	[+] 59,04
12 / +0,3/+1,5	[+] 38,02	[−] 23,67	[−] 35,50	[−] 48,23	[−] 72,35
15 / +0,3/+1,5	[+] 46,86	[−] 29,18	[−] 43,77	[−] 59,07	[+] 88,60
20 / +0,3/+1,5	[+] 61,60	[+] 37,95	[+] 56,93	[+] 76,42	[+] 114,63
25 / +0,3/+1,5	[+] 76,34	[−] 46,95	[−] 70,42	[−] 93,99	[+] 140,99
30 / +0,5/+2,5	[+] 92,84	[+] 56,49	[+] 84,74	[+] 111,68	[+] 167,52
35 / +0,5/+2,5	[+] 107,58	[−] 66,63	[+] 99,94	[−] 133,27	[+] 199,90
40 / +0,5/+2,5	[+] 122,32	[+] 74,67	[−] 112,00	[+] 152,29	[+] 228,44
45 / +0,5/+2,5	[−] 137,06	[−] 83,61	[−] 125,41	[−] 172,13	[−] 258,20
50 / +0,5/+2,5	[+] 151,79	[+] 91,30	[+] 136,95	[+] 185,12	[+] 277,68
60 / +0,5/+3,5	[+] 182,74	[+] 111,52	[+] 167,28	[+] 223,47	[+] 335,21
70 / +0,5/+3,5	[+] 212,22	[−] 130,87	[+] 196,31	[−] 262,87	[+] 394,30
80 / +0,5/+5,0	[+] 243,90	[−] 149,16	[+] 223,74	[−] 296,95	[+] 445,42
90 / +0,5/+5,0	[+] 273,38	[−] 166,76	[−] 250,14	[−] 337,59	[−] 506,38
100 / +0,5/+5,0	[+] 302,85	[−] 187,27	[−] 280,91	[−] 375,20	[−] 562,80
110 / +0,5/+6,0	[−] 333,80	[−] 203,62	[−] 305,43	[−] 410,47	[+] 615,71
125 / +0,5/+6,0	[−] 378,01	[+] 230,59	[−] 345,88	[+] 461,17	[−] 691,76
150 / +0,5/+7,0	[−] 462,75	[+] 282,28	[−] 423,42	[−] 564,55	[−] 846,83

ZELLAMID® Quality	900 PE POM-C + PE	900 AS POM-C antistatic	900 XU ELS POM-C conductive	1000 PEI amber	1000 SW PEI black
Width x Length (mm)	1000 x 2000			610 x 3000	610 x 3000
Thickness mm / Tolerance mm	kg/Plate				
6 / +0,2/+0,7	---	---	---	[−] 16,05	[−] 16,05
8 / +0,2/+1,1	[−] 24,20	[−] 24,24	---	[−] 22,02	[−] 22,02
10 / +0,2/+1,1	[+] 28,14	[−] 29,84	[−] 31,17	[−] 27,18	[−] 27,18
12 / +0,3/+1,5	[+] 36,52	[−] 36,15	[−] 37,75	[−] 33,18	[−] 33,18
15 / +0,3/+1,5	[−] 45,22	[−] 44,55	[−] 46,53	[−] 43,50	[−] 43,50
18 / +0,3/+1,5	[−] 54,36	---	---	---	---
20 / +0,3/+1,5	[+] 59,70	[−] 58,57	[−] 61,17	[−] 53,82	[−] 53,82
25 / +0,3/+1,5	[+] 74,20	[−] 72,58	[−] 75,80	[−] 66,66	[−] 66,66
30 / +0,5/+2,5	[+] 89,84	[−] 88,27	[−] 92,19	[−] 81,12	[−] 81,12
35 / +0,5/+2,5	[+] 104,32	[−] 102,28	[−] 106,82	[−] 93,96	[−] 93,96
40 / +0,5/+2,5	[+] 118,82	[−] 116,29	[−] 121,46	[−] 106,86	[−] 106,86
45 / +0,5/+2,5	[+] 133,30	---	[−] 136,09	[−] 132,60	[−] 132,60
50 / +0,5/+2,5	[+] 147,80	[−] 144,31	[−] 150,73	[−] 158,34	[−] 158,34
60 / +0,5/+3,5	[+] 178,22	---	---	---	---

[+] Product on stock [−] Product with minimum order quantity (MOQ) Λ Further dimensions on request.

ZELLAMID® | PLATES

ZELLAMID® Quality	900 SW POM-C black					900 blue POM-C RAL 5002	900 GF30 POM + 30 % Glass fibre
Width x Length (mm)	1000 x 2000	610 x 2000	610 x 3000	1220 x 2000	1220 x 3000	1000 x 2000	1000 x 2000
Thickness mm	Tolerance mm	kg/Plate						
2	+/-0,15	[−] 5,98	---	---	---	---	---	---
2,5	+/-0,15	[−] 7,48	---	---	---	---	---	---
3	+/-0,20	[−] 8,98	---	---	---	---	---	---
4	+/-0,20	[−] 11,96	---	---	---	---	---	---
5	+/-0,25	[+] 14,96	---	---	---	---	---	---
6	+/-0,25	[+] 17,94	---	---	---	---	---	---
8	+0,2/+1,1	[+] 25,50	[−] 15,17	[−] 22,75	[−] 32,01	[−] 48,01	[−] 25,50	---
10	+0,2/+1,1	[+] 31,39	[−] 19,66	[−] 29,49	[−] 39,36	[−] 59,04	[+] 31,39	[−] 35,42
12	+0,3/+1,5	[+] 38,02	[−] 23,67	[−] 35,50	[−] 48,23	[−] 72,35	[−] 38,02	[−] 43,20
15	+0,3/+1,5	[+] 46,86	[−] 29,18	[+] 43,77	[−] 59,07	[−] 88,60	[+] 46,86	[−] 53,40
20	+0,3/+1,5	[+] 61,60	[+] 37,95	[+] 56,93	[+] 76,42	[+] 114,63	[+] 61,60	[−] 70,52
25	+0,3/+1,5	[+] 76,34	[+] 46,95	[−] 70,42	[+] 93,99	[−] 140,99	[+] 76,34	[−] 87,64
30	+0,5/+2,5	[+] 92,84	[+] 56,49	[+] 84,74	[+] 111,68	[+] 167,52	[−] 92,84	---
35	+0,5/+2,5	[+] 107,58	[−] 66,63	[−] 99,94	[−] 133,27	[−] 199,90	[−] 107,58	---
40	+0,5/+2,5	[+] 122,32	[+] 74,67	[+] 112,00	[+] 152,29	[+] 228,44	[+] 122,32	---
45	+0,5/+2,5	[−] 137,06	[−] 83,61	[−] 125,41	[−] 172,13	[−] 258,20	[−] 137,06	---
50	+0,5/+2,5	[+] 151,79	[+] 91,30	[+] 136,95	[−] 185,12	[+] 277,68	[+] 151,79	---
60	+0,5/+3,5	[+] 182,74	[+] 111,52	[+] 167,28	[−] 223,47	[−] 335,21	[−] 182,74	---
70	+0,5/+3,5	[+] 212,22	[−] 130,87	[+] 196,31	[−] 262,87	[−] 394,30	[−] 212,22	---
80	+0,5/+5,0	[+] 243,90	[+] 149,16	[−] 223,74	[−] 296,95	[−] 445,42	[−] 243,90	---
90	+0,5/+5,0	[−] 273,38	[−] 166,76	[−] 250,14	[−] 337,59	[−] 506,38	[−] 273,38	---
100	+0,5/+5,0	[+] 302,85	[+] 187,27	[+] 280,91	[−] 375,20	[−] 562,80	[−] 302,85	---
110	+0,5/+6,0	[−] 333,80	[−] 203,62	[−] 305,43	[−] 410,47	[−] 615,71	[−] 333,80	---
125	+0,5/+6,0	[−] 378,01	[−] 230,59	[−] 345,88	[−] 461,17	[−] 691,76	[−] 378,01	---
150	+0,5/+7,0	[−] 462,75	[−] 282,28	[−] 423,42	[−] 564,55	[−] 846,83	[−] 462,75	---

ZELLAMID® Quality	1100 PA 6 C natural				1100 SW PA 6 C black			
Width x Length (mm)	1000 x 2000	1220 x 2000	1220 x 3050	1000 x 1000	1000 x 2000	1220 x 2000	1220 x 3050	1000 x 1000
Thickness mm	Tolerance mm	kg/Plate							
8	+0,2/+1,5	[+] 23,00	---	---	[+] 11,50	[+] 23,00	---	---	[+] 11,50
10	+0,2/+1,5	[+] 27,00	[+] 33,00	---	[+] 13,50	[+] 27,00	[+] 33,00	---	[+] 13,50
12	+0,3/+2,5	[+] 32,00	[+] 38,80	---	[+] 16,00	[+] 32,00	[+] 38,80	---	[+] 16,00
15	+0,3/+2,5	[+] 40,00	[+] 48,60	[+] 72,90	[+] 20,00	[+] 40,00	[+] 48,60	[+] 72,90	[+] 20,00
16	+0,3/+2,5	[+] 43,00	[+] 50,00	[−] 75,00	[+] 21,50	[+] 43,00	[+] 50,00	[−] 75,00	[+] 21,50
18	+0,3/+2,5	[+] 49,00	---	---	[+] 24,50	[+] 49,00	---	---	[+] 24,50
20	+0,3/+2,5	[+] 52,00	[+] 62,00	[+] 93,00	[+] 26,00	[+] 52,00	[+] 62,00	[+] 93,00	[+] 26,00
22	+0,3/+2,5	[+] 58,00	---	---	[+] 29,00	[−] 58,00	---	---	[−] 29,00
25	+0,3/+2,5	[+] 64,00	[+] 78,00	[+] 117,00	[+] 32,00	[+] 64,00	[+] 78,00	[+] 117,00	[+] 32,00
30	+0,5/+3,5	[+] 77,00	[+] 94,00	[+] 141,00	[+] 38,50	[+] 77,00	[+] 94,00	[+] 141,00	[+] 38,50
35	+0,5/+3,5	[+] 90,60	[−] 111,60	[+] 167,40	[+] 45,30	[+] 90,60	[−] 111,60	[+] 167,40	[+] 45,30
40	+0,5/+3,5	[+] 102,00	[+] 124,00	[+] 186,00	[+] 51,00	[+] 102,00	[+] 124,00	[+] 186,00	[+] 51,00
45	+0,5/+3,5	[+] 114,00	[−] 136,00	[+] 204,00	[+] 57,00	[+] 114,00	[−] 136,00	[−] 204,00	[+] 57,00
50	+0,5/+3,5	[+] 127,00	[+] 156,00	[+] 234,00	[+] 63,50	[+] 127,00	[+] 156,00	[+] 234,00	[+] 63,50
55	+0,5/+5,0	[+] 140,00	[−] 168,00	[−] 252,00	[+] 70,00	[+] 140,00	[−] 168,00	[−] 252,00	[+] 70,00
60	+0,5/+5,0	[+] 152,00	[+] 186,00	[+] 279,00	[+] 76,00	[+] 152,00	[+] 186,00	[+] 279,00	[+] 76,00
65	+0,5/+5,0	[+] 165,00	[−] 200,00	[−] 300,00	[+] 82,50	[+] 165,00	[−] 200,00	[−] 300,00	[+] 82,50
70	+0,5/+5,0	[+] 177,00	[−] 216,00	[+] 324,00	[+] 88,50	[+] 177,00	[−] 216,00	[+] 324,00	[+] 88,50

ZELLAMID® Quality	1100 PA 6 C natural				1100 SW PA 6 C black			
Width x Length (mm)	1000 x 2000	1220 x 2000	1220 x 3050	1000 x 1000	1000 x 2000	1220 x 2000	1220 x 3050	1000 x 1000
Thickness mm	Tolerance mm	kg/Plate							
75	+0,5/+7,0	[–] 189,00	[–] 231,60	[–] 347,40	[–] 94,50	[–] 189,00	[–] 231,60	[–] 347,40	[–] 94,50
80	+0,5/+7,0	[+] 202,00	[–] 244,00	---	[+] 101,00	[+] 202,00	[–] 244,00	[+] 366,00	[+] 101,00
85	+0,5/+7,0	[+] 216,00	[–] 262,00	[–] 393,00	[–] 108,00	[–] 216,00	[–] 262,00	[–] 393,00	[–] 108,00
90	+0,5/+7,0	[+] 226,00	[–] 270,00	[–] 405,00	[+] 113,00	[+] 226,00	[–] 270,00	[–] 405,00	[+] 113,00
95	+0,5/+7,0	[–] 241,00	[–] 293,00	[–] 439,20	[–] 120,50	[–] 241,00	[–] 293,00	[–] 439,20	[–] 120,50
100	+0,5/+7,0	[+] 252,00	[–] 296,00	[+] 444,00	[+] 126,00	[+] 252,00	[–] 296,00	[–] 444,00	[+] 126,00
110	+0,5/+9,0	---	---	[+] 483,00	[+] 137,70	---	---	[+] 483,00	[+] 137,70
120	+0,5/+9,0	---	---	[+] 540,00	[+] 149,80	---	---	[–] 540,00	[+] 149,80
130	+0,5/+9,0	---	---	[–] 609,00	[+] 161,80	---	---	[–] 609,00	[+] 161,80
140	+0,5/+10,0	---	---	---	[+] 173,90	---	---	---	[+] 173,90
150	+0,5/+10,0	---	---	---	[+] 186,00	---	---	---	[+] 186,00
160	+0,5/+10,0	---	---	---	[+] 198,10	---	---	---	[+] 198,10
165	+0,5/+10,0	---	---	---	[–] 202,90	---	---	---	[–] 202,90

ZELLAMID® Quality	* 1100 Oil / 1100 MO / 1100 T / 1100 FR / 1100 blue / 1100 HS PA 6 C + Oil / PA 6 C + MoS_2 / PA 6 C / PA 6 C / PA 6 C / PA 6 C				1115 PA 6/12 C	1200 PA 12 C
Width x Length (mm)	1000 x 2000	1220 x 2000	1220 x 3050	1000 x 1000	1000 x 2000	1000 x 3000
Thickness mm	Tolerance mm	kg/Plate					
8	+0,2/+1,5	[+] 23,00	---	---	[+] 11,50	[–] 23,00	[–] 30,30
10	+0,2/+1,5	[+] 27,00	[+] 33,00	---	[+] 13,50	[–] 27,00	[–] 36,30
12	+0,3/+2,5	[–] 32,00	[+] 38,80	[–] 58,20	[+] 16,00	[–] 32,00	[–] 42,60
15	+0,3/+2,5	[+] 40,00	[+] 48,60	[+] 72,90	[+] 20,00	[–] 40,00	[–] 54,60
16	+0,3/+2,5	[+] 43,00	[+] 50,00	[–] 75,00	[+] 21,50	[–] 43,00	[–] 60,90
18	+0,3/+2,5	[+] 49,00	---	---	[+] 24,50	[–] 49,00	[–] 63,30
20	+0,3/+2,5	[+] 52,00	[+] 62,00	[+] 93,00	[+] 26,00	[–] 52,00	[–] 69,48
22	+0,3/+2,5	[–] 58,00	---	---	[–] 29,00	[–] 58,00	---
25	+0,3/+2,5	[–] 64,00	[+] 78,00	[+] 117,00	[+] 32,00	[–] 64,00	[–] 87,00
30	+0,5/+3,5	[+] 77,00	[+] 94,00	[+] 141,00	[+] 38,50	[–] 77,00	[–] 102,60
35	+0,5/+3,5	[+] 90,60	[–] 111,60	[+] 167,40	[+] 45,30	[–] 90,60	[–] 118,50
40	+0,5/+3,5	[+] 102,00	[+] 124,00	[+] 186,00	[+] 51,00	[–] 102,00	[–] 135,90
45	+0,5/+3,5	[+] 114,00	[–] 136,00	[–] 204,00	[+] 57,00	[–] 114,00	[–] 151,20
50	+0,5/+3,5	[+] 127,00	[+] 156,00	[+] 234,00	[+] 63,50	[–] 127,00	[–] 167,10
55	+0,5/+5,0	[+] 140,00	[–] 168,00	[–] 252,00	[+] 70,00	[–] 140,00	[–] 193,80
60	+0,5/+5,0	[+] 152,00	[–] 186,00	[+] 279,00	[+] 76,00	[–] 152,00	[–] 200,40
65	+0,5/+5,0	[+] 165,00	[–] 200,00	[–] 300,00	[+] 82,50	[–] 165,00	---
70	+0,5/+5,0	[+] 177,00	[–] 216,00	[+] 324,00	[+] 88,50	[–] 177,00	---
75	+0,5/+7,0	[–] 189,00	[–] 231,60	[–] 347,40	[–] 94,50	[–] 189,00	---
80	+0,5/+7,0	[+] 202,00	[–] 244,00	[+] 366,00	[+] 101,00	[–] 202,00	---
85	+0,5/+7,0	[–] 216,00	[–] 262,00	[–] 393,00	[–] 108,00	[–] 216,00	---
90	+0,5/+7,0	[+] 226,00	[–] 270,00	[–] 405,00	[+] 113,00	[–] 226,00	---
95	+0,5/+7,0	[–] 241,00	[–] 293,00	[–] 439,20	[–] 120,50	[–] 241,00	---
100	+0,5/+7,0	[+] 252,00	[–] 296,00	[–] 444,00	[+] 126,00	[–] 252,00	---
110	+0,5/+9,0	---	---	[+] 483,00	[+] 137,70	---	---
120	+0,5/+9,0	---	---	[–] 540,00	[+] 149,80	---	---
130	+0,5/+9,0	---	---	[–] 609,00	[+] 161,80	---	---
140	+0,5/+10,0	---	---	---	[+] 173,90	---	---
150	+0,5/+10,0	---	---	---	[+] 186,00	---	---
160	+0,5/+10,0	---	---	---	[+] 198,10	---	---
165	+0,5/+10,0	---	---	---	[–] 202,90	---	---

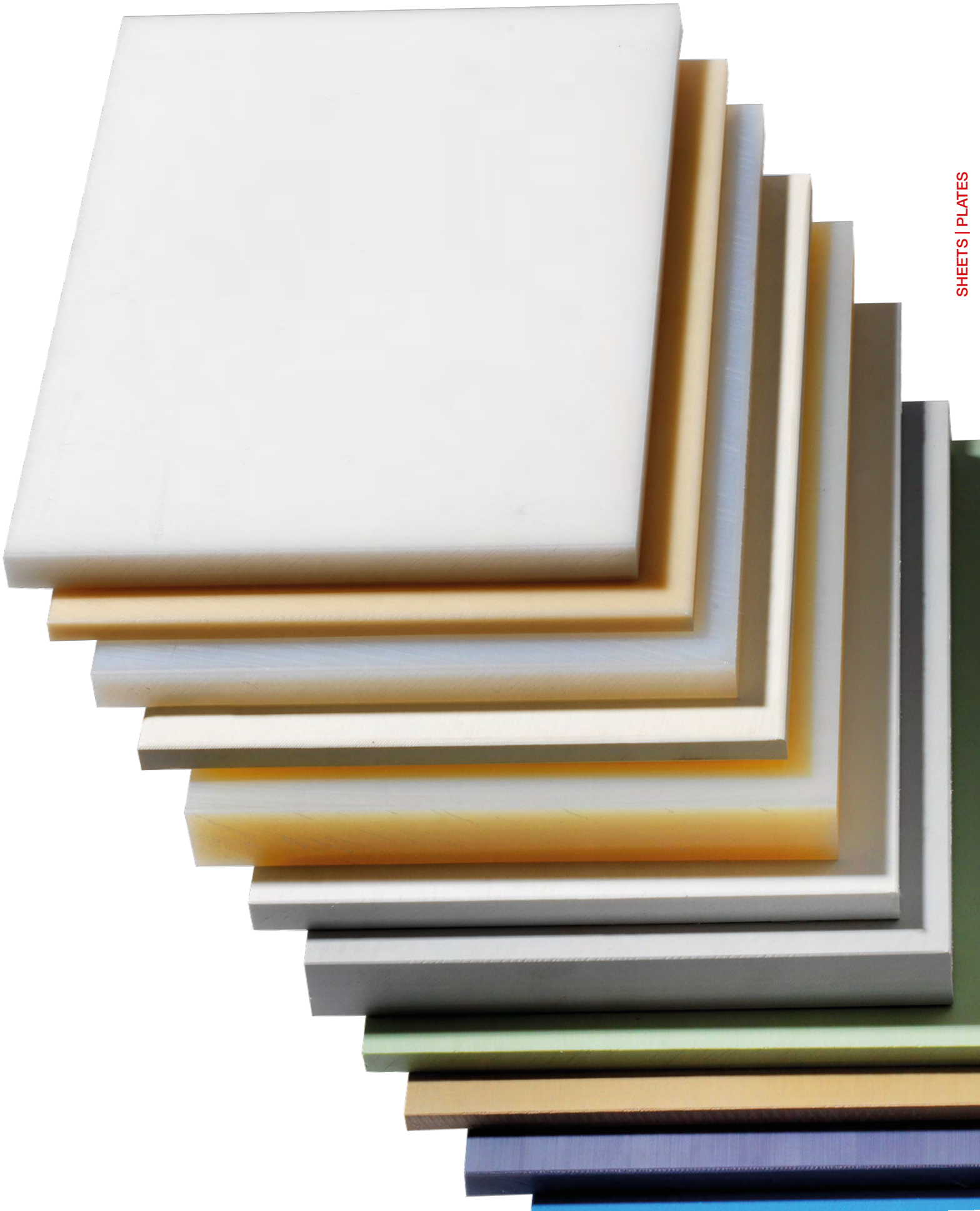
[+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions on request. There are several products in this table summarized and not all materials are available as standard. Please ask for availability.

ZELLAMID® | PLATES

ZELLAMID® Quality	1400* PET natural		1400 SW PET black	1400 T PET + Solid lubricant		
Width x Length (mm)	610 x 2000	1000 x 2000	1000 x 2000	610 x 2000	610 x 3000	1000 x 2000
Thickness mm	Tolerance mm	kg/Plate					
2	+/-0,20	---	[+] 5,64	---	---	---	---
3	+/-0,20	---	[+] 8,70	---	---	---	---
4	+/-0,20	---	[+] 11,60	---	---	---	---
5	+/-0,25	---	[+] 14,50	---	---	---	---
6	+0,2/+0,7	---	[+] 17,40	---	---	---	---
8	+0,2/+1,1	[–] 14,90	[+] 24,42	[–] 24,42	[+] 15,22	[–] 24,83	[–] 24,42
10	+0,2/+1,1	[–] 18,34	[+] 30,06	[+] 30,06	[+] 18,74	[–] 28,11	[–] 30,72
12	+0,3/+1,5	[–] 22,21	[+] 36,42	[–] 36,42	[+] 22,70	[–] 34,05	[–] 37,22
15	+0,3/+1,5	[+] 27,38	[+] 44,88	[+] 44,88	[+] 27,98	[–] 41,97	[–] 45,88
20	+0,3/+1,5	[+] 35,99	[+] 59,00	[+] 59,00	[+] 36,78	[–] 55,17	[–] 60,30
25	+0,3/+1,5	[–] 44,60	[+] 73,11	[–] 73,11	[+] 45,58	[–] 68,37	[–] 74,72
30	+0,5/+2,5	[–] 54,24	[+] 88,92	[+] 88,92	[+] 55,44	[–] 83,16	[–] 90,88
35	+0,5/+2,5	[–] 62,85	[+] 103,04	[–] 103,04	[–] 64,24	[–] 96,36	[–] 105,30
40	+0,5/+2,5	[+] 71,46	[+] 117,15	[+] 117,15	[+] 73,04	[–] 109,56	[–] 119,74
50	+0,5/+2,5	[+] 88,68	[+] 145,38	[+] 145,38	[+] 90,64	[–] 135,96	o.r.
60	+0,5/+3,5	[+] 106,76	[+] 175,02	[–] 175,02	[+] 109,12	[–] 163,68	o.r.
70	+0,5/+3,5	[–] 123,98	[–] 203,25	---	[–] 126,72	[–] 190,08	o.r.
80	+0,5/+5,0	[–] 142,49	[–] 233,60	---	[–] 145,64	[–] 218,46	o.r.
90	+0,5/+5,0	[–] 159,71	---	---	[–] 163,24	[–] 244,86	---
100	+0,5/+5,0	[–] 176,93	---	---	[–] 180,84	[–] 271,26	---
110	+0,5/+6,0	---	---	---	---	---	---
120	+0,5/+6,0	---	---	---	---	---	---

ZELLAMID® Quality	1500 X PEEK brown		1500 XSW PEEK black	1500 XCA30 PEEK + 30 % Carbon fibre	1500 XGF30 PEEK + 30 % Glass fibre	1500 XT PEEK modified
Width x Length (mm)	610 x 3000	1000 x 2000	1000 x 2000	610 x 3000	610 x 3000	610 x 3000
Thickness mm	Tolerance mm	kg/Plate				
3	+0,15/+0,25	---	[–] 8,16	---	---	---	---
4	+0,15/+0,25	---	[–] 10,88	---	---	---	---
5	+0,15/+0,25	[–] 14,40	[–] 13,60	---	---	---	---
6	+0,2/+0,7	---	---	---	---	---	---
8	+0,2/+1,1	---	[+] 22,99	[–] 22,99	---	---	---
10	+0,2/+1,1	---	[+] 28,31	[–] 28,31	---	---	---
12	+0,3/+1,5	---	[+] 34,29	[–] 34,29	[–] 36,15	[–] 38,40	[–] 36,90
15	+0,3/+1,5	---	[+] 42,26	[–] 42,26	[–] 44,25	[–] 47,10	[–] 45,30
16	+0,3/+1,5	---	---	---	[–] 47,10	[–] 50,10	[–] 48,00
18	+0,3/+1,5	---	---	---	[–] 52,50	[–] 55,80	[–] 53,70
20	+0,3/+1,5	---	[+] 55,55	[–] 55,55	[–] 58,05	[–] 61,65	[+] 59,25
25	+0,3/+1,5	---	[+] 68,84	[–] 68,84	[–] 71,70	[–] 76,20	[–] 73,20
30	+0,5/+2,5	---	[+] 83,73	[–] 83,73	[–] 87,45	[–] 93,15	[–] 89,40
35	+0,5/+2,5	---	[–] 97,02	---	[–] 101,25	[–] 107,70	[–] 103,35
40	+0,5/+2,5	---	[+] 110,31	[–] 110,31	[–] 114,90	[–] 122,25	[–] 117,30
45	+0,5/+2,5	---	---	---	[–] 128,55	[–] 136,80	[–] 131,40
50	+0,5/+2,5	---	[–] 136,89	[–] 136,89	[–] 142,35	[–] 151,35	[–] 145,35
55	+0,5/+3,5	---	---	---	[–] 157,80	[–] 167,85	[–] 161,10
60	+0,5/+3,5	---	[–] 164,79	---	[–] 171,45	[–] 182,40	[–] 175,05
65	+0,5/+3,5	---	---	---	---	[–] 196,95	[–] 189,15
70	+0,5/+3,5	---	---	---	---	[–] 211,50	[–] 203,10
80	+0,5/+5,0	---	---	---	---	[–] 243,60	[–] 233,85

* Plates available in the width of 1220 mm. [+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions on request. **o.r.** on request



ZELLAMID® | TUBES

ZELLAMID® Quality				202*	250	900	900 SW	1400	1400 SW	1400 T
				PA 6 natural	PA 6.6 natural	POM-C natural	POM-C black	PET natural	PET black	PET + solid lubricant
Nominal Size		Tolerance		Weight kg/m						
OD mm	ID mm	OD mm	ID mm							
25	10	+1,1/+0,4	-0,4/-1,1	[–] 0,54	[–] 0,52	[–] 0,65	[–] 0,65	[–] 0,63	[–] 0,63	[–] 0,64
25	12			[–] 0,51	[–] 0,51	[–] 0,67	[–] 0,67	[–] 0,58	[–] 0,58	[–] 0,59
25	15			[–] 0,43	[–] 0,55	[+] 0,55	[–] 0,55	[–] 0,50	[–] 0,50	[–] 0,51
30	15			[+] 0,57	[–] 0,67	[+] 0,86	[–] 0,86	[–] 0,80	[–] 0,80	[–] 0,82
30	20			[+] 0,54	[–] 0,54	[+] 0,64	[–] 0,64	[–] 0,65	[–] 0,65	[–] 0,70
35	15	+2,0/+0,6	-0,6/-2,0	[–] 1,00	[–] 1,01	[+] 1,27	[–] 1,27	[–] 1,22	[–] 1,22	[–] 1,25
35	20			[–] 0,87	[–] 0,88	[–] 1,14	[–] 1,14	[–] 1,05	[–] 1,05	[–] 1,07
35	25			[–] 0,69	[–] 0,70	[–] 0,93	[–] 0,93	[–] 0,85	[–] 0,85	[–] 0,86
40	15			[–] 1,21	[–] 1,38	[–] 1,78	[–] 1,78	---	---	---
40	20			[+] 1,05	[–] 1,21	[+] 1,45	[–] 1,45	[–] 1,47	[–] 1,47	[–] 1,50
40	25			[+] 1,04	[–] 1,04	[–] 1,36	[–] 1,36	[–] 1,24	[–] 1,24	[–] 1,27
40	30			[–] 0,81	[–] 0,82	[–] 1,10	[–] 1,10	[–] 0,96	[–] 0,96	[–] 1,00
45	20			[–] 1,64	[–] 1,63	[–] 1,97	[–] 1,97	---	---	---
45	25			[–] 1,46	[–] 1,47	[+] 1,78	[–] 1,78	[–] 1,71	[–] 1,71	[–] 1,75
45	30			[–] 1,25	[–] 1,26	[+] 1,51	[–] 1,51	[–] 1,50	[–] 1,50	[–] 1,53
45	35			[–] 1,00	[–] 0,92	[–] 1,14	[–] 1,14	[–] 1,09	[–] 1,09	[–] 1,12
50	20			[+] 2,09	[–] 2,10	[+] 2,61	[–] 2,61	---	---	---
50	25			[+] 1,91	[–] 1,91	[–] 2,37	[–] 2,37	[–] 2,24	[–] 2,24	[–] 2,29
50	30			[+] 1,67	[–] 1,68	[+] 2,09	[–] 2,09	[–] 1,96	[–] 1,96	[–] 2,00
50	35			[–] 1,42	[–] 1,42	[–] 1,78	[–] 1,78	[–] 1,62	[–] 1,62	[–] 1,66
50	40			[–] 1,12	[–] 1,12	[–] 1,44	[–] 1,44	[–] 1,35	[–] 1,35	[–] 1,39
55	25	+2,5/+0,8	-0,8/-2,5	[–] 2,45	[–] 2,47	[–] 3,13	[–] 3,13	[–] 2,89	[–] 2,89	[–] 2,95
55	30			[–] 2,05	[–] 2,23	[–] 2,83	[–] 2,83	[–] 2,61	[–] 2,61	[–] 2,66
55	35			[–] 1,96	[–] 1,97	[+] 2,39	[–] 2,39	[–] 2,27	[–] 2,27	[–] 2,31
55	45			[–] 1,21	[–] 1,21	[–] 1,50	[–] 1,50	[–] 1,44	[–] 1,44	[–] 1,47
55	50			[–] 0,79	[–] 0,79	[–] 0,99	[–] 0,99	[–] 0,94	[–] 0,94	[–] 0,97
60	20			[+] 3,22	---	[–] 3,95	[–] 3,95	---	---	---
60	25			[–] 2,96	---	[–] 3,68	[–] 3,68	---	---	---
60	30			[+] 2,80	[–] 2,79	[+] 3,43	[–] 3,43	[–] 3,37	[–] 3,37	[–] 3,44
60	35			[–] 2,53	[–] 2,55	[–] 3,14	[–] 3,14	[–] 2,91	[–] 2,91	[–] 2,98
60	40			[+] 2,23	[–] 2,23	[+] 2,74	[–] 2,74	[–] 2,52	[–] 2,52	[–] 2,58
60	45			[–] 1,75	[–] 1,75	[–] 2,31	[–] 2,31	[–] 2,08	[–] 2,08	[–] 2,13
60	50			[+] 1,44	[–] 1,50	[+] 1,82	[–] 1,82	[–] 1,59	[–] 1,59	[–] 1,62
60	55			[–] 1,33	[–] 1,33	[–] 1,08	[–] 1,08	[–] 1,03	[–] 1,03	[–] 1,06
65	30	+3,0/+0,8	-0,8/-3,0	[–] 3,35	[–] 3,35	[–] 4,20	[–] 4,20	[–] 3,99	[–] 3,99	[–] 4,08
65	35			[–] 3,07	[–] 3,07	[–] 3,82	[–] 3,82	[–] 3,66	[–] 3,66	[–] 3,74
65	40			[–] 2,82	[–] 2,83	[–] 3,56	[–] 3,56	[–] 3,28	[–] 3,28	[–] 3,35
65	45			---	---	---	---	---	---	---
65	50			[–] 2,06	[–] 2,06	[–] 2,45	[–] 2,45	[–] 2,55	[–] 2,55	[–] 2,62
65	55			[–] 1,50	[–] 1,50	[–] 2,06	[–] 2,06	[–] 1,79	[–] 1,79	[–] 1,83
70	30			[+] 4,02	[–] 3,98	[+] 4,97	[–] 4,97	[–] 4,93	[–] 4,93	[–] 5,03
70	35			[–] 3,70	[–] 3,70	[–] 4,61	[–] 4,61	[–] 4,41	[–] 4,41	[–] 4,52
70	40			[+] 3,42	[–] 3,42	[+] 4,25	[–] 4,25	[–] 4,03	[–] 4,03	[–] 4,09
70	45			---	---	---	---	---	---	---
70	50			[–] 2,65	[–] 2,64	[+] 3,44	[–] 3,44	[–] 3,25	[–] 3,25	[–] 3,50
70	55			[–] 2,13	[–] 2,13	[–] 2,66	[–] 2,66	[–] 2,45	[–] 2,45	[–] 2,60
70	60			[–] 1,39	[–] 1,89	[+] 2,29	[–] 2,29	[–] 1,94	[–] 1,94	[–] 1,99
75	30			[–] 4,69	[–] 4,74	[–] 5,80	[–] 5,80	[–] 5,55	[–] 5,55	[–] 5,67
75	35			[–] 4,38	[–] 4,38	[–] 5,45	[–] 5,45	[–] 5,22	[–] 5,22	[–] 5,34
75	40			[–] 4,12	[–] 4,13	[–] 5,05	[–] 5,05	[–] 4,84	[–] 4,84	[–] 4,94
75	50			[–] 3,33	[–] 3,31	[–] 4,17	[–] 4,17	[–] 3,90	[–] 3,90	[–] 3,99
75	60			[–] 2,48	[–] 2,48	---	---	[–] 2,75	[–] 2,75	[–] 2,81
75	65			[–] 1,75	[–] 1,75	---	---	[–] 2,09	[–] 2,09	[–] 2,14

OD: Outer diameter **ID:** Internal diameter [+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions on request.
* ZELLAMID® 202 SW on demand. All tubes are also available in ZELLAMID® 250 SW and ZELLAMID® 250 MO.

ZELLAMID® Quality		202*	250	900	900 SW	1400	1400 SW	1400 T
		PA 6 natural	PA 6.6 natural	POM-C natural	POM-C black	PET natural	PET black	PET + solid lubricant
Nominal Size		**Tolerance**		**Weight kg/m**				
OD mm	**ID mm**	**OD mm**	**ID mm**					
80	30	+3,0/+0,8	-0,8/-3,0	[+] 5,45	[–] 5,38	[+] 6,79	[–] 6,79	[–] 6,58	[–] 6,58	[–] 6,73
80	35			[–] 5,25	[–] 5,25	[–] 6,55	[–] 6,55	[–] 6,27	[–] 6,27	[–] 6,41
80	40			[+] 4,83	[–] 4,78	[+] 6,08	[–] 6,08	[–] 6,01	[–] 6,01	[–] 6,14
80	45			---	---	---	---	---	---	---
80	50			[+] 4,08	[–] 4,07	[+] 5,09	[–] 5,09	[–] 5,01	[–] 5,01	[–] 5,19
80	60			[+] 3,34	[–] 3,19	[+] 4,06	[–] 4,06	[+] 4,06	[–] 4,06	[–] 4,07
80	65			[–] 2,71	[–] 2,71	[–] 3,37	[–] 3,37	[–] 3,23	[–] 3,23	[–] 3,30
80	70			[–] 2,13	[–] 2,13	[+] 2,80	[–] 2,80	[–] 2,54	[–] 2,54	[–] 2,59
85	30	+3,6/+1,2	-1,6/-5,0	[–] 6,29	[–] 6,29	[–] 7,84	[–] 7,84	[–] 7,50	[–] 7,50	[–] 7,67
85	40			[–] 5,72	[–] 5,72	[–] 7,12	[–] 7,12	[–] 6,82	[–] 6,82	[–] 6,97
85	60			[–] 4,02	[–] 4,02	---	---	[–] 4,76	[–] 4,76	[–] 4,90
85	65			[–] 3,48	[–] 3,48	---	---	[–] 4,15	[–] 4,15	[–] 4,24
85	70			[–] 2,90	[–] 2,90	---	---	[–] 3,46	[–] 3,46	[–] 3,53
85	75			[–] 2,27	[–] 2,27	[–] 2,83	[–] 2,83	[–] 2,71	[–] 2,71	[–] 2,77
90	30			[–] 6,01	[–] 7,11	[–] 8,85	[–] 8,85	[–] 8,48	[–] 8,48	[–] 8,67
90	40			[+] 6,40	[–] 6,39	[+] 8,05	[–] 8,05	[–] 7,79	[–] 7,79	[–] 7,96
90	50			[–] 5,66	[–] 5,67	[+] 7,09	[–] 7,09	[–] 6,86	[–] 6,86	[+] 7,04
90	60			[+] 4,71	[–] 4,68	[+] 5,82	[–] 5,82	[–] 5,77	[–] 5,77	[–] 5,83
90	70			[–] 3,65	[–] 3,66	[+] 4,54	[–] 4,54	[+] 4,35	[–] 4,35	[–] 4,43
90	75			[–] 3,09	[–] 3,09	[–] 4,20	[–] 4,20	[–] 3,68	[–] 3,68	[–] 3,76
90	80			[–] 2,41	[–] 2,41	[–] 3,41	[–] 3,41	[–] 2,88	[–] 2,88	[–] 2,94
100	35			[–] 8,61	[–] 8,61	[–] 10,00	[–] 10,00	[–] 10,27	[–] 10,27	[–] 10,50
100	40			[–] 8,16	[–] 8,30	[+] 10,33	[–] 10,33	[–] 9,90	[–] 9,90	[–] 10,12
100	50			[+] 7,54	[–] 7,54	[+] 9,47	[–] 9,47	[+] 9,19	[–] 9,19	[–] 9,20
100	60			[+] 6,59	[–] 6,60	[+] 8,20	[–] 8,20	[–] 7,88	[–] 7,88	[–] 8,14
100	70			[+] 5,44	[–] 5,48	[+] 6,89	[–] 6,89	[–] 6,54	[–] 6,54	[–] 6,69
100	80			[+] 4,29	[–] 4,29	[+] 5,19	[–] 5,19	[–] 5,04	[–] 5,04	[–] 5,10
100	85			[–] 3,46	[–] 3,46	---	---	---	---	---
100	90			[–] 2,70	[–] 2,70	---	---	---	---	---
110	50			[–] 9,61	[–] 9,63	[+] 12,00	[–] 12,00	[–] 11,33	[–] 11,33	[–] 11,58
110	60			[–] 8,79	[–] 8,75	[+] 10,93	[–] 10,93	[–] 10,21	[–] 10,21	[–] 10,43
110	70			[–] 7,54	[–] 9,43	[+] 9,43	[–] 9,43	[–] 8,87	[–] 8,87	[–] 9,33
110	80			[+] 6,27	[–] 6,13	[+] 7,76	[–] 7,76	[–] 7,58	[–] 7,58	[–] 7,68
110	90			[–] 4,73	[–] 4,90	[+] 5,93	[–] 5,93	[–] 5,50	[–] 5,50	[–] 6,01
120	50	+4,5/+1,5	-2,0/-6,5	[–] 11,79	[–] 11,84	[–] 14,76	[–] 14,76	[–] 13,92	[–] 13,92	[–] 14,44
120	60			[–] 10,90	[–] 10,92	[+] 13,57	[–] 13,57	[–] 12,77	[–] 12,77	[–] 13,31
120	70			[–] 9,60	[–] 9,57	[–] 13,41	[–] 13,41	[–] 11,84	[–] 11,84	[–] 11,97
120	80			[+] 8,38	[–] 8,41	[+] 10,49	[–] 10,49	[–] 9,83	[–] 9,83	[–] 10,40
120	90			[–] 7,06	[–] 7,06	[–] 8,80	[–] 8,80	[–] 8,59	[–] 8,59	[–] 8,66
120	100			[+] 5,27	[–] 5,31	[+] 6,57	[–] 6,57	[–] 6,43	[–] 6,43	[–] 6,60
125	80			[–] 9,17	[–] 9,18	[+] 11,98	[–] 11,98	[–] 11,19	[–] 11,19	[–] 11,79
125	90			[–] 8,13	[–] 8,20	[–] 10,22	[–] 10,22	[–] 9,39	[–] 9,39	[–] 10,00
125	100			[–] 6,46	[–] 6,45	[+] 8,05	[–] 8,05	[–] 7,38	[–] 7,38	[–] 7,99
130	50			[–] 14,57	[–] 14,57	[–] 17,65	[–] 17,65	[–] 16,69	[–] 16,69	[–] 17,27
130	60			[–] 13,46	[–] 13,67	[+] 16,45	[–] 16,45	[–] 15,54	[–] 15,54	[–] 16,15
130	70			---	---	[–] 15,11	[–] 15,11	---	---	---
130	80			[–] 11,01	[–] 10,86	[–] 13,52	[–] 13,52	[–] 13,20	[–] 13,20	[–] 13,24
130	90			[–] 9,53	[–] 9,60	[+] 11,72	[–] 11,72	[–] 10,81	[–] 10,81	[–] 11,65
130	100			[–] 7,78	[–] 7,88	[+] 9,54	[–] 9,54	[–] 8,79	[–] 8,79	[–] 9,44
130	110			[–] 5,91	[–] 5,91	[+] 7,13	[–] 7,13	[–] 6,93	[–] 6,93	[–] 7,21
140	60			[–] 15,99	[–] 16,09	[–] 19,62	[–] 19,62	[–] 18,53	[–] 18,53	[–] 19,21
140	70			[–] 14,65	[–] 14,65	[–] 18,25	[–] 18,25	[–] 17,17	[–] 17,17	[–] 17,98
140	80			[–] 13,43	[–] 13,36	[–] 16,67	[–] 16,67	[–] 15,59	[–] 15,59	[–] 16,29

Standard length: 3000 mm to OD 310 mm. Further combinations of internal and external diameters as well as intermediate sizes are possible on request.

ZELLAMID® | TUBES

ZELLAMID® Quality		202*	250	900	900 SW	1400	1400 SW	1400 T
		PA 6 natural	PA 6.6 natural	POM-C natural	POM-C black	PET natural	PET black	PET + solid lubricant
Nominal Size		**Tolerance**		**Weight kg/m**				
OD mm	**ID mm**	**OD mm**	**ID mm**					
140	90	+4,5/+1,5	-2,0/-6,5	[–] 12,05	[–] 12,05	[–] 14,61	[–] 14,61	[–] 14,50	[–] 14,50	[–] 15,10
140	100			[–] 10,42	[–] 10,42	[+] 12,78	[–] 12,78	[–] 11,78	[–] 11,78	[–] 12,49
140	110			[–] 8,42	[–] 8,42	[+] 10,51	[–] 10,51	[–] 10,38	[–] 10,38	[–] 10,46
140	120			[–] 6,40	[–] 6,40	[–] 7,87	[–] 7,87	[–] 7,11	[–] 7,11	[–] 7,81
150	50			[–] 19,36	[–] 19,36	[–] 24,12	[–] 24,12	[–] 22,89	[–] 22,89	[–] 23,61
150	70			[–] 17,67	[–] 17,67	[–] 21,59	[–] 21,59	[–] 20,38	[–] 20,38	[–] 21,14
150	80			[–] 16,25	[–] 16,25	[+] 20,28	[–] 20,28	[–] 18,80	[–] 18,80	[–] 19,57
150	90			[–] 14,58	[–] 14,58	[–] 18,17	[–] 18,17	[–] 17,00	[–] 17,00	[–] 17,78
150	100			[+] 13,12	[–] 13,12	[+] 16,31	[–] 16,31	[–] 14,99	[–] 14,99	[–] 15,77
150	110			[–] 11,11	[–] 11,11	[–] 13,83	[–] 13,83	[–] 12,76	[–] 12,76	[–] 13,54
150	120			[+] 9,06	[–] 9,47	[+] 11,36	[–] 11,36	[–] 10,31	[–] 10,31	[–] 11,09
160	50	+5,4/+1,8	-2,2/-7,5	[–] 22,46	[–] 22,46	[–] 27,50	[–] 27,50	[–] 26,79	[–] 26,79	[–] 27,38
160	60			[–] 20,70	[–] 21,55	[–] 26,75	[–] 26,75	[–] 25,71	[–] 25,71	[–] 26,27
160	80			[–] 18,82	[–] 18,79	[–] 23,40	[–] 23,40	[–] 23,12	[–] 23,12	[–] 23,29
160	90			[–] 17,73	[–] 17,73	[–] 22,08	[–] 22,08	[–] 21,15	[–] 21,15	[–] 21,61
160	100			[–] 15,57	[–] 15,49	[–] 19,48	[–] 19,48	[–] 19,19	[–] 19,19	[–] 19,62
160	120			[–] 12,27	[–] 12,27	[–] 15,28	[–] 15,28	[–] 14,63	[–] 14,63	[–] 14,96
160	130			[–] 10,08	[–] 10,08	[–] 12,12	[–] 12,12	[–] 12,03	[–] 12,03	[–] 12,30
160	140			[–] 7,72	[–] 7,72	[+] 9,25	[–] 9,25	[–] 9,21	[–] 9,21	[–] 9,41
170	60			[–] 24,61	[–] 24,61	[–] 30,66	[–] 30,66	[–] 29,36	[–] 29,36	[–] 30,01
170	80			[–] 22,24	[–] 22,24	[–] 27,71	[–] 27,71	[–] 26,54	[–] 26,54	[–] 27,12
170	100			[–] 18,92	[–] 18,88	[+] 23,70	[–] 23,70	[–] 22,85	[–] 22,85	[–] 23,35
170	120			[–] 15,33	[–] 15,33	[–] 19,10	[–] 19,10	[–] 18,29	[–] 18,29	[–] 18,69
170	130			[+] 13,10	[–] 13,15	[+] 16,45	[–] 16,45	[–] 15,68	[–] 15,68	[–] 16,03
170	140			[–] 10,78	[–] 10,78	[–] 14,02	[–] 14,02	[–] 12,85	[–] 12,85	[–] 13,15
180	70			[–] 26,76	[–] 26,76	[–] 33,42	[–] 33,42	[–] 31,93	[–] 31,93	[–] 32,63
180	100			[–] 22,48	[–] 22,40	[+] 27,94	[–] 27,94	[–] 27,33	[–] 27,33	[–] 27,34
180	110			[–] 20,58	[–] 20,58	[–] 25,63	[–] 25,63	[–] 24,55	[–] 24,55	[–] 25,09
180	120			[–] 18,67	[–] 18,57	[+] 23,26	[–] 23,26	[–] 22,16	[–] 22,16	[–] 22,65
180	140			[–] 14,03	[–] 14,03	[+] 18,16	[–] 18,16	[–] 16,73	[–] 16,73	[–] 17,10
180	150			[–] 11,48	[–] 11,48	[–] 14,67	[–] 14,67	[–] 13,70	[–] 13,70	[–] 14,00
180	160			[–] 8,75	[–] 8,75	[+] 11,05	[–] 11,05	[–] 10,44	[–] 10,44	[–] 10,76
190	70	+6,0/+2,0	-2,5/-8,5	[–] 30,41	[–] 30,41	[–] 37,88	[–] 37,88	[–] 36,27	[–] 36,27	[–] 37,07
190	140			[–] 17,45	[–] 17,45	[–] 22,11	[–] 22,11	[–] 21,18	[–] 21,18	[–] 21,65
190	160			[–] 12,50	[–] 12,50	[–] 15,27	[–] 15,27	[–] 14,92	[–] 14,92	[–] 15,25
200	70			[–] 34,02	[–] 34,02	[–] 42,35	[–] 42,35	[–] 40,59	[–] 40,59	[–] 41,48
200	90			[–] 31,32	[–] 31,32	[–] 39,01	[–] 39,01	[–] 37,36	[–] 37,36	[–] 38,18
200	100			[–] 29,32	[–] 29,24	[–] 36,65	[–] 36,65	[–] 35,97	[–] 35,97	[–] 36,20
200	130			[–] 23,52	[–] 23,72	[–] 29,55	[–] 29,55	[–] 28,91	[–] 28,91	[–] 30,02
200	140			[–] 21,37	[–] 21,37	[–] 26,78	[–] 26,78	[–] 25,49	[–] 25,49	[–] 26,06
200	150			[–] 18,83	[–] 18,83	[+] 23,14	[–] 23,14	[–] 22,47	[–] 22,47	[–] 22,97
200	160			[–] 15,79	[–] 15,69	[–] 20,08	[–] 20,08	[–] 19,23	[–] 19,23	[–] 19,65
210	150			[–] 22,63	[–] 22,63	[–] 28,19	[–] 28,19	[–] 27,00	[–] 27,00	[–] 27,59
210	160			[–] 19,92	[–] 19,92	[+] 24,74	[–] 24,74	[–] 23,76	[–] 23,76	[–] 24,28
220	70			[–] 41,80	---	[–] 51,58	[–] 51,58	---	---	---
220	75			[–] 41,17	---	[–] 51,31	[–] 51,31	---	---	---
220	160			[–] 23,76	---	[–] 29,69	[–] 29,69	---	---	---
220	190			[–] 16,14	---	[–] 18,70	[–] 18,70	---	---	---
230	120	+9,0/+3,0	-3,0/-12,0	[–] 37,81	---	[–] 48,70	[–] 48,70	---	---	---
230	160			[–] 28,39	---	[–] 36,70	[–] 36,70	---	---	---
230	170			[–] 26,60	---	[–] 31,67	[–] 31,67	---	---	---
230	190			[–] 20,34	---	[+] 24,11	[–] 24,11	---	---	---
250	70			[–] 55,95	---	[–] 69,73	[–] 69,73			
250	150			[–] 40,74	---	[–] 51,17	[–] 51,17	---	---	---
250	170			[–] 35,54	---	[–] 44,93	[–] 44,93	---	---	---

OD: Outer diameter **ID:** Internal diameter [+] Product on stock [–] Product with minimum order quantity (MOQ) Λ Further dimensions on request.
* ZELLAMID® 202 SW on demand.

ZELLAMID® Quality		202*	250	900	900 SW	1400	1400 SW	1400 T
		PA 6 natural	PA 6.6 natural	POM-C natural	POM-C black	PET natural	PET black	PET + solid lubricant
Nominal Size		**Tolerance**		**Weight kg/m**				
OD mm	**ID mm**	**OD mm**	**ID mm**					
260	130	+10,0/+3,0	-3,5/-13,0	[–] 51,05	---	[–] 63,58	[–] 63,58	---	---	---
260	160			[–] 43,59	---	[–] 54,30	[–] 54,30	---	---	---
260	170			[–] 40,75	---	[–] 50,75	[–] 50,75	---	---	---
260	190			[–] 34,58	---	[–] 43,41	[–] 43,41	---	---	---
265	90			[–] 60,88	---	[–] 75,84	[–] 75,84	---	---	---
265	210			[–] 29,98	---	[–] 35,98	[–] 35,98	---	---	---
270	90			[–] 63,37	---	[–] 78,94	[–] 78,94	---	---	---
280	100			[–] 66,91	---	[–] 83,35	[–] 83,35	---	---	---
280	140			[–] 58,79	---	[–] 73,23	[–] 73,23	---	---	---
280	210			[–] 37,59	---	[–] 46,82	[–] 46,82	---	---	---
280	240			[–] 25,77	---	[–] 31,79	[–] 31,79	---	---	---
300	90			[–] 79,26	---	[–] 89,73	[–] 89,73	---	---	---
300	100			[–] 77,68	---	[–] 96,76	[–] 96,76	---	---	---
310	130	+11,0/+3,0	-3,5/-14,0	[–] 77,92	---	[–] 97,06	[–] 97,06	---	---	---
350	200			---	---	[–] 104,71	[–] 104,71	---	---	---
400	200			---	---	[–] 146,04	[–] 146,04	---	---	---
400	300			---	---	[–] 91,44	[–] 91,44	---	---	---
450	200	+13,0/+3,0	-3,5/-16,0	---	---	[–] 196,38	[–] 196,38	---	---	---
450	300			---	---	[–] 142,01	[–] 142,01	---	---	---
500	200			---	---	[–] 251,03	[–] 251,03	---	---	---
500	300			---	---	[–] 196,66	[–] 196,66	---	---	---
500	375			---	---	[–] 141,04	[–] 141,04	---	---	---

Standard length: 3000 mm to OD 310 mm. Further combinations of internal and external diameters as well as intermediate sizes are possible on request.

ZELLAMID® | TUBES

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
50	30	+0,8/+3,0	-4,0/-0,8	[+] 1,80
50	40			[–] 1,30
55	30			[+] 2,40
60	30			[+] 3,10
60	40			[+] 2,50
65	40			[–] 3,10
65	50			[–] 2,30
70	30			[+] 4,20
70	40			[–] 3,60
70	45			---
70	50			[+] 2,80
75	30			[–] 5,00
75	40			[–] 4,40
75	50			[+] 3,60
75	60			[–] 2,70
80	30			[+] 5,80
80	35			[–] 5,50
80	40			[+] 5,20
80	50			[+] 4,50
80	55			[–] 4,00
80	60			[–] 3,50
85	35			[–] 6,30
85	40			[–] 6,00
85	70	+0,8/+4,0	-4,0/-0,8	[–] 3,20
90	40	+0,8/+3,0	-4,0/-0,8	[+] 6,90
90	50			[–] 6,20
90	55			[–] 5,70
90	60			[+] 5,20
90	65	+0,8/+4,0	-4,0/-0,8	[–] 4,70
90	70			[–] 4,10
90	75			[–] 3,50
95	70			[–] 5,10
100	35	+0,8/+3,0	-4,0/-0,8	[–] 8,90
100	40			[+] 8,60
100	45			[–] 8,20
100	50			[+] 7,90
100	55			[–] 7,50
100	60			[+] 7,10
100	65	+0,8/+4,0	-4,0/-0,8	[–] 6,30
100	70			[+] 6,00
100	75			[–] 5,20
100	80			[+] 4,50
110	35	+0,8/+3,0	-4,0/-0,8	[–] 10,80
110	40			[–] 10,60
110	45			[–] 10,20
110	50			[–] 9,80
110	55			[–] 9,40
110	60			[+] 9,30
110	65	+0,8/+4,0	-4,0/-0,8	[–] 8,50
110	70			[–] 7,90
110	75			[–] 7,10
110	80			[+] 7,00
110	90	+1,0/+5,0	-6,0/-1,0	[–] 5,50
120	35	+0,8/+3,0	-4,0/-0,8	[–] 13,00
120	40			[–] 12,70
120	45			[–] 12,50

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
120	50	+0,8/+3,0	-4,0/-0,8	[–] 12,10
120	55			[–] 11,80
120	60			[+] 11,30
120	65			[–] 10,70
120	70	+0,8/+4,0	-4,0/-0,8	[–] 10,50
120	75			[–] 9,50
120	80			[+] 8,90
120	90	+1,0/+5,0	-6,0/-1,0	[–] 7,90
120	100			[+] 5,80
130	35	+0,8/+3,0	-4,0/-0,8	[–] 15,20
130	40			[–] 15,00
130	45			[–] 14,60
130	50			[–] 14,20
130	55			[–] 14,40
130	60			[–] 13,40
130	65	+0,8/+4,0	-4,0/-0,8	[–] 12,90
130	70			[+] 12,70
130	75			[–] 12,10
130	80			[+] 11,50
130	90	+1,0/+5,0	-6,0/-1,0	[–] 10,00
130	100			[+] 8,40
130	110			[–] 6,60
140	35	+0,8/+3,0	-4,0/-0,8	[–] 18,10
140	40			[–] 17,80
140	45			[–] 17,50
140	50			[–] 17,10
140	55			[–] 16,60
140	60			[–] 17,00
140	65			[–] 15,80
140	70			[–] 15,50
140	75			[–] 15,10
140	80			[–] 14,80
140	90	+1,0/+5,0	-6,0/-1,0	[–] 12,90
140	100			[–] 11,68
140	110			[+] 9,40
140	120	+1,5/+7,5	-7,5/-1,5	[–] 7,40
150	35	+0,8/+3,0	-4,0/-0,8	[–] 20,80
150	40			[–] 20,50
150	45			[–] 21,00
150	50			[–] 20,60
150	55			[–] 20,29
150	60			[–] 19,20
150	65	+0,8/+4,0	-4,0/-0,8	[–] 18,30
150	70			[–] 18,20
150	75			[–] 17,70
150	80			[+] 17,20
150	90	+1,0/+5,0	-6,0/-1,0	[–] 15,80
150	100			[+] 14,20
150	110			[+] 12,40
150	120	+1,5/+7,5	-7,5/-1,5	[+] 10,40
150	130			[+] 9,10
160	35	+0,8/+3,0	-4,0/-0,8	[–] 23,70
160	40			[–] 23,70
160	45			[–] 23,10
160	50			[–] 22,70
160	55			[–] 22,40

OD: Outer diameter **ID:** Internal diameter [+] Product on stock [–] Product with minimum order quantity (MOQ)

ZELLAMID® Quality		1100 Group PA 6 C		

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
160	60	+0,8/+3,0	-4,0/-0,8	[−] 21,90
160	65	+0,8/+4,0	-4,0/-0,8	[−] 21,30
160	70			[−] 20,80
160	75			[−] 20,30
160	80			[+] 20,10
160	90	+1,0/+5,0	-6,0/-1,0	[+] 18,70
160	100			[+] 17,10
160	110			[−] 15,30
160	120	+1,5/+7,5	-7,5/-1,5	[+] 13,30
160	130			[+] 11,20
160	140			[−] 8,70
170	35	+0,8/+3,0	-4,0/-0,8	[−] 26,80
170	40			[−] 26,80
170	45			[−] 26,20
170	50			[−] 25,80
170	55			[−] 25,30
170	60			[−] 25,20
170	65	+0,8/+4,0	-4,0/-0,8	[−] 24,40
170	70			[−] 23,80
170	75			[−] 23,20
170	80			[−] 22,80
170	90	+1,0/+5,0	-6,0/-1,0	[−] 21,80
170	100			[−] 20,20
170	110			[−] 18,40
170	120	+1,5/+7,5	-7,5/-1,5	[−] 16,40
170	130			[−] 14,30
170	140			[−] 11,90
170	150			[−] 9,60
180	35	+0,8/+3,0	-4,0/-0,8	[−] 29,80
180	40			[−] 29,80
180	45			[−] 29,50
180	50			[−] 29,10
180	55			[−] 28,20
180	60			[−] 27,30
180	65	+0,8/+4,0	-4,0/-0,8	[−] 27,20
180	70			[−] 27,00
180	75			[−] 26,60
180	80			[−] 26,10
180	90	+1,0/+5,0	-6,0/-1,0	[−] 24,80
180	100			[−] 23,60
180	110			[−] 21,40
180	120	+1,5/+7,5	-7,5/-1,5	[+] 19,40
180	130			[−] 17,30
180	140			[+] 15,20
180	150			[−] 12,40
180	160	+1,8/+9,0	-9,0/-1,8	[−] 9,90
190	35	+0,8/+3,0	-4,0/-0,8	[−] 33,00
190	40			[−] 32,70
190	45			[−] 32,40
190	50			[−] 32,00
190	55			[−] 31,60
190	60			[−] 32,10
190	65	+0,8/+4,0	-4,0/-0,8	[−] 30,80
190	70			[−] 30,40
190	75			[−] 29,50
190	80			[−] 29,00

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
190	90	+1,0/+5,0	-6,0/-1,0	[−] 27,70
190	100			[−] 26,70
190	110			[−] 24,90
190	120	+1,5/+7,5	-7,5/-1,5	[−] 22,90
190	130			[−] 20,70
190	140			[−] 18,40
190	150			[−] 15,90
190	160	+1,8/+9,0	-9,0/-1,8	[−] 13,10
190	170			[−] 10,80
200	35	+0,8/+3,0	-4,0/-0,8	[−] 36,90
200	40			[−] 36,70
200	45			[−] 36,30
200	50			[−] 36,00
200	55			[−] 35,60
200	60			[−] 35,20
200	65	+0,8/+4,0	-4,0/-0,8	[−] 34,70
200	70			[−] 35,30
200	75			[−] 33,60
200	80			[−] 33,30
200	90	+1,0/+5,0	-6,0/-1,0	[−] 32,10
200	100			[+] 30,70
200	110			[−] 28,90
200	120	+1,5/+7,5	-7,5/-1,5	[+] 27,00
200	130			[−] 24,80
200	140			[−] 22,40
200	150			[−] 19,90
200	160	+1,8/+9,0	-9,0/-1,8	[+] 17,20
200	170			[−] 14,30
200	180			[−] 11,50
210	40	+0,8/+3,0	-4,0/-0,8	[−] 40,30
210	45			[−] 40,20
210	50			[−] 39,90
210	55			[−] 39,60
210	60			[−] 39,20
210	65	+0,8/+4,0	-4,0/-0,8	[−] 38,80
210	70			[−] 38,40
210	75			[−] 37,70
210	80			[−] 37,30
210	90	+1,0/+5,0	-6,0/-1,0	[−] 35,80
210	100			[−] 34,30
210	110			[−] 32,40
210	120	+1,5/+7,5	-7,5/-1,5	[−] 30,40
210	130			[−] 28,20
210	140			[−] 25,90
210	150			[−] 23,30
210	160	+1,8/+9,0	-9,0/-1,8	[−] 20,70
210	170			[−] 17,70
210	180			[−] 15,00
210	190	+2,0/+11,0	-11,0/-2,0	[−] 12,10
220	40	+0,8/+3,0	-4,0/-0,8	[−] 44,50
220	45			[−] 44,30
220	50			[−] 43,90
220	55			[−] 43,80
220	60			[−] 43,30
220	65	+0,8/+4,0	-4,0/-0,8	[−] 42,70
220	70			[−] 42,20

Λ These diameters can be produced at short term. Standard length depending on diameter 1000 mm or 2000 mm, longitudinal tolerance +0% / + 3%. Special lengths up to 3000 mm, further combinations of inner and outer diameters as well as intermediate sizes are possible on request.

ZELLAMID® | TUBES

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
220	75	+0,8/+4,0	-4,0/-0,8	[–] 41,70
220	80			[–] 41,00
220	90	+1,0/+5,0	-6,0/-1,0	[–] 39,80
220	100			[–] 38,30
220	110			[–] 36,50
220	120	+1,5/+7,5	-7,5/-1,5	[–] 34,80
220	130			[–] 32,50
220	140			[–] 30,30
220	150			[–] 27,80
220	160	+1,8/+9,0	-9,0/-1,8	[–] 25,10
220	170			[–] 22,20
220	180			[–] 19,00
220	190	+2,0/+11,0	-11,0/-2,0	[–] 15,80
220	200			[–] 12,30
230	40	+0,8/+3,0	-4,0/-0,8	[–] 48,80
230	45			[–] 48,70
230	50			[–] 48,40
230	55			[–] 48,00
230	60			[–] 47,40
230	65	+0,8/+4,0	-4,0/-0,8	[–] 47,10
230	70			[–] 46,40
230	75			[–] 45,90
230	80			[–] 45,20
230	90	+1,0/+5,0	-6,0/-1,0	[–] 43,90
230	100			[–] 42,30
230	110			[–] 40,80
230	120	+1,5/+7,5	-7,5/-1,5	[–] 38,90
230	130			[–] 36,80
230	140			[–] 35,00
230	150			[–] 32,50
230	160	+1,8/+9,0	-9,0/-1,8	[–] 29,90
230	170			[–] 26,30
230	180			[–] 23,90
230	190	+2,0/+11,0	-11,0/-2,0	[–] 20,70
230	200			[–] 17,30
240	40	+0,8/+3,0	-4,0/-0,8	[–] 52,60
240	45			[–] 52,40
240	50			[–] 52,00
240	55			[–] 51,70
240	60			[–] 51,30
240	65	+0,8/+4,0	-4,0/-0,8	[–] 50,80
240	70			[–] 50,30
240	75			[–] 49,80
240	80			[–] 49,20
240	90	+1,0/+5,0	-6,0/-1,0	[–] 47,90
240	100			[–] 46,40
240	110			[–] 44,70
240	120	+1,5/+7,5	-7,5/-1,5	[–] 42,90
240	130			[–] 40,80
240	140			[–] 38,60
240	150			[–] 36,50
240	160	+1,8/+9,0	-9,0/-1,8	[–] 33,90
240	170			[–] 31,00
240	180			[–] 28,00
240	190	+2,0/+11,0	-11,0/-2,0	[–] 24,70
240	200			[–] 21,30

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
240	210	+2,0/+11,0	-11,0/-2,0	[–] 17,70
240	220			[–] 13,90
250	50	+0,8/+3,0	-4,0/-0,8	[–] 58,00
250	55			[–] 58,30
250	60			[–] 57,50
250	65			[–] 56,80
250	70			[–] 56,30
250	75			[–] 55,70
250	80			[+] 55,10
250	90	+1,0/+5,0	-6,0/-1,0	[–] 53,80
250	100			[–] 52,30
250	110			[–] 50,50
250	120	+1,5/+7,5	-7,5/-1,5	[–] 49,60
250	130			[–] 46,80
250	140			[–] 44,40
250	150			[+] 45,00
250	160	+1,8/+9,0	-9,0/-1,8	[–] 42,60
250	170			[–] 39,10
250	180			[–] 35,90
250	190	+2,0/+11,0	-11,0/-2,0	[–] 32,40
250	200			[–] 28,90
250	210			[–] 25,00
250	220			[–] 21,10
250	230	+2,5/+12,5	-12,5/-2,5	[–] 17,10
260	50	+0,8/+3,0	-4,0/-0,8	[–] 63,20
250	55			[–] 62,00
250	60			[–] 62,50
250	65			[–] 62,00
250	70			[–] 61,50
250	75			[–] 61,00
250	80			[–] 60,40
260	90	+1,0/+5,0	-6,0/-1,0	[–] 61,20
260	100			[–] 57,50
260	110			[–] 55,80
260	120	+1,5/+7,5	-7,5/-1,5	[–] 54,00
260	130			[–] 51,90
260	140			[–] 49,70
260	150			[–] 50,20
260	160	+1,8/+9,0	-9,0/-1,8	[–] 47,30
260	170			[–] 44,30
260	180			[–] 41,10
260	190	+2,0/+11,0	-11,0/-2,0	[–] 37,50
260	200			[–] 34,00
260	210			[–] 30,20
260	220			[–] 26,10
260	230	+2,5/+12,5	-12,5/-2,5	[–] 22,00
260	240			[–] 17,80
270	50	+0,8/+3,0	-4,0/-0,8	[–] 67,70
270	55			[–] 67,30
270	60			[–] 66,90
270	65			[–] 69,54
270	70			[–] 65,90
270	75			[–] 65,90
270	80			[–] 64,80
270	90	+1,0/+5,0	-6,0/-1,0	[–] 63,50
270	100			[–] 62,00

OD: Outer diameter **ID:** Internal diameter [+] Product on stock [–] Product with minimum order quantity (MOQ)

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
270	110	+1,0/+5,0	-6,0/-1,0	[−] 60,30
270	120	+1,5/+7,5	-7,5/-1,5	[−] 58,40
270	130			[−] 56,30
270	140			[−] 54,00
270	150			[−] 51,70
270	160	+1,8/+9,0	-9,0/-1,8	[−] 52,60
270	170			[−] 49,50
270	180			[−] 46,30
270	190	+2,0/+11,0	-11,0/-2,0	[−] 42,90
270	200			[−] 39,30
270	210			[−] 35,40
270	220			[−] 31,40
270	230	+2,5/+12,5	-12,5/-2,5	[−] 27,20
270	240			[−] 22,90
270	250			[−] 18,50
280	50	+0,8/+3,0	-4,0/-0,8	[−] 72,30
280	55			[−] 71,90
280	60			[−] 71,50
280	65	+0,8/+4,0	-4,0/-0,8	[−] 71,00
280	70			[−] 70,50
280	75			[−] 70,00
280	80			[−] 69,40
280	90	+1,0/+5,0	-6,0/-1,0	[−] 68,00
280	100			[−] 66,50
280	110			[−] 64,80
280	120	+1,5/+7,5	-7,5/-1,5	[−] 62,92
280	130			[−] 60,90
280	140			[−] 58,60
280	150			[−] 56,70
280	160	+1,8/+9,0	-9,0/-1,8	[−] 58,10
280	170			[−] 55,10
280	180			[−] 51,60
280	190	+2,0/+11,0	-11,0/-2,0	[−] 48,00
280	200			[−] 44,80
280	210			[−] 40,90
280	220	+2,0/+11,0	-11,0/-2,0	[−] 36,90
280	230	+2,5/+12,5	-12,5/-2,5	[−] 32,80
280	240			[−] 28,40
280	250			[−] 23,80
280	260	+3,0/+15,0	-15,0/-3,0	[−] 19,20
290	50	+0,8/+3,0	-4,0/-0,8	[−] 78,60
290	55			[−] 78,30
290	60			[−] 77,90
290	65	+0,8/+4,0	-4,0/-0,8	[−] 77,40
290	70			[−] 76,90
290	75			[−] 76,30
290	80			[−] 75,70
290	90	+1,0/+5,0	-6,0/-1,0	[−] 74,40
290	100			[−] 72,90
290	110			[−] 71,40
290	120	+1,5/+7,5	-7,5/-1,5	[−] 69,50
290	130			[−] 67,40
290	140			[−] 65,50
290	150			[−] 63,00
290	160	+1,8/+9,0	-9,0/-1,8	[−] 63,80
290	170			[−] 60,70

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
290	180	+1,8/+9,0	-9,0/-1,8	[−] 57,50
290	190	+2,0/+11,0	-11,0/-2,0	[−] 54,10
290	200			[−] 50,50
290	210			[−] 46,70
290	220			[−] 42,70
290	230	+2,5/+12,5	-12,5/-2,5	[−] 38,40
290	240			[−] 34,10
290	250			[−] 29,60
290	260	+3,0/+15,0	-15,0/-3,0	[−] 24,60
290	270			[−] 20,10
300	50	+0,8/+3,0	-4,0/-0,8	[−] 83,00
300	55			[−] 82,60
300	60			[−] 82,20
300	65			[−] 81,80
300	70			[−] 80,70
300	75			[−] 80,70
300	80			[−] 80,20
300	90	+1,0/+5,0	-6,0/-1,0	[−] 78,80
300	100			[−] 77,40
300	110			[−] 75,70
300	120	+1,5/+7,5	-7,5/-1,5	[−] 73,90
300	130			[−] 71,80
300	140			[−] 73,20
300	150			[−] 67,80
300	160	+1,8/+9,0	-9,0/-1,8	[−] 65,10
300	170			[−] 66,70
300	180			[−] 63,40
300	190	+2,0/+11,0	-11,0/-2,0	[−] 60,00
300	200			[+] 56,40
300	210			[−] 52,60
300	220			[−] 48,50
300	230	+2,5/+12,5	-12,5/-2,5	[−] 44,30
300	240			[−] 40,00
300	250			[−] 35,30
300	260	+3,0/+15,0	-15,0/-3,0	[−] 30,50
300	270	+3,0/+15,0	-15,0/-3,0	[−] 25,50
300	280			[−] 20,60
310	80	+0,8/+4,0	-4,0/-0,8	[−] 85,70
310	90	+1,0/+5,0	-6,0/-1,0	[−] 84,40
310	100			[−] 83,10
310	110			[−] 81,40
310	120	+1,5/+7,5	-7,5/-1,5	[−] 79,50
310	130			[−] 77,50
310	140			[−] 75,50
310	150			[−] 73,10
310	160	+1,8/+9,0	-9,0/-1,8	[−] 70,50
310	170			[−] 67,80
310	180			[−] 69,40
310	190	+2,0/+11,0	-11,0/-2,0	[−] 66,10
310	200			[−] 62,50
310	210			[−] 58,60
310	220			[−] 54,60
310	230	+2,5/+12,5	-12,5/-2,5	[−] 50,40
310	240			[−] 46,10
310	250			[−] 41,50
310	260	+3,0/+15,0	-15,0/-3,0	[−] 36,60

Λ These diameters can be produced at short term. Standard length depending on diameter 1000 mm or 2000 mm, longitudinal tolerance +0% / + 3%. Special lengths up to 3000 mm, further combinations of inner and outer diameters as well as intermediate sizes are possible on request.

ZELLAMID® | TUBES

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
310	270	+3,0/+15,0	-15,0/-3,0	[–] 31,60
310	280			[–] 26,50
320	80	+0,8/+4,0	-4,0/-0,8	[–] 92,80
320	90	+1,0/+5,0	-6,0/-1,0	[–] 91,40
320	100			[–] 89,90
320	110			[–] 88,40
320	120	+1,5/+7,5	-7,5/-1,5	[–] 86,50
320	130			[–] 84,50
320	140			[–] 82,00
320	150			[–] 80,00
320	160	+1,8/+9,0	-9,0/-1,8	[–] 77,80
320	170			[–] 75,00
320	180			[–] 75,80
320	190	+2,0/+11,0	-11,0/-2,0	[–] 72,40
320	200			[–] 68,80
320	210			[–] 64,90
320	220			[–] 59,60
320	230	+2,5/+12,5	-12,5/-2,5	[–] 56,70
320	240			[–] 52,30
320	250			[–] 47,70
320	260	+3,0/+15,0	-15,0/-3,0	[–] 42,90
320	270			[–] 37,60
320	280			[–] 32,70
320	290			[–] 27,40
330	80	+0,8/+4,0	-4,0/-0,8	[–] 97,50
330	90	+1,0/+5,0	-6,0/-1,0	[–] 96,20
330	100			[–] 94,90
330	110			[–] 93,20
330	120	+1,5/+7,5	-7,5/-1,5	[–] 91,30
330	130			[–] 89,30
330	140			[–] 87,30
330	150			[–] 84,90
330	160	+1,8/+9,0	-9,0/-1,8	[–] 82,50
330	170			[–] 79,90
330	180			[–] 76,90
330	190	+2,0/+11,0	-11,0/-2,0	[–] 78,90
330	200			[–] 75,30
330	210			[–] 71,40
330	220			[–] 67,40
330	230	+2,5/+12,5	-12,5/-2,5	[–] 63,20
330	240			[–] 58,80
330	250			[–] 54,20
330	260	+3,0/+15,0	-15,0/-3,0	[–] 49,40
330	270			[–] 44,40
330	280			[–] 39,20
330	290			[–] 33,80
330	300			[–] 28,20
340	80	+0,8/+4,0	-4,0/-0,8	[–] 104,40
340	90	+1,0/+5,0	-6,0/-1,0	[–] 107,40
340	100			[–] 101,50
340	110			[–] 99,80
340	120	+1,5/+7,5	-7,5/-1,5	[–] 98,10
340	130			[–] 96,30
340	140			[–] 94,10
340	150			[–] 91,70
340	160	+1,8/+9,0	-9,0/-1,8	[–] 89,40

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
340	170	+1,8/+9,0	-9,0/-1,8	[–] 86,50
340	180			[–] 83,80
340	190	+2,0/+11,0	-11,0/-2,0	[–] 80,70
340	200			[–] 82,00
340	210			[–] 78,10
340	220			[–] 74,10
340	230	+2,5/+12,5	-12,5/-2,5	[–] 69,90
340	240			[–] 65,50
340	250			[–] 60,80
340	260	+3,0/+15,0	-15,0/-3,0	[–] 56,10
340	270			[–] 51,00
340	280			[–] 45,90
340	290	+3,0/+15,0	-15,0/-3,0	[–] 40,50
340	300			[–] 34,90
340	310			[–] 29,20
350	80	+0,8/+4,0	-4,0/-0,8	[–] 110,10
350	90	+1,0/+5,0	-6,0/-1,0	[–] 108,80
350	100			[–] 107,30
350	110			[–] 105,80
350	120	+1,5/+7,5	-7,5/-1,5	[–] 103,90
350	130			[–] 102,00
350	140			[–] 99,90
350	150			[–] 97,70
350	160	+1,8/+9,0	-9,0/-1,8	[–] 95,20
350	170			[–] 92,40
350	180			[–] 89,50
350	190	+2,0/+11,0	-11,0/-2,0	[–] 87,60
350	200			[–] 88,80
350	210			[–] 85,00
350	220			[–] 81,00
350	230	+2,5/+12,5	-12,5/-2,5	[–] 76,80
350	240			[–] 72,40
350	250			[+] 67,80
350	260	+3,0/+15,0	-15,0/-3,0	[–] 63,00
350	270			[–] 58,00
350	280	+3,0/+15,0	-15,0/-3,0	[–] 52,80
350	290			[–] 47,40
350	300			[–] 41,80
350	310	+3,0/+17,5	-17,5/-3,0	[–] 36,00
350	320			[–] 30,10
360	80	+0,8/+4,0	-4,0/-0,8	[–] 116,70
360	90	+1,0/+5,0	-6,0/-1,0	[–] 115,30
360	100			[–] 113,00
360	110			[–] 112,30
360	120	+1,5/+7,5	-7,5/-1,5	[–] 110,60
360	130			[–] 108,40
360	140			[–] 106,60
360	150			[–] 104,30
360	160	+1,8/+9,0	-9,0/-1,8	[–] 101,70
360	170			[–] 99,00
360	180			[–] 96,40
360	190	+2,0/+11,0	-11,0/-2,0	[–] 94,80
360	200			[–] 92,00
360	210			[–] 92,00
360	220			[–] 88,00
360	230	+2,5/+12,5	-12,5/-2,5	[–] 83,80

OD: Outer diameter **ID:** Internal diameter [+] Product on stock [–] Product with minimum order quantity (MOQ)

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
360	240	+2,5/+12,5	-12,5/-2,5	[–] 79,40
360	250			[–] 74,80
360	260	+3,0/+15,0	-15,0/-3,0	[–] 70,00
360	270			[–] 65,00
360	280			[–] 59,80
360	290			[–] 54,50
360	300			[–] 48,80
360	310	+3,0/+17,5	-17,5/-3,0	[–] 43,10
360	320			[–] 37,10
360	330			[–] 31,00
370	80	+0,8/+4,0	-4,0/-0,8	[–] 124,00
370	90	+1,0/+5,0	-6,0/-1,0	[–] 122,80
370	100			[–] 121,20
370	110			[–] 119,70
370	120	+1,5/+7,5	-7,5/-1,5	[–] 117,80
370	130			[–] 116,00
370	140			[–] 114,30
370	150			[–] 111,70
370	160	+1,8/+9,0	-9,0/-1,8	[–] 109,10
370	170			[–] 106,40
370	180			[–] 103,40
370	190	+2,0/+11,0	-11,0/-2,0	[–] 102,20
370	200			[–] 99,10
370	210			[–] 96,10
370	220			[–] 95,30
370	230	+2,5/+12,5	-12,5/-2,5	[–] 91,10
370	240			[–] 86,70
370	250			[–] 77,30
370	260	+3,0/+15,0	-15,0/-3,0	[–] 77,30
370	270			[–] 72,30
370	280			[–] 67,10
370	290			[–] 61,70
370	300			[–] 56,10
370	310			[–] 50,40
370	320			[–] 44,40
370	330	+3,0/+17,5	-17,5/-3,0	[–] 38,20
370	340			[–] 31,90
380	80	+0,8/+4,0	-4,0/-0,8	[–] 130,30
380	90	+1,0/+5,0	-6,0/-1,0	[–] 129,10
380	100			[–] 127,50
380	110			[–] 125,80
380	120	+1,5/+7,5	-7,5/-1,5	[–] 124,10
380	130			[–] 122,10
380	140			[–] 120,00
380	150			[–] 117,90
380	160	+1,8/+9,0	-9,0/-1,8	[–] 115,30
380	170			[–] 112,60
380	180			[–] 111,80
380	190	+2,0/+11,0	-11,0/-2,0	[–] 109,40
380	200			[–] 106,10
380	210			[–] 102,70
380	220			[–] 99,00
380	230	+2,5/+12,5	-12,5/-2,5	[–] 98,60
380	240			[–] 94,20
380	250			[–] 89,60
380	260	+3,0/+15,0	-15,0/-3,0	[–] 84,80
380	270			[–] 79,80
380	280			[–] 74,60
380	290			[–] 69,20
380	300			[–] 63,60
380	310	+3,0/+17,5	-17,5/-3,0	[–] 57,80
380	320			[–] 51,80
380	330			[–] 45,70
380	340			[–] 39,30
380	350			[–] 35,40
390	80	+0,8/+4,0	-4,0/-0,8	[–] 138,80
390	90	+1,0/+5,0	-6,0/-1,0	[–] 137,50
390	100			[–] 136,00
390	110			[–] 134,50
390	120	+1,5/+7,5	-7,5/-1,5	[–] 132,60
390	130			[–] 130,80
390	140			[–] 128,60
390	150			[–] 126,40
390	160	+1,8/+9,0	-9,0/-1,8	[–] 131,40
390	170			[–] 121,10
390	180			[–] 120,30
390	190	+2,0/+11,0	-11,0/-2,0	[–] 117,00
390	200			[–] 114,00
390	210			[–] 110,60
390	220			[–] 106,90
390	230	+2,5/+12,5	-12,5/-2,5	[–] 103,10
390	240			[–] 101,80
390	250			[–] 97,20
390	260	+3,0/+15,0	-15,0/-3,0	[–] 92,40
390	270			[–] 87,40
390	280			[–] 82,30
390	290			[–] 76,90
390	300			[–] 66,30
390	310	+3,0/+17,5	-17,5/-3,0	[–] 65,50
390	320			[–] 59,50
390	330			[–] 53,30
390	340	+3,0/+17,5	-17,5/-3,0	[–] 47,00
390	350			[–] 40,40
390	360			[–] 36,40
400	80	+0,8/+4,0	-4,0/-0,8	[–] 146,20
400	90	+1,0/+5,0	-6,0/-1,0	[–] 147,00
400	100			[–] 143,30
400	110			[–] 141,60
400	120	+1,5/+7,5	-7,5/-1,5	[–] 139,90
400	130			[–] 137,90
400	140			[–] 135,90
400	150			[–] 133,80
400	160	+1,8/+9,0	-9,0/-1,8	[–] 131,20
400	170			[–] 128,50
400	180			[–] 127,60
400	190	+2,0/+11,0	-11,0/-2,0	[–] 124,30
400	200			[+] 119,90
400	210			[–] 116,40
400	220			[–] 112,80
400	230	+2,5/+12,5	-12,5/-2,5	[–] 109,00
400	240			[–] 105,00
400	250			[–] 105,00

Λ These diameters can be produced at short term. Standard length depending on diameter 1000 mm or 2000 mm, longitudinal tolerance +0% / + 3%. Special lengths up to 3000 mm, further combinations of inner and outer diameters as well as intermediate sizes are possible on request.

ZELLAMID® | TUBES

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
400	260	+3,0/+15,0	-15,0/-3,0	[–] 100,30
400	270			[–] 95,30
400	280			[–] 90,00
400	290			[–] 84,70
400	300			[+] 79,10
400	310	+3,0/+17,5	-17,5/-3,0	[–] 73,30
400	320			[–] 67,40
400	330			[–] 61,20
400	340			[–] 54,80
400	350			[–] 48,30
400	360			[–] 41,50
400	370	+0,8/+4,0	-3,0/-0,8	[–] 37,30
410	80	+0,8/+4,0	-4,0/-0,8	[–] 155,90
410	90	+1,0/+5,0	-6,0/-1,0	[–] 154,60
410	100			[–] 152,30
410	110			[–] 150,80
410	120	+1,5/+7,5	-7,5/-1,5	[–] 149,00
410	130			[–] 147,10
410	140			[–] 144,90
410	150			[–] 142,80
410	160			[–] 140,20
410	170			[–] 137,50
410	180			[–] 134,60
410	190			[–] 131,50
410	200			[–] 128,50
410	210			[–] 125,10
410	220			[–] 121,40
410	230			[–] 117,60
410	240			[–] 113,60
410	250	+1,0/+5,0	-6,0/-1,0	[–] 109,40
410	260			[–] 109,40
410	270			[–] 103,30
410	280			[–] 98,20
410	290			[–] 92,80
410	300			[–] 81,10
410	310	+1,0/+5,0	-6,0/-1,0	[–] 81,40
410	320	+0,8/+4,0	-4,0/-0,8	[–] 69,20
410	330			[–] 69,20
410	340			[–] 62,90
410	350	+0,8/+4,0	-3,0/-0,8	[–] 56,30
410	360			[–] 49,50
410	370			[–] 42,60
410	380			[–] 38,30
420	80	+0,8/+4,0	-4,0/-0,8	[–] 161,30
420	100	+1,0/+5,0	-6,0/-1,0	[–] 158,50
420	110			[–] 157,00
420	120	+1,5/+7,5	-7,5/-1,5	[–] 155,10
420	130			[–] 153,30
420	140			[–] 151,00
420	150			[–] 148,90
420	160	+1,8/+9,0	-9,0/-1,8	[–] 146,40
420	170			[–] 143,60
420	180			[–] 140,70
420	190	+2,0/+11,0	-11,0/-2,0	[–] 137,60
420	200			[–] 134,30
420	210			[–] 130,90

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
420	220	+2,0/+11,0	-11,0/-2,0	[–] 127,60
420	230	+2,5/+12,5	-12,5/-2,5	[–] 123,80
420	240			[–] 119,80
420	250			[–] 115,60
420	260	+3,0/+15,0	-15,0/-3,0	[–] 111,20
420	280			[–] 106,70
420	290			[–] 97,00
420	300			[–] 95,40
420	310			[–] 89,60
420	320	+3,0/+17,5	-17,5/-3,0	[–] 83,70
420	330			[–] 77,50
420	340			[–] 71,10
420	350			[–] 64,60
420	360			[–] 57,80
420	370			[–] 50,80
420	380			[–] 43,70
420	390			[–] 36,60
430	80	+0,8/+4,0	-4,0/-0,8	[–] 170,00
430	100	+1,0/+5,0	-6,0/-1,0	[–] 167,20
430	110			[–] 165,60
430	120	+1,5/+7,5	-7,5/-1,5	[–] 163,80
430	130			[–] 161,90
430	140			[–] 159,70
430	150			[–] 157,60
430	160	+1,8/+9,0	-9,0/-1,8	[–] 162,90
430	170			[–] 152,30
430	180			[–] 149,40
430	190	+2,0/+11,0	-11,0/-2,0	[–] 146,30
430	200			[–] 143,30
430	210			[–] 140,60
430	220			[–] 136,30
430	230	+2,5/+12,5	-12,5/-2,5	[–] 133,20
430	240			[–] 129,30
430	250			[–] 125,50
430	260	+3,0/+15,0	-15,0/-3,0	[–] 125,50
430	270			[–] 116,70
430	280			[–] 116,70
430	290			[–] 107,70
430	300			[–] 107,70
430	310	+3,0/+17,5	-17,5/-3,0	[–] 98,40
430	320			[–] 92,20
430	330			[–] 86,00
430	340			[–] 79,60
430	350			[–] 73,00
430	360			[–] 66,30
430	370			[–] 59,30
430	380			[–] 52,10
430	390			[–] 44,80
430	400			[–] 40,30
440	80	+0,8/+4,0	-4,0/-0,8	[–] 178,00
440	100	+1,0/+5,0	-6,0/-1,0	[–] 175,20
440	110			[–] 173,70
440	120	+1,5/+7,5	-7,5/-1,5	[–] 171,80
440	130			[–] 170,00
440	140			[–] 167,80
440	150			[–] 165,60

OD: Outer diameter **ID:** Internal diameter [+] Product on stock [–] Product with minimum order quantity (MOQ)

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
440	160	+1,8/+9,0	-9,0/-1,8	[−] 163,10
440	170			[−] 160,40
440	180			[−] 157,40
440	190	+2,0/+11,0	-11,0/-2,0	[−] 154,70
440	200			[−] 151,40
440	210			[−] 149,30
440	220			[−] 145,00
440	230	+2,5/+12,5	-12,5/-2,5	[−] 141,30
440	240			[−] 137,30
440	250			[−] 133,60
440	260	+3,0/+15,0	-15,0/-3,0	[−] 133,60
440	270			[−] 124,80
440	280			[−] 124,80
440	290			[−] 115,80
440	300			[−] 115,80
440	310			[−] 105,50
440	320	+3,0/+17,5	-17,5/-3,0	[−] 100,70
440	330			[−] 94,60
440	340			[−] 88,20
440	350			[−] 81,60
440	360			[−] 74,90
440	370			[−] 67,90
440	380			[−] 60,80
440	390			[−] 53,50
440	400			[−] 45,90
450	80	+0,8/+4,0	-4,0/-0,8	[−] 186,30
450	100	+1,0/+5,0	-6,0/-1,0	[−] 183,50
450	110			[−] 181,90
450	120	+1,5/+7,5	-7,5/-1,5	[−] 178,00
450	130			[−] 178,20
450	140			[−] 176,00
450	150			[−] 173,90
450	160	+1,8/+9,0	-9,0/-1,8	[−] 171,30
450	170			[−] 168,80
450	180			[−] 165,70
450	190	+2,0/+11,0	-11,0/-2,0	[−] 162,90
450	200			[−] 160,30
450	210			[−] 157,60
450	220			[−] 153,30
450	230	+2,5/+12,5	-12,5/-2,5	[−] 149,50
450	240			[−] 145,60
450	250			[+] 141,90
450	260	+3,0/+15,0	-15,0/-3,0	[−] 141,90
450	270			[−] 133,00
450	280			[−] 133,00
450	300			[−] 124,00
450	310			[−] 113,80
450	320			[−] 113,80
450	330	+3,0/+17,5	-17,5/-3,0	[−] 103,40
450	340			[−] 97,00
450	350			[+] 91,50
450	360			[−] 83,70
450	370			[−] 76,80
450	380			[−] 69,60
450	390			[−] 62,30
450	400			[−] 54,70

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
450	410	+3,0/+20,0	-20,0/-3,0	[−] 47,00
450	420			[−] 42,20
460	80	+0,8/+4,0	-4,0/-0,8	[−] 193,80
460	100	+1,0/+5,0	-6,0/-1,0	[−] 191,00
460	110			[−] 189,50
460	120	+1,5/+7,5	-7,5/-1,5	[−] 187,80
460	130			[−] 185,80
460	140			[−] 183,60
460	150			[−] 181,50
460	160	+1,8/+9,0	-9,0/-1,8	[−] 178,90
460	170			[−] 176,20
460	180			[−] 173,60
460	190	+2,0/+11,0	-11,0/-2,0	[−] 170,50
460	200			[−] 167,20
460	210			[−] 164,50
460	220			[−] 160,10
460	230	+2,5/+12,5	-12,5/-2,5	[−] 157,00
460	240			[−] 153,10
460	250			[−] 149,40
460	260	+3,0/+15,0	-15,0/-3,0	[−] 149,40
460	270			[−] 140,60
460	280			[−] 140,60
460	290			[−] 131,60
460	300			[−] 131,60
460	310			[−] 121,40
460	320			[−] 121,40
460	330	+3,0/+17,5	-17,5/-3,0	[−] 113,20
460	340			[−] 107,60
460	350			[−] 99,50
460	360			[−] 92,80
460	370			[−] 85,80
460	380			[−] 78,60
460	390			[−] 71,30
460	400			[−] 66,10
460	410	+3,0/+20,0	-20,0/-3,0	[−] 56,00
460	420			[−] 48,10
470	80	+0,8/+4,0	-4,0/-0,8	[−] 203,30
470	100	+1,0/+5,0	-6,0/-1,0	[−] 200,50
470	110			[−] 198,80
470	120	+1,5/+7,5	-7,5/-1,5	[−] 197,10
470	130			[−] 195,30
470	140			[−] 193,00
470	150			[−] 200,41
470	160	+1,8/+9,0	-9,0/-1,8	[−] 188,38
470	170			[−] 185,64
470	180			[−] 182,70
470	190	+2,0/+11,0	-11,0/-2,0	[−] 179,62
470	200			[−] 176,70
470	210			[−] 174,60
470	220			[−] 169,59
470	230	+2,5/+12,5	-12,5/-2,5	[−] 166,56
470	240			[−] 162,60
470	250			[−] 158,80
470	260	+3,0/+15,0	-15,0/-3,0	[−] 154,40
470	280			[−] 150,00
470	300			[−] 141,00

Λ These diameters can be produced at short term. Standard length depending on diameter 1000 mm or 2000 mm, longitudinal tolerance +0% / + 3%. Special lengths up to 3000 mm, further combinations of inner and outer diameters as well as intermediate sizes are possible on request.

ZELLAMID® | TUBES

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
470	310	+3,0/+15,0	-15,0/-3,0	[–] 130,00
470	320			[–] 130,80
470	330	+3,0/+17,5	-17,5/-3,0	[–] 122,70
470	340			[–] 117,00
470	350			[–] 111,20
470	360			[–] 102,00
470	370			[–] 95,00
470	380			[–] 87,88
470	390			[–] 80,50
470	400			[–] 73,00
470	410	+3,0/+20,0	-20,0/-3,0	[–] 65,20
470	420			[–] 57,30
470	430			[–] 49,20
480	120	+1,5/+7,5	-7,5/-1,5	[–] 205,90
480	130			[–] 204,00
480	140			[–] 201,90
480	150			[–] 199,70
480	160	+1,8/+9,0	-9,0/-1,8	[–] 197,20
480	170			[–] 194,50
480	180			[–] 191,82
480	190	+2,0/+11,0	-11,0/-2,0	[–] 188,74
480	200			[–] 185,50
480	210			[–] 183,42
480	220			[–] 178,76
480	230	+2,5/+12,5	-12,5/-2,5	[–] 175,30
480	240			[–] 171,40
480	250			[–] 167,70
480	260	+3,0/+15,0	-15,0/-3,0	[–] 163,40
480	280			[–] 158,88
480	300			[–] 149,90
480	310			[–] 139,50
480	320			[–] 131,50
480	330	+3,0/+17,5	-17,5/-3,0	[–] 125,20
480	350			[–] 120,00
480	360			[–] 114,00
480	370			[–] 97,30
480	380			[–] 98,80
480	390			[–] 90,00
480	400			[–] 83,30
480	410			[–] 76,60
480	420	+3,0/+20,0	-20,0/-3,0	[–] 66,70
480	430			[–] 58,60
480	440			[–] 50,30
490	120	+1,5/+7,5	-7,5/-1,5	[–] 215,80
490	130			[–] 214,00
490	140			[–] 211,80
490	150			[–] 209,60
490	160	+1,8/+9,0	-9,0/-1,8	[–] 207,10
490	170			[–] 204,30
490	180			[–] 201,70
490	190	+2,0/+11,0	-11,0/-2,0	[–] 198,90
490	200			[–] 165,40
490	210			[–] 193,30
490	220			[–] 189,00
490	230	+2,5/+12,5	-12,5/-2,5	[–] 185,20
490	240			[–] 181,30

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
490	250	+2,5/+12,5	-12,5/-2,5	[–] 177,60
490	260	+3,0/+15,0	-15,0/-3,0	[–] 172,40
490	280			[–] 168,80
490	310			[–] 149,50
490	320			[–] 145,80
490	330			[–] 141,40
490	350	+3,0/+17,5	-17,5/-3,0	[–] 129,80
490	360			[–] 123,80
490	370			[–] 117,70
490	380			[–] 111,30
490	390			[–] 99,60
490	400			[–] 92,00
490	410			[–] 84,30
490	420			[–] 76,40
490	430	+3,0/+20,0	-20,0/-3,0	[–] 68,40
490	440			[–] 59,90
490	450			[–] 51,40
500	100	+1,0/+5,0	-6,0/-1,0	[–] 228,35
500	110			[–] 226,84
500	120	+1,5/+7,5	-7,5/-1,5	[–] 225,00
500	130			[–] 222,95
500	140			[–] 220,95
500	150			[–] 218,50
500	160	+1,8/+9,0	-9,0/-1,8	[–] 216,30
500	170			[–] 213,50
500	180			[–] 210,90
500	190	+2,0/+11,0	-11,0/-2,0	[–] 207,80
500	200			[–] 204,50
500	210			[–] 201,43
500	220			[–] 198,20
500	230	+2,5/+12,5	-12,5/-2,5	[–] 194,40
500	240			[–] 190,45
500	250			[–] 186,70
500	260	+3,0/+15,0	-15,0/-3,0	[–] 182,50
500	280			[–] 177,90
500	300			[–] 168,90
500	310			[–] 158,70
500	320			[–] 154,80
500	330	+3,0/+17,5	-17,5/-3,0	[–] 150,50
500	350			[–] 142,70
500	360			[–] 133,10
500	370			[–] 129,86
500	390			[–] 120,00
500	400			[–] 94,30
500	410			[–] 87,60
500	420			[–] 80,20
500	430	+3,0/+20,0	-20,0/-3,0	[–] 72,60
500	440			[–] 64,90
500	450			[–] 57,00
500	460			[–] 56,40
510	100	+1,0/+5,0	-6,0/-1,0	[–] 239,60
510	110			[–] 237,90
510	120	+1,5/+7,5	-7,5/-1,5	[–] 236,20
510	130			[–] 244,17
510	140			[–] 232,20
510	150			[–] 230,00

OD: Outer diameter **ID:** Internal diameter [+] Product on stock [–] Product with minimum order quantity (MOQ)

ZELLAMID® Quality	1100 Group
	PA 6 C

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
510	160	+1,8/+9,0	-9,0/-1,8	[–] 227,50
510	170			[–] 225,00
510	180			[–] 222,20
510	190	+2,0/+11,0	-11,0/-2,0	[–] 219,36
510	200			[–] 216,10
510	210			[–] 213,00
510	220			[–] 209,00
510	230	+2,5/+12,5	-12,5/-2,5	[–] 205,30
510	240			[–] 201,30
510	250			[–] 197,56
510	260	+3,0/+15,0	-15,0/-3,0	[–] 194,10
510	280			[–] 191,50
510	310			[–] 170,00
510	320			[–] 165,10

Nominal Size		Tolerance		Weight kg/m
OD mm	ID mm	OD mm	ID mm	
510	330	+3,0/+15,0	-15,0/-3,0	[–] 159,00
510	350	+3,0/+17,5	-17,5/-3,0	[–] 147,30
510	360			[–] 145,70
510	370	+3,0/+17,5	-17,5/-3,0	[–] 139,60
510	390			[–] 134,00
510	400			[–] 112,90
510	410			[–] 104,20
510	420			[–] 96,30
510	430			[–] 88,10
510	440	+3,0/+20,0	-20,0/-3,0	[–] 79,80
510	450			[–] 71,20
510	460			[–] 62,50
510	470			[–] 53,60

Λ Special lengths up to 3000 mm, further combinations of inner and outer diameters as well as intermediate sizes are possible on request. These diameters can be produced in the short term. Standard length depending on diameter 1000 mm or 2000 mm, longitudinal tolerance +0% / + 3%.

ZELLAMID® Quality	1100 Group
	PA 6 C

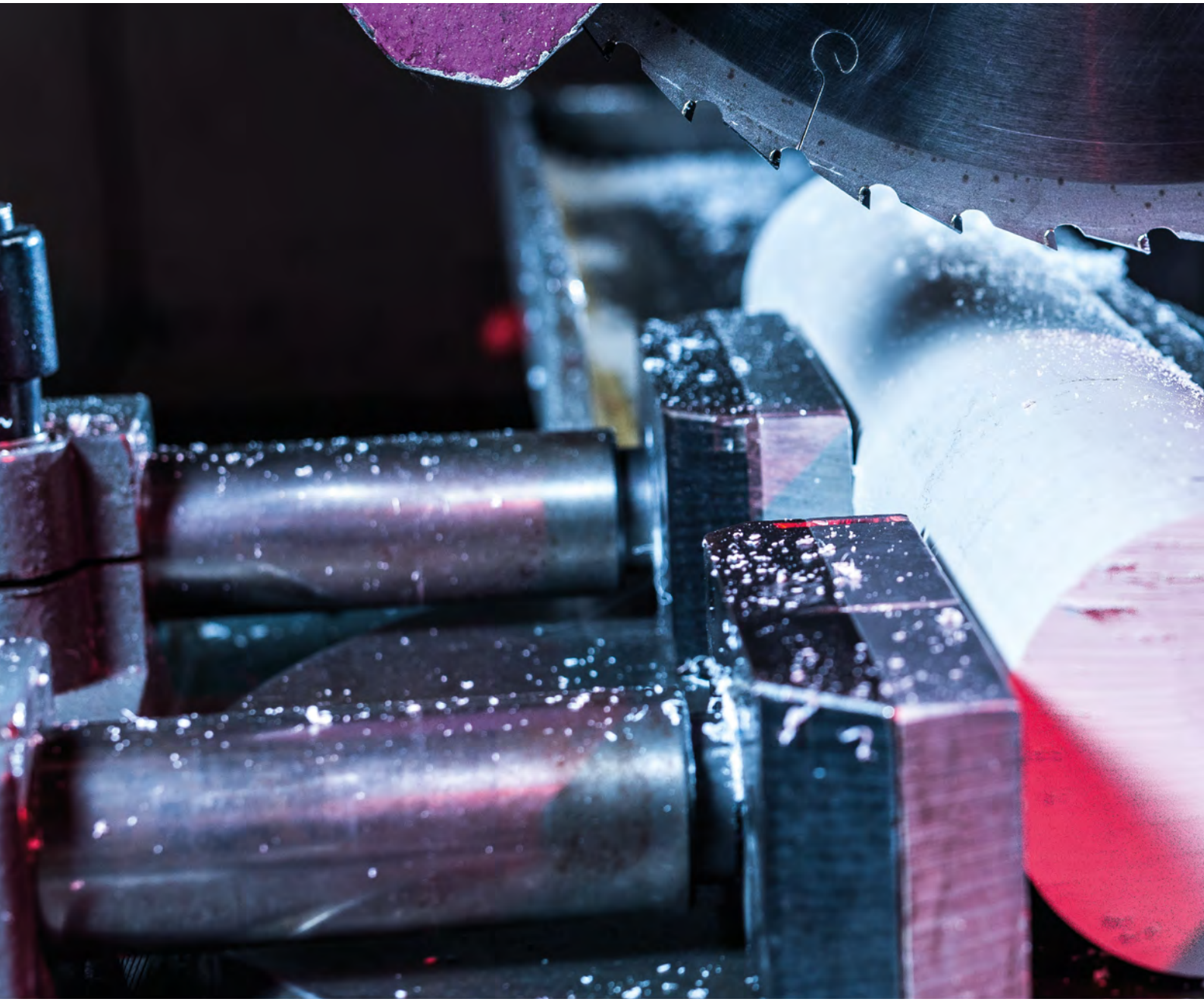
Nominal Size in mm		
OD	ID from	ID to
520	100	480
530	100	490
540	100	500
550	100	500
560	100	510
570	100	520
580	100	530
590	100	540
600	100	550

Nominal Size in mm		
OD	ID from	ID to
620	120	560
640	120	580
650	130	590
660	140	600
680	140	620
700	140	640
720	140	660
740	300	600
750	330	710

Nominal Size in mm		
OD	ID from	ID to
760	380	720
770	700	720
780	400	740
800	420	740
820	440	740
840	460	780
850	450	790
860	480	820
880	500	840

Λ **Standard length** depending on diameter 1000 mm or 2000 mm. Further combinations up to outer diameter 2000 mm and intermediate sizes are possible on request.

ZELLAMID® | MACHINING INSTRUCTIONS

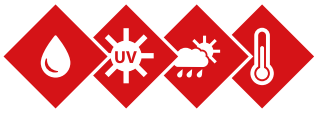


ZELLAMID® | HANDLING & STORAGE

ZELLAMID® Quality plastics are produced with high-end technology and stand out for their excellent quality in numerous applications.

To safeguard the properties and features of our products, the following guidelines will provide you with information on transportation, storage and machining.

Depending on the purpose of use or kind of application, modifications to these can be made by the buyer or customer.



Protected from high moisture weather conditions and UV light sources

Environmental effects like direct sunlight (UV rays) and moisture can modify the polymeric structure. Prolonged exposure to these can result in moisture expansion, volume changes and discoloration. Stock shapes should be stored at 50 % humidity and at temperatures ranging from 0 °C to +30 °C and protected from UV rays (including some interior lighting systems).

Due to the hygroscopic properties of polyamide, panels <8 mm must be wrapped airtight and stored indoors.

Free from chemicals and other liquids

Chemical liquids and gases can also damage the polymeric structure and should be avoided.

Protected from radiation

Energy radiation like X-rays should be avoided as not every type of plastic is resistant to it.

Separate from flammable materials and heat sources

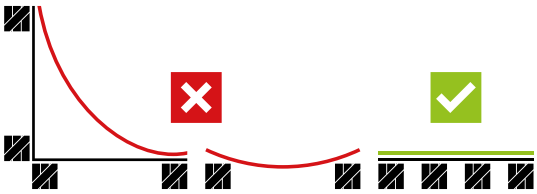
ZELLAMID® products alone do not pose a fire risk. However, some types are flammable, so please store them as regulated by law.

Keep the production code number for traceability

For traceability, certificates and further inquires, please keep the invoice and production code number.

Avoid bending

Store the stock material straight without bending in well supported flat racks, as this can deform the stock material permanently and recovering requires extensive effort. Handle **ZELLAMID®** materials only with suitable lifting jacks and supports. Please consider the safety rules of public authorities.



ZELLAMID® | NEW POSSIBILITIES

ZELLAMID® materials offer new solutions to satisfy your customers. Plastics offer many performance advantages in applications where materials like bronze, stainless steel, cast iron, brass, aluminum or ceramic have previously been used.

The advantages are easier handling, lower machining costs and excellent mechanical performance.

ZELLAMID® materials have a wide range of applications in several industries ranging from basic industries like construction equipment and food processing, through to high technology industries like medical, semiconductor and alternative energy. The benefits of cost, weight and machining savings keep the market growing rapidly.

Our high performance materials like **ZELLAMID® 1500 X** can be used at temperatures up to 260 °C.

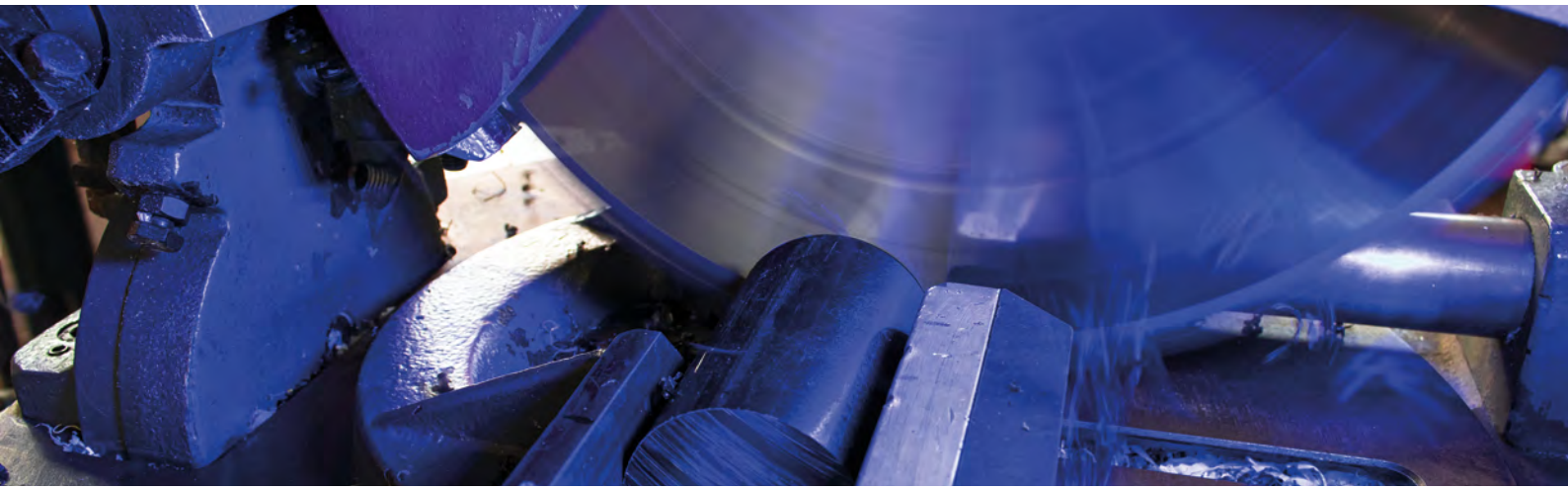
Metals vs. plastics

The most important point is cooling. Plastics are thermal insulating and have much lower heat transfer ability than metals.

The melting temperature is much lower than the one for metals. Thus, plastics are very sensitive to high temperatures which are generated during machining.

The thermal expansion is up to 20 times higher compared to metals. This difference is substantial when using clamping devices and considering machining forces.

ZELLAMID® | ADVICE FOR MACHINING



Plastics and Metals must be machined differently. In comparison to metals one needs to put attention to following:

- Plastics in general do not conduct heat very well. Therefore, one needs to prevent heat buildup and hot-spots at the contact surface of plastic-material and cutting-material. Heat is normally deduced via the tools. In order to prevent excessive heat, the application of coolants is helpful.
- The thermal resistance of plastics compared to metals is far lower. One needs to pay utmost attention not to exceed the glass transition temperature as this will lead to dimensional instability, inferior surface quality and maybe even crack the part to be machined.

Tools must be sharp and well ground

Set form feed as high as possible for low development of heat

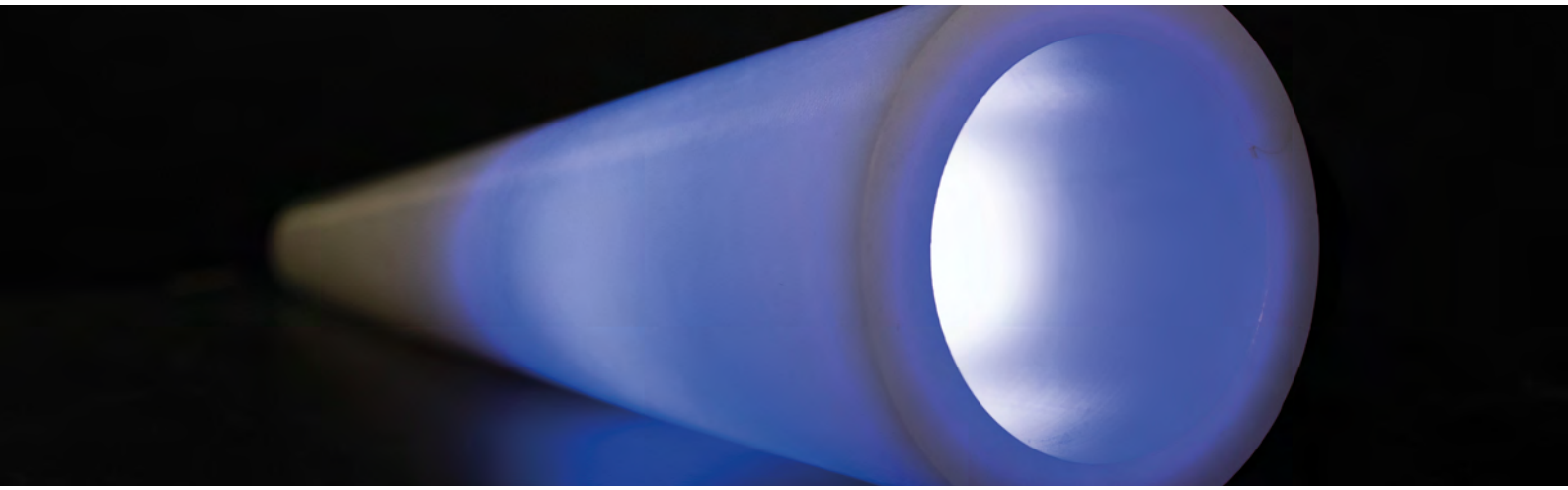
Use sufficient coolant (or compressed air) in order to avoid heat

The tool‘s relief angle should be large enough to keep the chips short

Remove the chips to prevent queue or jamming

Store the stock shape in a machining environment for at least 24 hours before machining

ZELLAMID® | POST-TREATMENT



Accuracy

Even after annealing processes of our **ZELLAMID®** stock shapes at our production site, internal tension can be created by incorrect machining. Try to use raw material with similar dimensions to the desired finished part. To achieve tighter tolerances increase the number of machining steps and implement intermediate annealing.

Conditioning

ZELLAMID® 202, **250** and **1100** have a higher moisture absorption rate than other **ZELLAMID®** materials, they should be conditioned in a warm water bath before machining. The water temperature should be 80 °C and the duration recommended is 1 day per cm of wall thickness. The impact strength can be improved for the application.

Annealing

Annealing is a temperature treatment of plastic to relieve internal stress. The surrounding temperature should be slowly and continuously increased and decreased. This process should not be accelerated as changing the temperature too fast can thermally shock the material, actually increasing the internal stress and reducing dimensional stability of the finished part. The warming and cooling rate should be between 10 °C and 20 °C per hour. The holding temperatures for the different materials are listed below. The holding time should be approx 6 minutes per mm of wall thickness.

ZELLAMID® Description	°C
202 (PA 6) | 900 (POM-C) 1100 (PA 6 C)	150 - 160 °C
250 (PA 6.6) | 1400 (PET) 1400 PBT	170 - 180 °C
1500 X (PEEK)	220 - 240 °C

ZELLAMID® | REINFORCED ZELLAMID

Reinforced **ZELLAMID®**-products have glass, carbon fibres or ceramic fillers integrated in the polymer matrix. This allows strength, temperature resistance increases and other product properties are improved. During processing, especially the changed mechanical properties are difficult to handle..

The most important advice for machining are the following:

- Deploy intensive cooling (external & internal)
- Avoid heat by increasing the feed rate
- Check the sharpness of the tools regularly
- Use diamond equipped or special coated tools
- Preheating

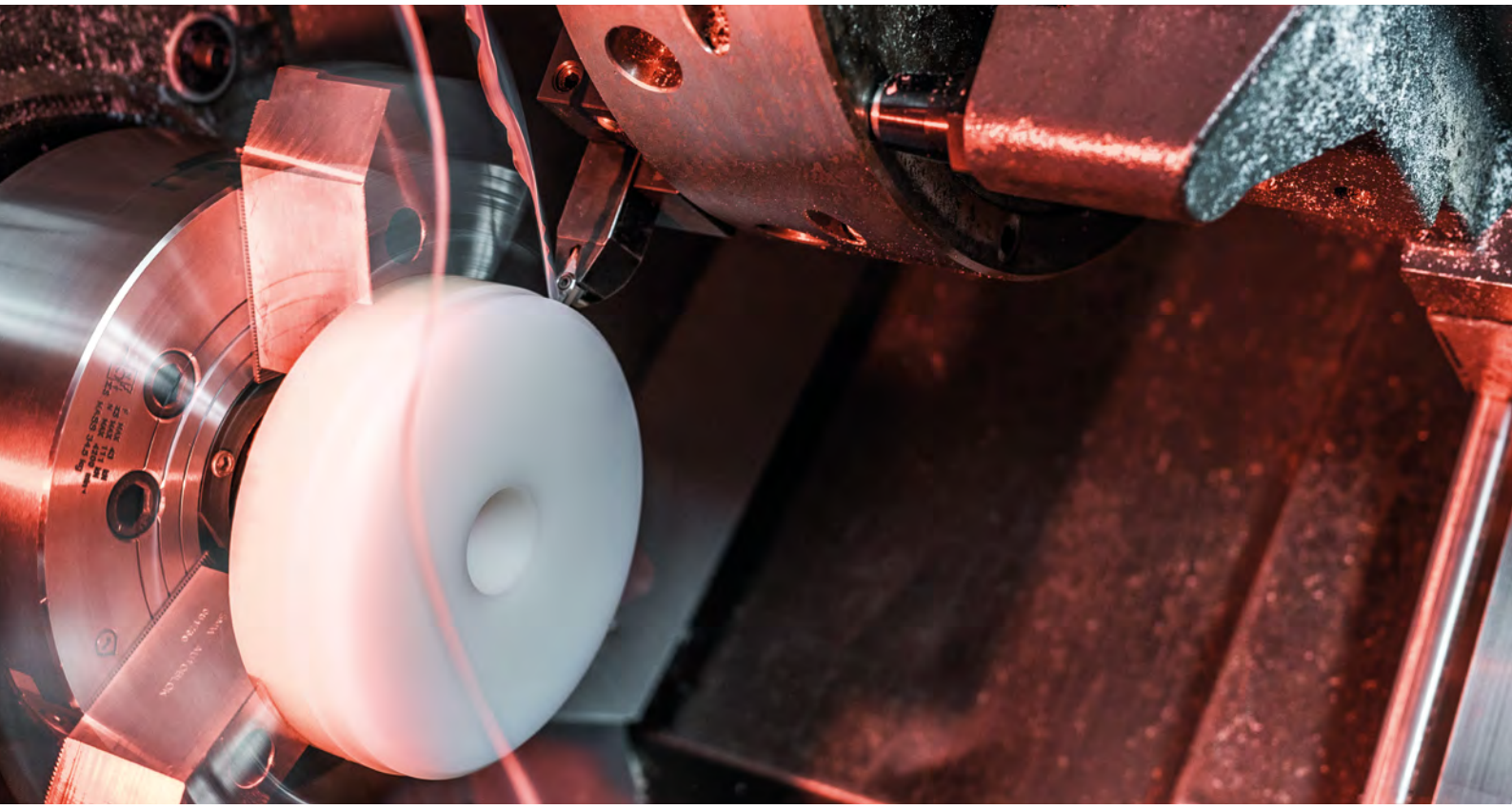
Preheating

Reinforced **ZELLAMID®** products like **250 GF30**, **1500 XT**, **1500 XGF30**, **1500 XCA30**, **1500 XC20**, **1000 GF30**, **1900 GF40** and unreinforced products like **1400** and **1400 BPT** should be pre heated before sawing or drilling (rods from 80 mm and plates from 50 mm thickness). The temperature should be between 90 and 120 °C with a heating and cooling rate of approximately 10 °C per hour. All other materials should have room temperature before machining.

Diamond tipped tools

Reinforced products should be machined with diamond equipped tools, which are expensive, but perform excellently in the endurance of sharp edges.

ZELLAMID® | MACHINING INSTRUCTIONS



1 Machines and Tools

Engineering plastic stock shapes can be easily machined on metalworking and woodworking machines with HSS (high speed steel) or hard metal tools.

By machining with circular saws it is recommended to use hard metal saw blades. Only use properly sharpened tools.

It is possible to use hard metal tools for machining glass fibre reinforced materials but due to the high wear rates it is difficult to reach good economically results, therefore diamond coated tools are recommended which are more expensive but however offers longer life span.

2 Machining and clamping the component

Compared to metals, plastic materials show a lower thermal conductivity and modulus of elasticity.

Improper machining leads to heating of the work piece followed by dilation. High clamping pressure and blunt tools create deformations of the work piece during machining.

In order to achieve a satisfying machining result, some material specific guidelines must be kept:

- Cutting speed should be as high as possible.
- An ideal chip removal must be assured to prevent wrapping of the swarf around the tool or work piece.
- Tools must be kept sharp. Blunt tools lead to heating which causes distortion and dilation.
- Too high clamping pressure leads to deformation of the work piece and imprints of clamping tool.
- As engineering plastics are not as rigid as metallic materials it is essential to secure the work piece adequately and to ensure a uniform support.
- If necessary, materials with high water absorption (e.g. polyamide) should be conditioned before machining.
- Machining tolerances for engineering plastic parts are wider than for metal parts.

3 Cooling during machining

Generally, coolants are not necessary for machining thermoplastic materials.

When coolants are required, compressed air is recommended. Compressed air has an additional benefit of chip removal from the working area, preventing interference with cutting tools and the workpiece.

Usual drilling emulsions can also be used; they are particularly recommended when drilling deep holes and long threads.

Furthermore it is possible to achieve higher feed rates which leads to a reduction in machining time.

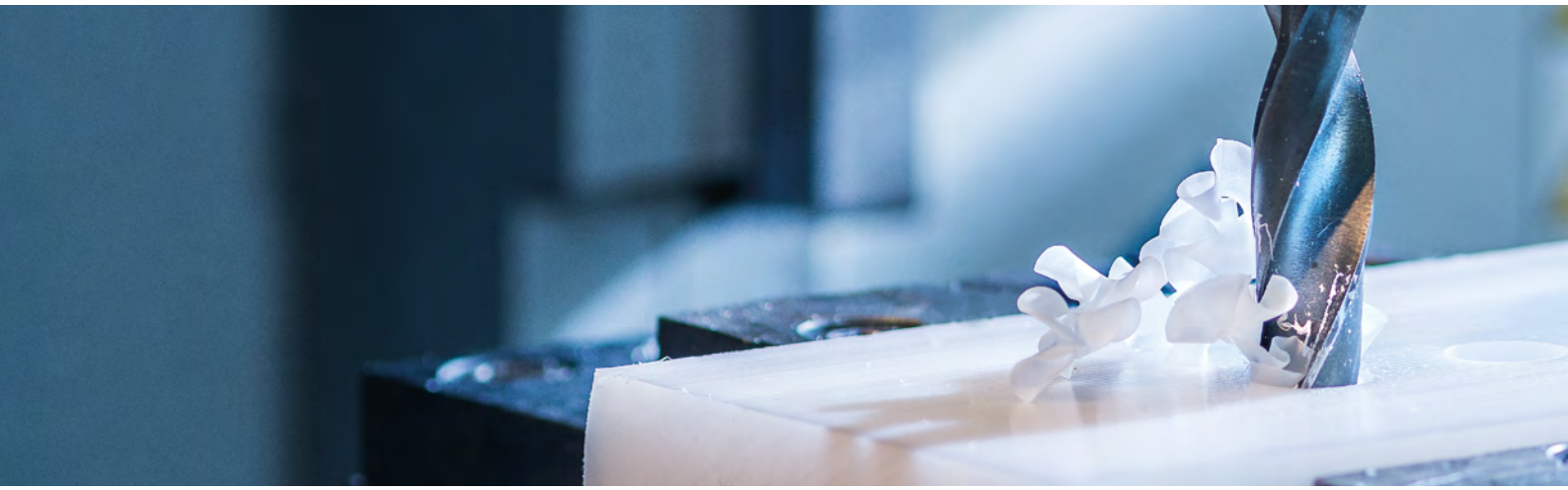
If drilling emulsions are used, consideration must be given to subsequent cleaning operations to prevent contamination of any additional process such as splicing or varnishing.

4 Characteristic data for different machining operations

More about machining-instructions:

 Drilling Page 80-81
 Turning Page 82-83
 Sawing Page 84-85
 Milling Page 86-87

ZELLAMID® | DRILLING



Drilling
Turning
Sawing
Milling

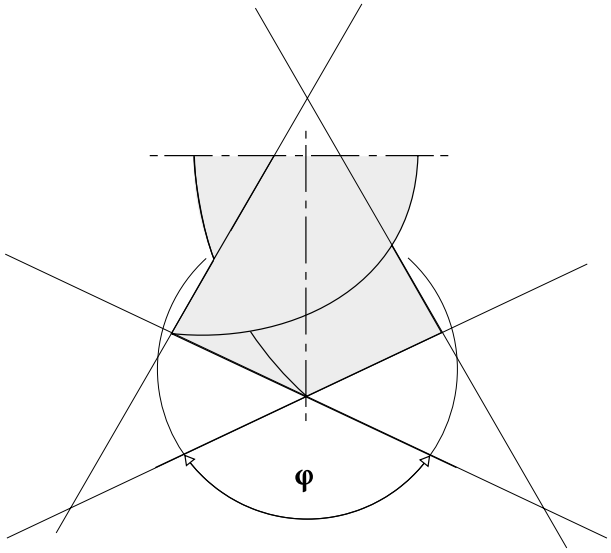
Usual HSS sharpened tools can be used for drilling.Take care of chip removal when drilling particularly deep holes to prevent excessive temperatures, frequent removal of the drill may also be necessary.

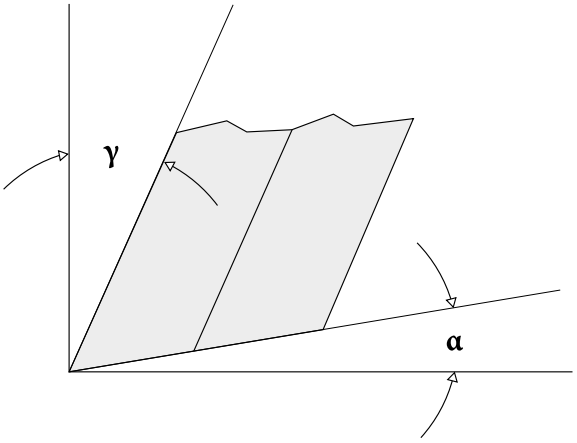
For drilling holes in thin-walled workpieces, it is advisable to choose a high drilling speed and, if applicable, a neutral (0°) effective cutting angle. This prevents the drill from sticking in the workpiece and hinders the associated stripping of the hole or the workpiece being drawn up by the drill.

Furthermore the drill has to be cooled to ensure an acceptable chip removal otherwise the plastic heats up to melting point and the materials low thermal conductivity prevents heat dissipation which leads to extreme material expansion in the centre. As the outer wall remains cold a huge area of stress is generated. Notch effect of the tool may lead to material failure (cracking) if above-mentioned rules are not observed. This effect may also appear with high impact strength materials. As reinforced plastic materials have higher machining residual stress paired with lower impact strength than unreinforced plastic materials they are especially crack sensitive. These materials should be heated up to 120°C prior drilling. (Heating time ca. 1 hour per 10 mm thickness). Also with ZELLAMID® 250 GF30 (PA 6.6 + 30% Glass fibre) as well as ZELLAMID® 1400 and 1400 T (PET and PET+ solid lubricant), this procedure is recommended.

When drilling especially high-crystalline materials such as ZELLAMID®, high temperatures build up on the cutting edges, which cannot be adequately dissipated because of the good insulation properties of the plastics. The heat causes an internal expansion in the material, which causes compressive stress in the inside of the rod section.

This stress can be so high that the rod tears and splits and can be avoided to a great extent if the material is machined correctly. It is advisable to predrill the hole and complete it with a right side tool. The pre-drilled holes should not exceed 35 mm in diameter. Drilled holes in long sections of rod must only be made from one side, as otherwise an unfavourable stress relationship is created when the drilled holes





meet in the middle of the rod. That supports the rod section cracking.

Λ In extreme cases it may be necessary to heat the blank to approx. 50-120 °C and pre-drill it in this condition.

The hole can then be completed when the rod has cooled down and when an even temperature has set in throughout the blank. Finishing can take place after complete cooling and achieving a uniform temperature level inside the stock shape.

ZELLAMID® Description	α	γ	φ	V	S
202 (PA 6) | 202 MO (PA 6 + MoS_2) | 1100 (PA 6 C)	5 - 15	5 - 20	90	50 - 150	0,1 - 0,3
250 (PA 6.6)	5 - 15	10 - 20	90	50 - 150	0,1 - 0,3
900 (POM-C) | 900 H (POM-H) | 900 XU ELS (POM-C conductive) | 900 AS (POM-C antistatic)	5 - 10	15 - 30	90	50 - 200	0,1 - 0,3
1400 (PET) | 1400 PBT i	5 - 10	10 - 20	90	50 - 100	0,2 - 0,3
1500 X (PEEK)	5 - 10	10 - 30	90 - 120	70 - 200	0,1 - 0,3
1000 (PEI)	5 - 10	10 - 20	90	20 - 80	0,1 - 0,3
1900 (PPS) i	5 - 10	10 - 30	90	50 - 200	0,1 - 0,3
2100 (PPSU)	3 - 10	10 - 20	90	20 - 80	0,1 - 0,3
Filled/Reinforced ZELLAMID® products i	5 - 10	5 - 10	90	80 - 100	0,1 - 0,3

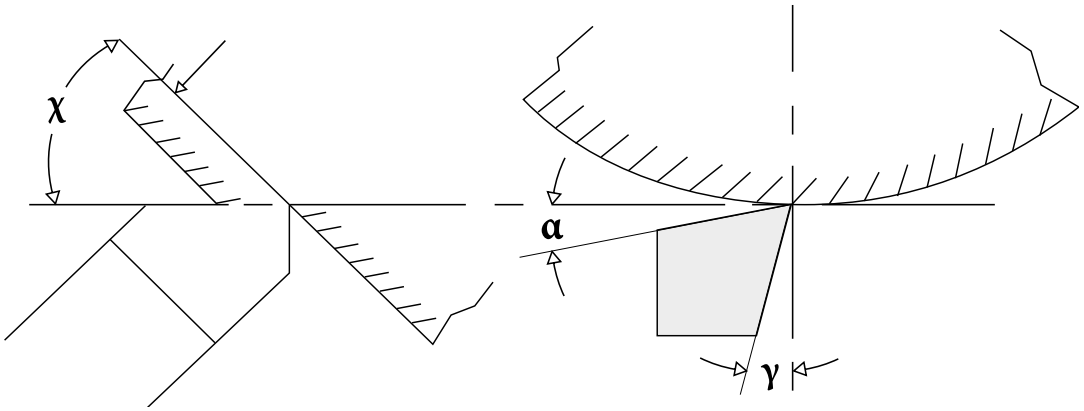
α side relief angle (°) | **γ** rake angle (°) | **φ** Top angle (°) | **V** cutting speed (m/min) | **S** feed (mm/rev) | Spin angle should be between ca. 12 and 16°

i Reinforced ZELLAMID® grades as 250 GF30, 1500 T, 1500 GF30, 1000 GF30, 1900 GF40 and filled grades 1400, 1400 H and 1900 should be pre heated before sawing or drilling a centre hole for rod dia 80 mm or larger and plate thickness of 50 mm or more. A preheat temperature of 100 °C to 120 °C is recommended with a smooth temperature increase and decrease at a rate of 10 °C per hour. Use only sharpened tools with low feed. All other materials should be heated equally to room temperature before machining! For sawing, we recommend using blades with rakers. Our application technology consultation in word and writing is to support your own work. It is considered as noncommittal recommendation, also in the reference to any patent rights third. We do not assume liability for possible damage, which occur during processing. Changes, which serve the technical progress, we reserve ourselves.

ZELLAMID® | TURNING

Drilling
Turning
Sawing
Milling

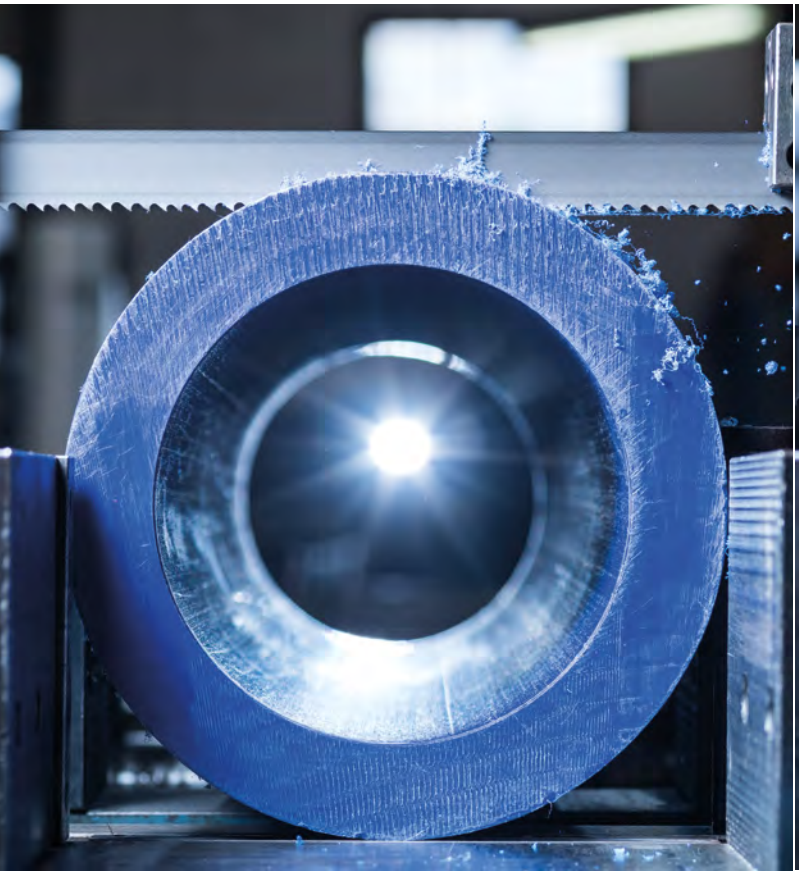
Turning most thermoplastic plastics produces a continuous chip stream. An ideal chip removal must be assured to prevent wrapping or clamping of the chip around the tool or work piece.
Due to the fact that plastics show lower rigidity, long turning pieces can sag and therefore the usage of a steady rest is advisable.

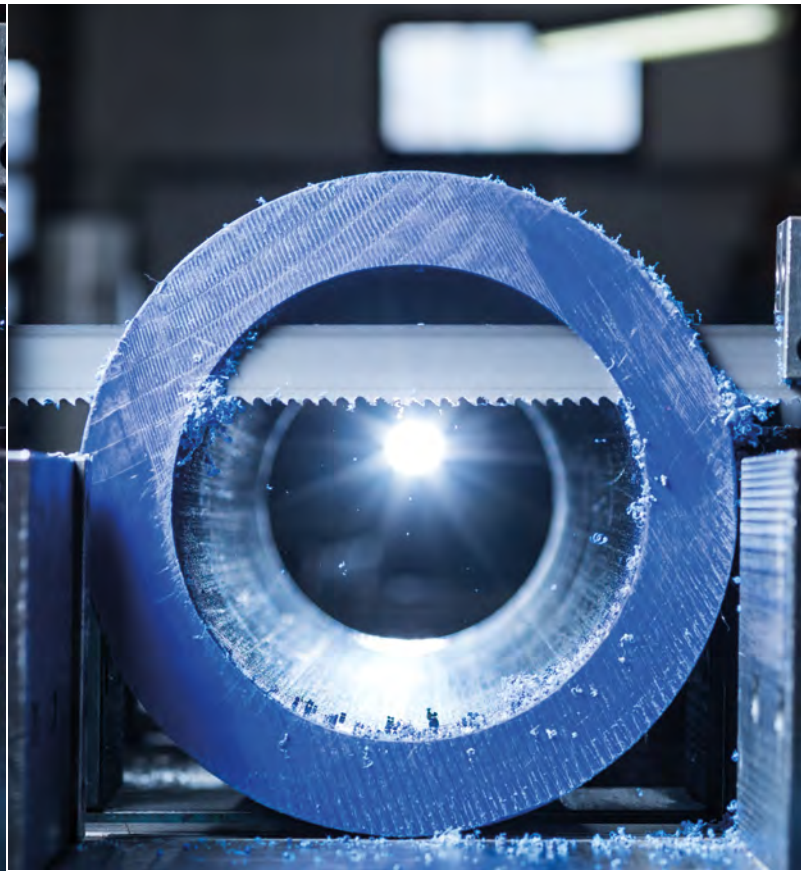


ZELLAMID® Description	**α**	**γ**	**χ**	**V**	**S**
202 (PA 6) | 202 MO (PA 6 + MoS_2) | 1100 (PA 6 C)	6 - 10	0 - 5	45 - 60	250 - 150	0,1 - 0,5
250 (PA 6.6)	6 - 10	0 - 5	45 - 60	200 - 500	0,1 - 0,5
900 (POM-C) | 900 H (POM-H) | 900 XU ELS (POM-C conductive) | 900 AS (POM-C antistatic)	6 - 8	0 - 5	45 - 60	300 - 600	0,1 - 0,4
1400 (PET), 1400 PBT	5 - 15	0 - 5	45 - 60	300 - 400	0,2 - 0,4
1500 X (PEEK)	6 - 8	0 - 5	45 - 60	250 - 500	0,1 - 0,4
1000 (PEI)	6	0	45 - 60	350 - 400	0,1 - 0,3
1900 (PPS)	6 - 8	0 - 5	45 - 60	250 - 500	0,1 - 0,5
2100 (PPSU)	6	0	45 - 60	350 - 400	0,1 - 0,3
Filled/Reinforced ZELLAMID® products	6 - 8	2 - 8	45 - 60	150 - 200	0,1 - 0,5

α side relief angle (°) | **γ** rake angle (°) | **χ** Top angle (°) | **V** cutting speed (m/min) | **S** feed (mm/rev) | Spin angle should be between ca. 12 and 16°

ZELLAMID® | SAWING





Drilling
Turning
Sawing
Milling

Engineering plastics can be cut either with band saws or circular saws.

The choice depends on the shape of semi-finished part. Application of a band saw is especially recommended when cutting rods and tubes. Generated heat is dissipated by the saw blade.

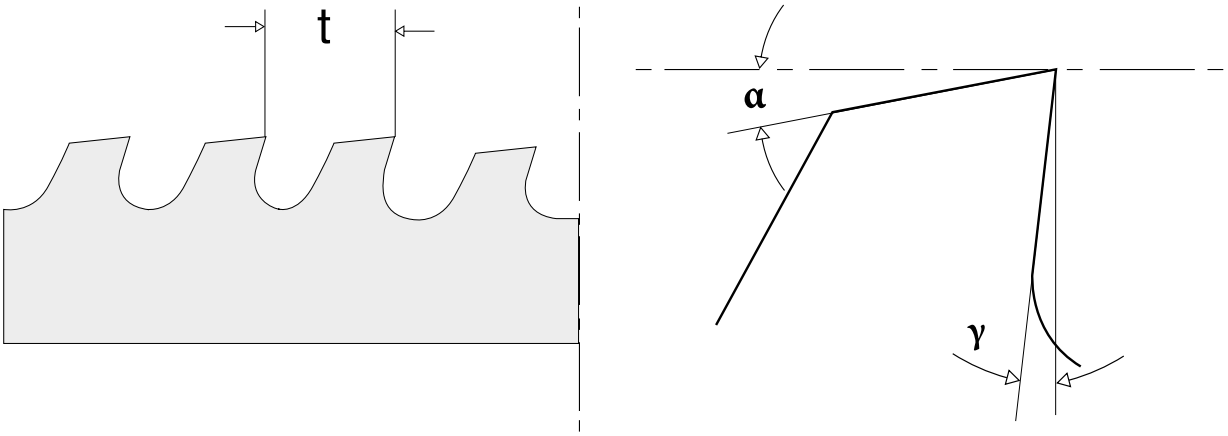
Take care of crosswise teeth setting to prevent clamping of the saw blade. Circular saws are generally used for cutting plates with straight cutting edges.

Λ Work with high feed rates to ensure a good chip removal and to prevent clamping of the saw blade or overheating of the plastic at the cutting edge.

Λ Usage of saw blades with side cutters and side scrapers is recommendable.

As reinforced plastic materials have higher machining residual stress paired with lower impact strength than un-reinforced plastic materials they are especially crack sensitive.

Λ Reinforced Materials should be heated up between 90 – 100 °C prior sawing. For cutting a band saw is recommended (tooth pitch about 4 – 6 mm), as standard circular saws usually leads to cracks.



ZELLAMID® Description	α	γ	V	t
202 (PA 6) | 202 MO (PA 6 + MoS_2) | 1100 (PA 6 C)	20 - 30	2 - 5	500	3 - 8
250 (PA 6.6)	20 - 30	2 - 5	500	3 - 8
900 (POM-C) | 900 H (POM-H) | 900 XU ELS (POM conductive) 900 AS (POM-C antistatic)	20 - 30	0 - 5	500 - 800	2 - 5
1400 (PET) | 1400 PBT [i]	15 - 30	5 - 8	300	2 - 8
1500 X (PEEK)	15 - 30	0 - 5	500 - 800	3 - 5
1000 (PEI)	15 - 30	0 - 4	500	2 - 5
1900 (PPS) [i]	15 - 30	0 - 5	500 - 800	3 - 5
2100 (PPSU)	15 - 30	0 - 4	500	2 - 5
Filled/Reinforced ZELLAMID® products [i]	15 - 30	10 - 15	80 - 100	3 - 5

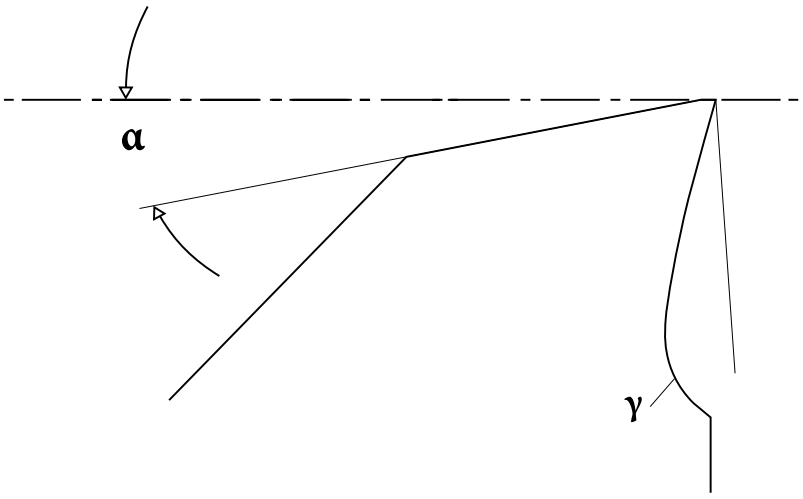
α side relief angle (°) | **γ** rake angle (°) | **V** cutting speed (m/min) | **t** pitch (mm)

[i] Reinforced ZELLAMID® grades as 250 GF30, 1500 T, 1500 GF30, 1000 GF30, 1900 GF40 and filled grades 1400, 1400 H and 1900 should be pre heated before sawing or drilling a centre hole for rod dia 80 mm or larger and plate thickness of 50 mm or more. A preheat temperature of 100 °C to 120 °C is recommended with a smooth temperature increase and decrease at a rate of 10 °C per hour. Use only sharpened tools with low feed. All other materials should be heated equally to room temperature before machining! For sawing, we recommend using blades with rakers. Our application technology consultation in word and writing is to support your own work. It is considered as noncommittal recommendation, also in the reference to any patent rights third. We do not assume liability for possible damage, which occur during processing. Changes, which serve the technical progress, we reserve ourselves.

ZELLAMID® | MILLING

Drilling
Turning
Sawing
Milling

High chipping performance paired with good surface quality and accuracy can be achieved with high cutting speed and moderate feed on usual mills.



ZELLAMID® Description	α	γ	V
202 (PA 6) | 202 MO (PA 6 + MoS_2) | 1100 (PA 6 C)	10 - 20	5 - 15	250 - 500
250 (PA 6.6)	10 - 20	5 - 15	250 - 500
900 (POM-C) | 900 H (POM-H) | 900 XU ELS (POM-C conductive) 900 AS (POM-C antistatic)	5 - 15	5 - 15	250 - 500
1400 (PET) | 1400 PBT	5 - 15	5 - 15	250 - 400
1500 X (PEEK)	5 - 15	6 - 10	180 - 450
1000 (PEI)	2 - 10	1 - 5	250 - 500
1900 (PPS)	5 - 15	6 - 10	250 - 500
2100 (PPSU)	2 - 10	1 - 5	250 - 500
Filled/Reinforced ZELLAMID® products	15 - 30	6 - 10	80 - 100

α side relief angle (°) | **γ** Rake angle (°) | **V** cutting speed (m/min) | Feed rate can be set up to 0,5mm/tooth

ZELLAMID® | NOTES AND SPECIFICATIONS


Plan 5X
∞/0
JAPAN
0.75


8254
10kN

ZELLAMID® | LEGAL NOTES AND SPECIFICATIONS

Legal Notes

ZELLAMID® is an international registered trade name, which stands for quality and service. The information submitted in this publication is offered as a possible helpful suggestion in experimentation for those to whom we supply our ZELLAMID® products.

Since practical operating conditions do not always correspond with testing methods, the information given in this leaflet can only be considered as an indication and not as a basis for calculations since allowances have to be made for field operating conditions. We accept no liability for the application, suitability, working or
other use of our products or the consequences resulting therefrom.

The data given in this brochure do not relieve distributors, processors, OEMs or end-users from the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose or application. Buyers and users of ZELLAMID® shall be obligated to inspect the quality and properties of the products; they accept full responsibility for the selection, use and working of the products and the use of information and the consequences therefrom.

It is the responsibility of those who use ZELLAMID® to ensure that any proprietary rights and existing laws and legislation are observed.

Printing and typographical errors reserved.

Specifications

Worldwide specifications of plastic materials are used either to assure the quality of stock shapes purchased or to protect the safety of the public. These specifications are issued by governments, private institutions or technical societies.

The most common are the US-specs, DIN and JIS. Being the supplier to the world market ZELLAMID® semi-finished plastic products meet or exceed the commonly set standards.

Our semi-finished products meet or exceed:

- ASTM D-6778
- ASTM D-5989
- ASTM D-6100
- ASTM D-6261
- ASTM D-6779
- EU 1935/2004
- DIN EN 15860

Industrial specifications from private firms can be met upon information. Specification sheets and product handling information sheets are available on request. Above information is given in good faith, but is subject to revision as additional experience and knowledge are gained, or because the list of particular regulations is also changing continuously.

It is therefore recommended, that you consult your ZELLAMID® specialist for the latest status.

For further information, please contact your local ZELLAMID® representative.


Hände
desinfizieren
nicht vergessen

ZELLAMID® | COMMITMENT TO QUALITY

Quality starts with the raw materials we use to make **ZELLAMID®** Stock-Shapes. We only purchase virgin pellets, powder, compounds, fillers and additives. We exclusively buy from global chemical corporations, even if the price for such high-quality resins is higher than from secondary suppliers. Our incoming quality control checks the water content of our feedstock, the melt-index MFR DIN EN ISO 1133-A, differential scanning calorimetry (DSC) and rheological analyses with torsional thermometers. Since many years our claim rate is below 0,09 %. In order to maintain and further improve these high levels of customer satisfaction our Quality Management continuously tests our stock-shapes with state-of-the-art equipment and standardized methods.

Our commitment to quality include test processes that we regularly conduct ourselves:

- Ultrasonic Inspection DIN EN 15860
- Determination of Density DIN EN ISO 1183
- Hardness Shore-D ISO 868
- Microcrack Hardness DIN 53799-4.15
- Tensile Testing DIN EN ISO 527-2
- Flexural Testing DIN EN ISO 178
- Impact Bending Test DIN 53453
- Impact Testing on specimen with a Punched Hole or Double-V-notched DIN 53753
- Charpy-Impact Test DIN EN ISO 179
- Instrumented Impact Penetration Test DIN EN ISO 6603-2
- Roughness Test DIN 4777
- Abrasion Resistance analysis according to the friction gear method DIN 53754
- Chemical Resistance DIN 68861-1
- Surface resistance to chemicals according to various standards
- Resistance to Stress Cracking based on environmental influences DIN EN ISO 4599
- Heat Distortion Temperature HDT DIN EN ISO 75-1
- VICAT-Softening Temperature DIN EN ISO 306
- Thermal Ageing Studies according to various standards
- Ageing with Accelerated Weathering Tests, under Xenon-light and field tests
- Alternating Temperature Tests according to various methods
- Microscopic inspection of materials in 2D and 3D with up to thousand-fold magnification

All other tests we outsource to renowned Universities and scientific institutions. The outcome of such testing is intricate part of our Quality Management System. The results are documented and recorded to ensure our clients that all **ZELLAMID®** products are made to specification. Should the users of our stock-shapes require out of routine testing or certifications we can close such Customer Quality-Agreements.

ZELLAMID® Stock-Shapes are manufactured in Austria, Italy and USA. Our focus lies since ages on Quality. As quality has its price we deliberately do not compete against low-priced, cheap quality.

ZELLAMID® | PRODUCT FINDER

As a special service for our customers **Zell Materials Engineering Plastics** provides a new product finder.

The **ZELLAMID® Product Finder for semi-finished goods** shows you the **ZELLAMID®** material that matches your application with just a few clicks.

As a result you will get the best material solution for your application. The properties can be shown in figures, graphs or on datasheets which are simple to understand.

Please register at:
ZELLAMID.com/en/pim/finder

Your benefits:

- 24-hours availability of actual data sheets
- print the data sheets
- compare all **ZELLAMID®** materials
- get automatic updated material data sheets
- find the right **ZELLAMID®** product quickly

How to use the Product Finder:

1 Login on ZELLAMID.com

Login with your user account under **ZELLAMID.com**.

2 Selection of requirements

Select your desired requirement with the drop down menu.

3 Compare all materials

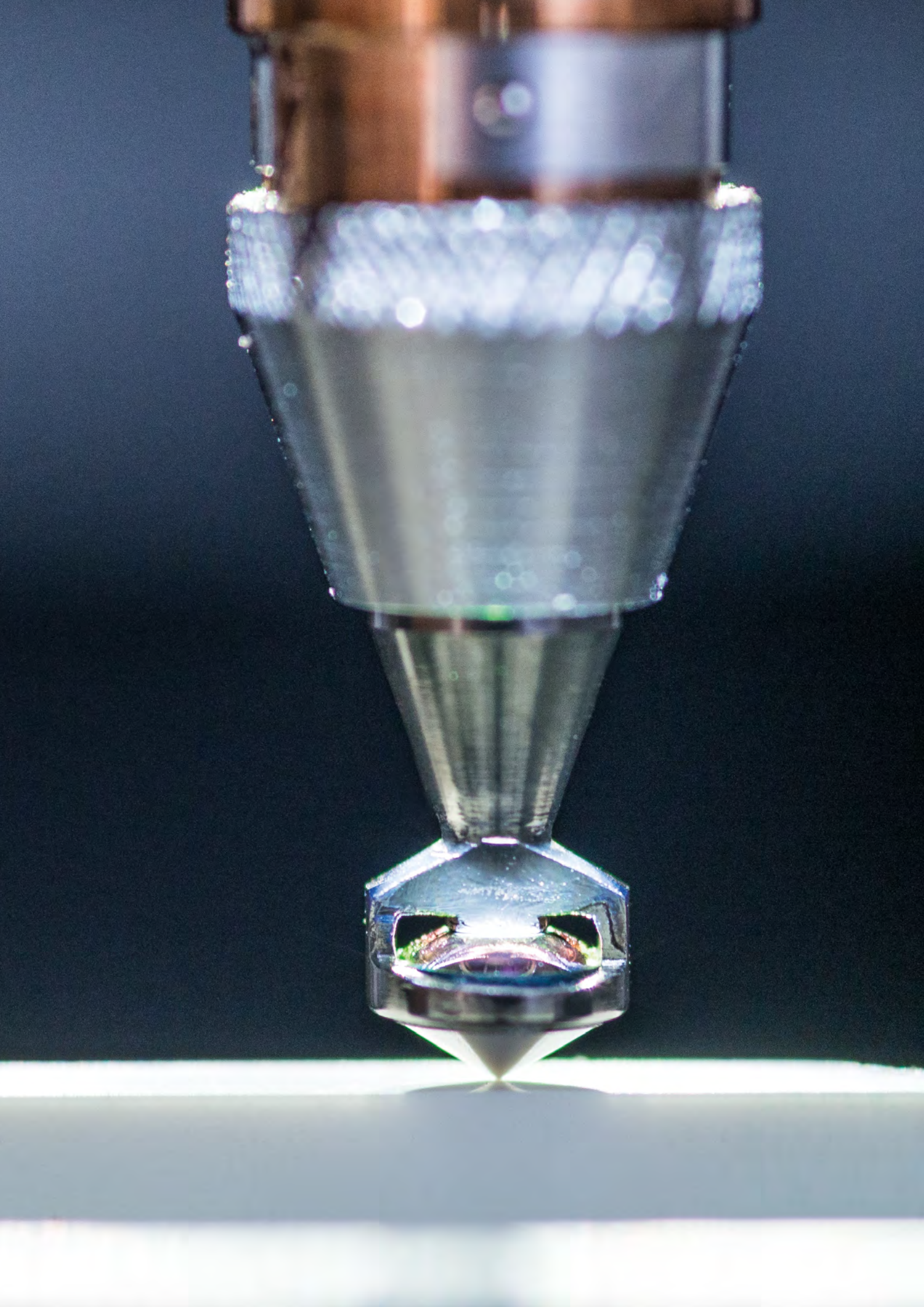
After you have defined your criteria, the materials can be compared.

4 Visualization of the results

The properties can be shown in figures, graphs or on datasheets.


ZELLAMID.com


ZELLAMID.com



ZELLAMID® | NOTES

klepsch group - the plastic power network

ZELL MATERIALS ENGINEERING PLASTICS · ZELL PARTS by KLEPSCH · ZL engineering plastics · SENOPLAST · senosan · seletec · senco Research and Development GmbH & Co.KG · seno SPEZIALMASCHINEN Sondermaschinen- und Stahlbau · senova

ZELL MATERIALS
ENGINEERING PLASTICS

Download our **GENERAL CATALOGUE**
from the Infocenter on our website:
www.ZELLAMID.com/en/infocenter/downloads

ZELL MATERIALS GMBH
Engineering Plastics

Schulstrasse 16
5710 Kaprun, Austria

T +43 6547 8417
F +43 6547 8890

office@zellamid.com
ZELLAMID.com