PLASTICS ENGINEERED BY GEHR®

DELIVERY PROGRAM
STOCK SHAPES

NOTES ON GEHR-DELIVERY PROGRAM

Stock item
(Product available from stock shipped from USA)

Custom extrusion on request
(Product can be produced on customer's request and based on minimum order quantity)

Stock FIL-A-GEHR™

Stock item Germany
(Product available from stock shipped from Mannheim/Germany)

All weights specified are based on average production weights. As a rule these are the invoiced weights, only High Performance Materials and welding rods will partially be invoiced by actual weight.

Following DIN norms are being used for semi-finished materials:

» Round Rods, Sheets, Hollow Bars: DIN EN 15860
» Welding Rods: according to DVS 2211

Tolerances which are not mentioned can be offered on request.

The current version of our General Terms and Conditions can be found on our website www.gehrplastics.com

We reserve the rights to make modifications and errors. Values are dependent on the diameters and can deviate.

GEHR makes no representations or warranties regarding the technical statements in this brochure. Desired capability characteristics are only binding if there is an explicit agreement when the contract is concluded.

CONTENT

PLASTICS ENGINEERED BY GEHR

GEHR, a family owned and operated company, has been ranking amongst the global leading producers of thermoplastic semi-finished products for over 80 years. Our headquarters is located in Mannheim, Germany, 50 miles south of Frankfurt. In 1982 GEHR Plastics Inc., our American subsidiary and production facility, was founded and is now located in Boothwyn, PA. In our branches all over the world, more than 250 employees produce and sell a wide range of extruded rods, sheets, tubes and profiles. Our independence, good partnership with our customers and absolute reliability are the basic pillars of our success.

Our semi-finished products are used in a great variety of products in the processing industry – e.g. mechanical engineering and apparatus engineering, chemical industry and aerospace industry. It goes without saying that we ensure compliance with the most restrictive norms for our products. The constant expansion of our portfolio is also of great importance to us. The latest example of this are the filaments for professional 3D printing sold under the brand name FIL-A-GEHR™.

QUALITY AND INNOVATION

Decades of experience enable us to meet the highest quality standards and to keep offering new solutions to our customers. In our labs, our engineers continually bring existing process technologies to perfection. They develop new materials and dimensions, e.g. from renewable raw materials or with special properties made to suit the individual requirements. Often this is done in close cooperation with universities and other highly-esteemed scientific institutes such as the Fraunhofer Institute. We are certified according to DIN EN ISO 9001 (quality management), DIN EN ISO 14001 (environmental management) and DIN EN ISO 13485 (Quality Management for the Medical Devices Industry).

GLOBAL PRESENCE

In addition to our headquarters in Mannheim, we produce and sell a comprehensive product range of thermoplastic materials at our plants in Germany and the USA, as well as our branches in Italy, India, China and Hong Kong. Our core competency lies in the production of sheets, tubes, profiles and round rods up to 27" (700 mm). Our warehouses are designed to carry large inventories. This provides us the ability to service and ship our products to customers anytime and anyplace.

TAILOR-MADE SERVICE

For us, service goes far beyond delivery reliability: our experts are available to find solutions for all kinds of complex application-related challenges. Quick and straightforward.

Also, we are offering Individual post-processing of sheets and rods to suit the corresponding application. Our services include:

» Offcuts of sheets and rods
» Planing (milling) of sheets
» Centerless grinding of rods

SUSTAINABILITY AND SOCIAL RESPONSIBILITY

Environmental protection and sustainability are of particular importance to us. Therefore, our product portfolio comprises ECO-GEHR™ semi-finished products which are based on renewable raw materials and have a positive carbon footprint.

We also take social responsibility very seriously. Our social responsibility activities include the support of institutions of higher education and of young academic talents. Sponsoring regional projects is of great importance to us. For us, global presence and local commitment are not mutually exclusive.

CRITICAL FOR SUCCESS – THE HUMAN FACTOR

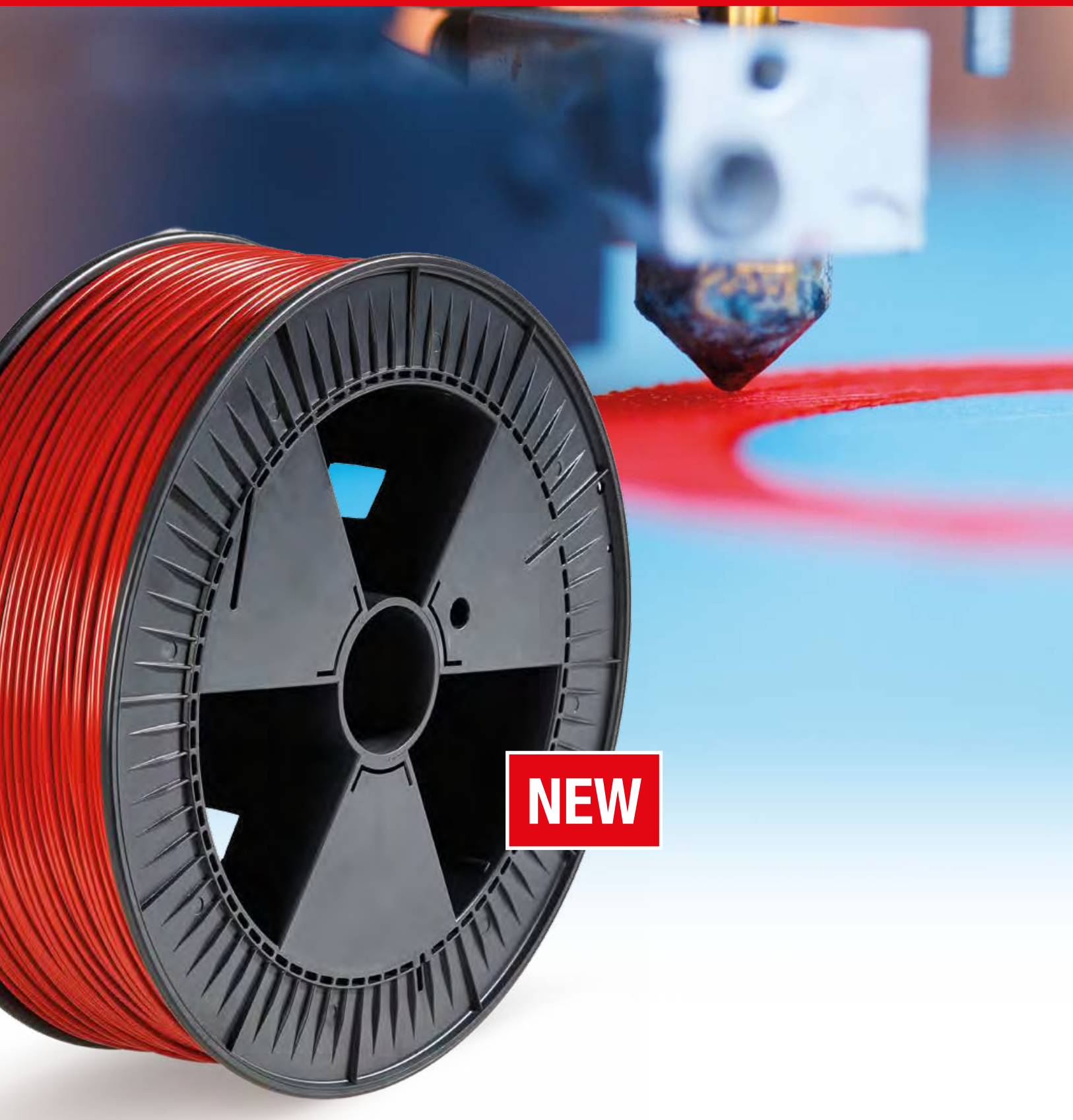
Our success and our innovative capacity can only be ensured with highly-qualified employees. Therefore we continually invest in their training and competence. We lay the foundation for an excellent future by offering seminars, further training courses and symposia in our training center. For us, an excellent future means continuing to meet our customers' requirements with 100 % passion and top product quality.

OUR CERTIFICATIONS

Quality Management

Environmental Management

Quality Management for the Medical Devices Industry



FIL-A-GEHR™

FIL-A-GEHR™ FILAMENTS

We have expanded our extruded plastic semi-finished products portfolio. As of now we offer plastic filaments for professional 3D printing under the brand name FIL-A-GEHR™. The low-emission and low-odor filaments are produced from high-quality raw materials with close tolerances (+/- 0,05 mm) and allow for a precise and failure-free 3D printing. FIL-A-GEHR™ filaments are compatible with all standard 3D printers and are delivered carefully spooled and packed in easy to use aluminium-laminated resealable zip bags.

Properties FIL-A-GEHR™

- Extremely close tolerances
- Filaments made of high-quality raw materials
- Low-emission and odor free
- Shrinkage-free
- Good layer adhesion
- Optimal flow behavior while printing
- Carefully spooled and packed in easy to use aluminium-laminated resealable zip bags

FIL-A-GEHR ABS™

FIL-A-GEHR ABS™ is a high-quality thermoplastic polymer with excellent mechanical properties. After-treatment or surface treatment can easily be applied to components made of FIL-A-GEHR ABS™. The components are specifically suitable for the production of small or mid-sized objects, functional prototypes or parts and thermostable items.

Properties FIL-A-GEHR ABS™

- Low-emission and low-odor
- Compliant to European Toy Safety Norm EN71-3
- Raw material ABS has food contact and medical approval
- High stability and impact strength
- Heat resistant up to approx. 212 °F (100 °C)
- Easy after-treatment or surface treatment

Applications FIL-A-GEHR ABS™

- Small and medium-sized objects
- Functional prototypes
- Thermostable parts e.g. model making

FIL-A-GEHR PLA™

FIL-A-GEHR PLA™ is made by NatureWorks and consists of high-quality Ingeo™ biopolymer. It stands out for its great dimensional stability, its high level of stiffness as well as its high elastic modulus. Long-term tests have shown that embrittlement on the coil does not occur. Reduced energy consumption and low nozzle temperatures while printing are other advantageous properties of this material. Furthermore, it can be printed without a heated bed. Recommended by NatureWorks | ingeo™

Properties FIL-A-GEHR PLA™

- High dimensional stability
- Very good layer adhesion
- No embrittlement on the spool (Long term flexural test)
- Raw material PLA has food contact and toy safety approval
- High stiff ness/high modulus of elasticity (3.380 MPa)

Applications FIL-A-GEHR PLA™

- Very large products
- Dimensionally stable products e.g. molds for cast-bronze
- High precision temporary parts

FIL-A-GEHR PC-ABS™

combines the properties of two exceptional FDM thermoplastics: the high impact strength and heat deflection temperature of PC with the high toughness at low temperatures and the good processability of ABS. Filagehr PC-ABS™ has excellent electrical insulating properties (specific surface resistivity > 10^{15} Ohm) and is suitable for techniques such as painting or adhesive bonding.

Properties FIL-A-GEHR PC-ABS™

- Optimized flow behavior
- Heat deflection temperature between 230 °F (110 °C) and 275 °F (135 °C).
- High notch impact strength values over wide temperature range
- High dimensional stability
- Low susceptibility to warping

Applications FIL-A-GEHR PC-ABS™

- Housing components
- Power tools prototypes
- Automotive industry
- Connectors and switches

FILAMENTS

∅		Tolerances mm		FIL-A-GEHR ABS™	
mm	inch	min.	max.	1-kg-Spool/2.2-lbs-Spool	2,3-kg-Spool/5.0-lbs-Spool
1,75	0.07"	0,05	0,05	● ● ● ○ ●	● ● ● ○ ●
2,85	0.11"	0,05	0,05	● ● ● ○ ●	● ● ● ○ ●

∅		Tolerances mm		FIL-A-GEHR PLA™	
mm	inch	min.	max.	1-kg-Spool/2.2-lbs-Spool	2,3-kg-Spool/5.0-lbs-Spool
1,75	0.07"	0,05	0,05	● ● ● ○ ● ●	● ● ● ○ ● ●
2,85	0.11"	0,05	0,05	● ● ● ○ ● ●	● ● ● ○ ● ●

∅		Tolerances mm		FIL-A-GEHR PC-ABS™	
mm	inch	min.	max.	1-kg-Spool/2.2-lbs-Spool	2,3-kg-Spooll/5.0-lbs-Spool
1,75	0.07"	0,05	0,05	●	●
2,85	0.11"	0,05	0,05	●	●

Stock Fil-A-GEHR™

Colors: ● black (~RAL 9005) ● blue (~RAL 5015) ● red (~RAL 3000) ○ white (~RAL 9010) ● yellow (~RAL 1037) ● green transparent

FIL-A-GEHR PPA™

FIL-A-GEHR PPA™ is a particularly stiff and hard material. Thanks to its high levels of stability and hardness and its high continuous operating temperature, the material is mainly used as metal replacement, e.g. in the engine compartment. The stiff material is particularly suited for 3D printing; different from carbon fibre filled materials, the print nozzles do not wear. Material distortion is minimal in 3D printing.

Properties FIL-A-GEHR PPA™

- High stiffness, modulus of elasticity (3000 MPa)
- Very high stability (Tensile Stress at Yield 100 MPa)
- Very good layer adhesion
- High hardness level
- Low warpage
- Heat resistance up to approx. 221 °F (105 °C)

Applications FIL-A-GEHR PPA™

- Replacement for metal and carbon fiber filled PLA
- Components in the engine compartment
- Fittings for water pipes / water meter housings

FIL-A-GEHR PA 12™

Compared to other polyamides, FIL-A-GEHR PA 12™ has a low moisture absorption which is beneficial for failure-free 3D printing. The excellent chemical resistance, in particular against fuels and antifreeze agents, in combination with the high impact strength of the material, justifies the material's application e.g. in fuel or coolant pipes in the automotive industry. Its very low susceptibility to distortion combined with very good layer adhesion and low processing temperature makes FIL-A-GEHR PA 12™ the ideal material for 3D printing.

Properties FIL-A-GEHR PA 12™

- Excellent chemical resistance, in particular against fuels and antifreeze agents
- Low moisture absorption / high degree of dimensional stability
- High stability
- Low wear / excellent sliding friction
- High impact strength
- High continuous operating temperature of 185 °F (85 °C)
- Low susceptibility to distortion

Applications FIL-A-GEHR PA 12™

- Cooling water systems
- Fuel pipes

FIL-A-GEHR PEEK™

Polyetheretherketone ranks among the high performance thermoplastics thanks to its high melting point of 649 °F (343 °C) and its maximum continuous operating temperature of 500 °F (260 °C). Its particular chemical structure makes PEEK largely stable against thermal and chemical damage and permits its usage inside the body. In case of fire, the smoke development of PEEK is the lowest of all thermoplastics; the material is therefore used in aviation. FIL-A-GEHR PEEK™ is an experimental filament with a processing temperature of 707 °F (375 °C) in the heated chamber 202 °F (180 °C). The material is specifically apt for use on 3D printers.

Properties FIL-A-GEHR PEEK™

- High stiffness, elastic modulus 3830 MPa
- Resistance against many chemicals
- Maximum continuous operating temperature 500 °F (260 °C)
- Print temperature 707 °F (375 °C)
- Chamber temperature 202 °F (180 °C)

Applications FIL-A-GEHR PEEK™

- Inside the body
- Aviation

For more information visit www.filagehr.de

FILAMENTS

∅		FIL-A-GEHR PPA™
mm	inch	1-kg-Spool / 2.2-lbs-Spool
1,75	0.07"	⊙
2,85	0.11"	⊙

∅		FIL-A-GEHR PA 12™
mm	inch	1-kg-Spool / 2.2-lbs-Spool
1,75	0.07"	⊙
2,85	0.11"	⊙

∅		FIL-A-GEHR PEEK™
mm	inch	1-kg-Spool / 2.2-lbs-Spool
1,75	0.07"	⊙
2,85	0.11"	⊙

Stock Fil-A-GEHR™

Colors: ⊙ natural

PEEK

GEHR PEEK™

Polyetheretherketone can be used at very high temperatures (about +500 °F) and exhibits extraordinary mechanical strength, toughness, hardness, flexural strength, torsional strength. PEEK exhibits excellent chemical resistance, very good dielectric properties up to +500 °F and a very good resistance to all kinds of radiation (even ultraviolet rays only lead to a slight yellow discoloration). PEEK is self-extinguishing properties according to UL 94.

GEHR PEEK-MOD™

Reinforced with 10 % of each PTFE, graphite and carbonfiber. The very good friction, wear and tear properties makes this material the good choice for many applications with friction.

GEHR PEEK-30GF™

Reinforced with 30 % glass fiber.

Properties GEHR PEEK™

» Very high mechanical strength
» Very high rigidity (also at low temperature)
» Very high thermal stability
» Very high creep resistance
» Very high dimensional stability
» Very high radiation resistance
» Very high hydrolysis resistance
» Relatively low notch impact strength
» Low resistance to acetone

Applications GEHR PEEK™

» Bearing shells
» Piston rings
» Valve seats
» Gears
» Seals
» Aviation
» Cog wheels
» Pump vanes
» Fittings
» Plug connectors for chromatography
» Wafer carriers
» Semiconductor industry

ROUND RODS

Stock Lengths

∅ 5⁄16"–3" = 8 ft
∅ 3"–4¼" = 4 ft
∅ 8–100 mm = 1 | 2 | 3 m
∅ 150–200 mm = 1 m

∅	Tolerances of thickness inch		GEHR PEEK™
inch	min.	max.	lbs/ft
5⁄16	+ 0.002	+ 0.002	0.043
3⁄8	+ 0.002	+ 0.002	**0.062** ⊙
7⁄16	+ 0.002	+ 0.002	0.085
½	+ 0.002	+ 0.002	**0.111** ⊙
9⁄16	+ 0.002	+ 0.002	0.140
5⁄8	+ 0.002	+ 0.002	**0.173** ⊙
¾	+ 0.002	+ 0.002	**0.249** ⊙
⅞	+ 0.002	+ 0.002	**0.339** ⊙
1	+ 0.002	+ 0.002	**0.443** ⊙
1⅛	+ 0.002	+ 0.002	0.560
1¼	+ 0.005	+ 0.005	**0.692** ⊙
1⅜	+ 0.005	+ 0.005	0.837
1½	+ 0.005	+ 0.005	**0.996** ⊙
1⅝	+ 0.005	+ 0.005	1.170
1¾	+ 0.005	+ 0.005	**1.360** ⊙
1⅞	+ 0.005	+ 0.005	1.560
2	+ 0.005	+ 0.005	**1.770** ⊙
2⅛	+ 0.005	+ 0.005	2.000
2¼	+ 0.005	+ 0.005	**2.240** ⊙
2⅜	+ 0.005	+ 0.005	2.500
2½	+ 0.005	+ 0.005	**2.770** ⊙
2¾	+ 0.005	+ 0.005	3.530
3	+ 0.030	+ 0.030	**3.980** ⊙
3¼	+ 0.030	+ 0.030	4.680
3½	+ 0.030	+ 0.030	**5.420** ⊙
3¾	+ 0.030	+ 0.030	6.220
4	+ 0.030	+ 0.030	**7.080** ⊙
4¼	+ 0.900	+ 6.000	14.378

	mm		
mm	min.	max.	lbs/ft
150	+ 1.9	+ 6.0	**16.605** ●
180	+ 1.2	+ 7.5	**23.828** ●
200	+ 1.3	+ 8.5	**29.363** ●

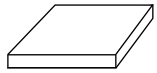
∅	Tolerances mm		GEHR PEEK-mod™	GEHR PEEK-30GF™
mm	min.	max.	lbs/ft	lbs/ft
8	+ 0.1	+ 0.8	0.054	0.054
10	+ 0.1	+ 0.8	**0.088** ●	**0.088** ⊙
12	+ 0.2	+ 1.2	0.122	0.122
15	+ 0.2	+ 1.2	0.187	0.187
16	+ 0.2	+ 1.2	0.216	0.216
18	+ 0.2	+ 1.2	0.270	0.270
20	+ 0.2	+ 1.5	**0.344** ●	**0.345** ⊙
22	+ 0.2	+ 1.5	0.405	0.406
25	+ 0.2	+ 1.5	0.513	0.514
28	+ 0.2	+ 1.5	0.642	0.643
30	+ 0.2	+ 1.5	**0.750** ●	**0.751** ⊙
32	+ 0.2	+ 1.5	0.844	0.845
36	+ 0.2	+ 1.5	1.006	1.008
40	+ 0.2	+ 2.0	**1.310** ●	**1.312** ⊙
45	+ 0.3	+ 2.6	1.668	1.670
50	+ 0.3	+ 2.6	**2.113** ●	**2.116** ⊙
56	+ 0.3	+ 2.8	2.552	2.555
60	+ 0.3	+ 2.8	**2.970** ●	**2.984** ⊙
65	+ 0.3	+ 2.8	3.443	3.456
70	+ 0.3	+ 2.8	3.983	4.000
75	+ 0.4	+ 3.5	4.597	4.610
80	+ 0.4	+ 3.5	**5.468** ●	**5.488** ⊙
90	+ 0.5	+ 3.8	6.608	6.615
100	+ 0.6	+ 5.0	8.168	**8.235** ⊙

PLATES

	Tolerances of thickness		GEHR PEEK™
	inch		Width 24"
inch	min.	max.	lbs/sft
¼	+ 0.0	+ 0.025	1.690
5/16	+ 0.0	+ 0.025	2.110
⅜	+ 0.0	+ 0.025	**2.540** ⊙
½	+ 0.0	+ 0.025	**3.380** ⊙
⅝	+ 0.0	+ 0.025	**4.230** ⊙
¾	+ 0.0	+ 0.025	**5.070** ⊙
1	+ 0.0	+ 0.025	**6.760** ⊙
1¼	+ 0.0	+ 0.025	**8.450** ⊙
1½	+ 0.0	+ 0.025	**10.100** ⊙
1¾	+ 0.0	+ 0.025	11.800
2	+ 0.0	+ 0.025	**13.500** ⊙

	mm		
mm	min.	max.	lbs/sft
60	+ 0.5	+ 0.5	**16.687** ⊙
80	+ 0.5	+ 0.5	**22.000** ⊙
100	+ 0.5	+ 0.5	**27.310** ⊙
120	+ 0.5	+ 0.5	**33.125** ⊙

	Tolerances of thickness		GEHR PEEK-mod™	GEHR PEEK-30GF™
	inch		Width 24"	Width 24"
mm	min.	max.	lbs/sft	lbs/sft
5	+ 0.2	+ 0.7	1.634	1.663
6	+ 0.2	+ 0.7	1.945	1.978
8	+ 0.2	+ 0.9	2.651	2.697
10	+ 0.2	+ 0.9	3.224	3.280
12	+ 0.2	+ 0.9	3.899	3.967
16	+ 0.3	+ 1.5	5.107	5.197
20	+ 0.3	+ 1.5	6.316	6.426
25	+ 0.3	+ 1.5	7.952	7.800
30	+ 0.5	+ 2.5	9.512	9.679
36	+ 0.5	+ 2.5	11.257	11.455
40	+ 0.5	+ 2.5	12.540	12.760
45	+ 0.5	+ 2.5	14.067	13.821
50	+ 0.5	+ 2.5	15.570	15.846



Stock Lengths

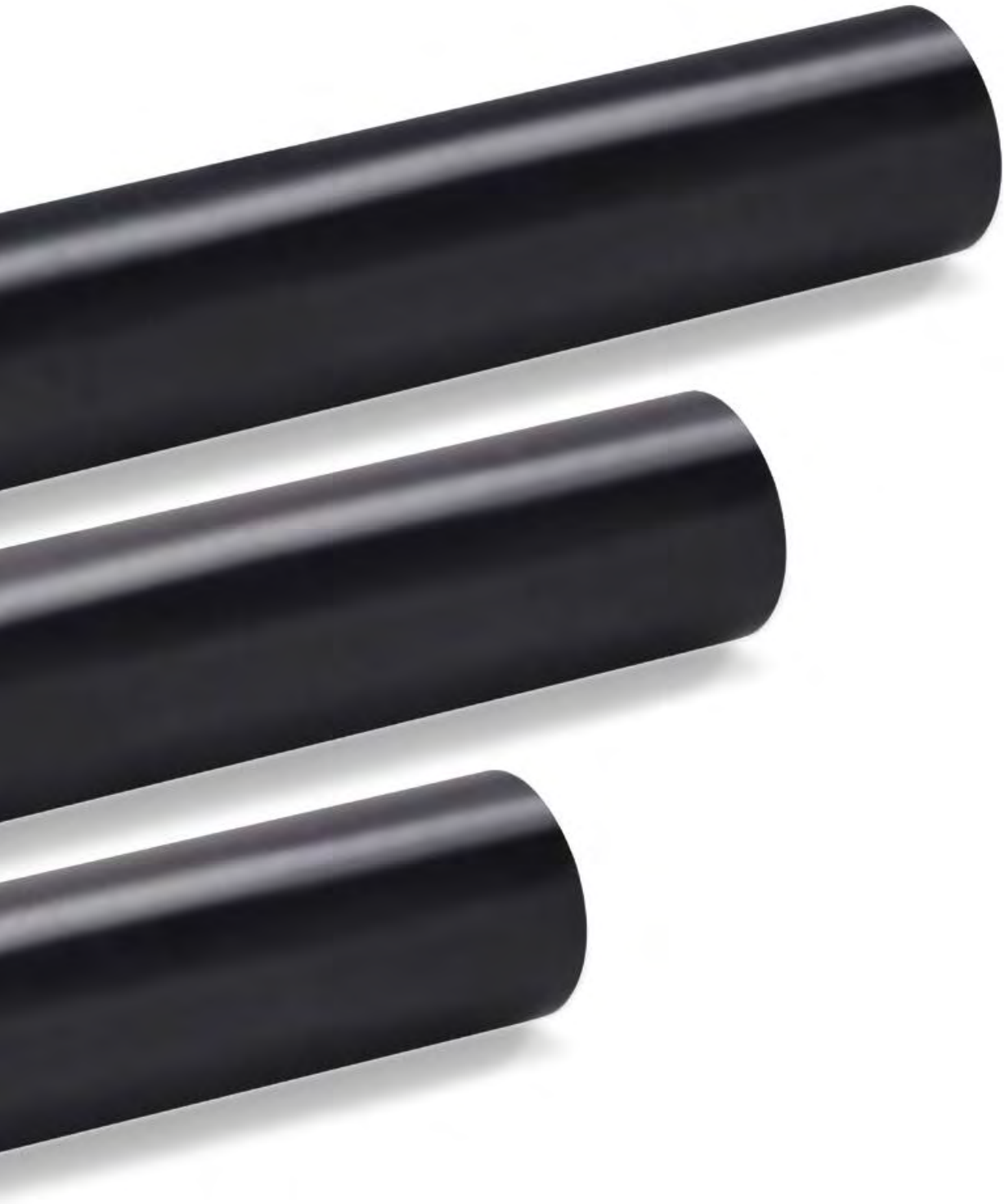
- ¼"–2" = 8 ft
- 5–50 mm = 5 ft | 10 ft | 15 ft
- 60–120 mm = 5 ft

Stock item Colors: ⊙ natural ● black

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural ● black

Custom extrusion Time of delivery on request

Lengths are nominal * Tolerances on request



PPS

GEHR PPS™

The linear Polyphenylensulfide belongs to the semi-crystalline materials and exhibits very high mechanical performance in conjunction with excellent efficiency at the same time (usual operating temperature up to approx. +446 °F), high dimensional stability and creep strength. The LOI belongs to the highest of the Polymers. By the reinforcement with glass fibers strength is achieved, which is comparable with light metal. PPS closes the gap between the technical synthetics and PEEK with its strength and economy.

GEHR PPS-40GF™

Due to the reinforcement of 40 % glass fiber PPS can reach a strength compared with light metals.

Properties GEHR PPS™

» Very high strength and rigidity
» High hardness
» High thermostability
» High dimensional stability
» Very high chemical resistance
» Very good insulating properties
» High weather resistance
» High resistance to hydrolysis

Applications GEHR PPS™

» Pump parts
» Fan parts
» Impellers
» Wheels
» Valve balls
» Parts in the fuel and automotive sector

Properties GEHR PPS-40GF™

» Very high thermal profile
» Excellent mechanical strength
» Superior stiffness
» Maximum operating temperature +446 °F

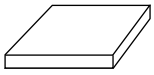
ROUND RODS

Stock Lengths

1 | 3 m

∅	Tolerances mm		GEHR PPS™	GEHR PPS-40GF™ *
mm	min.	max.	kg/m	kg/m
10	+ 0,2	+ 0,9	0,115	0,139
20	+ 0,2	+ 0,9	0,452	0,549
25	+ 0,2	+ 1,2	0,706	0,858
30	+ 0,2	+ 1,2	1,010	1,230
35	+ 0,2	+ 1,2	1,364	1,655
40	+ 0,2	+ 1,2	1,790	2,170
50	+ 0,3	+ 1,3	2,790	3,390
60	+ 0,4	+ 4,0	4,020	4,880
70	+ 0,4	+ 4,0	5,440	6,800
80	+ 0,4	+ 4,0	7,125	

SHEETS



Stock Lengths

1 m

	Tolerances mm		GEHR PPS™	GEHR PPS-40GF™ *
			Width 610mm	Width 620mm
mm	min.	max.	kg/m	kg/m
10	+ 0,2	+ 0,9	9,280	11,330
16	+ 0,3	+ 1,5	14,780	18,060
20	+ 0,3	+ 1,5	18,270	22,330
25	+ 0,3	+ 1,5	22,650	27,680
30	+ 0,5	+ 2,5	27,540	33,660
40	+ 0,5	+ 2,5	36,290	44,350
50	+ 0,5	+ 2,5	45,030	55,040

Custom extrusion Time of delivery on request

Lengths are nominal * Tolerances on request


Zwick / Roell

PEI (ULTEM)

GEHR PEI™ (ULTEM™ 1000)

Polyetherimide exhibits high mechanical strength in connection with good chemical and heat resistance (operating temperature up to +338 °F), good dimensional stability and creep resistance. Its unique torque strength permits the economical substitution of machined fabricated small parts from steel.

GEHR PEI-30GF™ (ULTEM™ 2300)

is a Polyetherimide that is reinforced with 30% glass fiber and offers improved mechanical and temperature properties when compared to GEHR PEI™.

Properties GEHR PEI™ (ULTEM™ 1000)

- Very high strength and rigidity
- High creep resistance
- High torque strength and hardness
- High thermostability
- High weather resistance
- High radiation resistance against γ-rays
- Self-extinguishing
- Limited resistance to stress cracks

Applications GEHR PEI™ (ULTEM™ 1000)

- Parts for electrical engineering
- Parts for food industry
- Parts for aircraft construction
- Medical industry

Properties PEI-30GF™ (ULTEM™ 2300)

- Very high thermal profile
- Excellent mechanical strength
- Superior stiffness
- Maximum operating temperature +338 °F

ROUND RODS

Stock Lengths

∅ ¼" – 2" = 8 ft

∅ 2⅛" – 6" = 4 ft

∅ inch		Tol. -0 inch	GEHR PEI™ (ULTEM 1000) lbs/ft	GEHR PEI-30GF™ (ULTEM 2300) lbs/ft
¼	0.250	+ 0.010	**0.028** ⊙	0.033
5/16	0.313	+ 0.012	**0.044** ●	0.052
⅜	0.375	+ 0.015	**0.062** ⊙	**0.074** ⊙
½	0.500	+ 0.020	**0.110** ⊙	**0.131** ⊙
⅝	0.625	+ 0.025	**0.171** ⊙	**0.204** ⊙
¾	0.750	+ 0.030	**0.246** ⊙	**0.293** ⊙
⅞	0.875	+ 0.035	0.334	0.398
1	1.000	+ 0.040	**0.442** ⊙	**0.519** ⊙
1¼	1.250	+ 0.050	**0.695** ⊙●	**0.826** ⊙
1½	1.500	+ 0.060	**1.001** ⊙	**1.190** ⊙
1¾	1.750	+ 0.070	**1.362** ⊙	1.620
2	2.000	+ 0.080	**1.780** ⊙	**2.117** ⊙
2¼	2.250	+ 0.090	2.250	2.675
2½	2.250	+ 0.100	**2.779** ⊙	**3.304** ⊙
2¾	2.750	+ 0.110	3.363	3.999
3	3.000	+ 0.120	**4.006** ⊙	4.763
3½	3.500	+ 0.140	**5.452** ⊙	6.482
4	4.000	+ 0.160	**7.123** ⊙	8.468
4½	4.500	+ 0.180	9.008	10.711
5	5.000	+ 0.200	**11.125** ⊙	13.227
6	6.000	+ 0.240	16.026	19.055

Stock item

Custom extrusion

Lengths are nominal

Colors: ⊙ natural ● black

Time of delivery on request


A 322
GEHR

PSU/PPSU

GEHR PSU™

Polysulfone shows great thermal stability (from -148 °F to +320 °F). PSU possesses a high mechanical strength, very good dielectric properties, hydrolysis resistance and a high radiation resistance (permeable for microwaves). PSU has a low notch impact strength.

Properties GEHR PSU™

- High strength and rigidity
- High impact strength (also at low temperatures)
- Very good dimensional stability
- High chemical resistance
- High resistance to β-, γ-, x- and infrared radiation
- High permeability of microwaves
- Self-extinguishing
- Good to sterilize
- Mediocre resistance to stress crack
- Not weather resistant

Applications GEHR PSU™

- Parts of microwave ovens
- Blow dryer
- Humidifiers
- Food and medical industry
- Pump wheels
- Insulators

GEHR PPSU™

Polyphenylensulfone is an amorphous material, with improved impact and hydrolysis resistance compared to PSU. The usual operating temperature is approx. +338 °F. The extremely high notch impact strength remains after heat aging. Applications are the same as GEHR PSU™ but in applications that may require higher chemical resistance and temperature profile.

Properties GEHR PPSU™

- High strength and rigidity
- Very high impact strength (also at low temperatures)
- Very good dimensional stability
- Very high chemical resistance
- High resistance to many kinds of radiation
- Very good sterilising capability
- Lower chemical resistance than comparable semicrystalline materials

ROUND RODS

Stock Lengths

∅ ¼" – 2" = 8 ft

∅ 2⅛" – 6" = 4 ft

∅ inch		Tol. max.	GEHR PSU™ lbs/ft	GEHR PPSU™* lbs/ft
¼	0.250	+ 0.010	0.027	0.028
⅜	0.375	+ 0.015	**0.061** ⊙	0.063
½	0.500	+ 0.020	**0.109** ⊙	0.113
⅝	0.625	+ 0.025	**0.167** ⊙	0.174
¾	0.750	+ 0.030	**0.240** ⊙	0.250
⅞	0.875	+ 0.035	0.320	0.333
1	1.000	+ 0.040	**0.426** ⊙	0.443
1¼	1.250	+ 0.050	**0.678** ⊙	0.705
1½	1.500	+ 0.060	**0.990** ⊙	1.030
1⅝	1.625	+ 0.065	1.140	1.186
1¾	1.750	+ 0.070	1.290	1.342
2	2.000	+ 0.080	**1.738** ⊙	1.807
2¼	2.250	+ 0.090	**2.197** ⊙	2.285
2½	2.500	+ 0.100	**2.713** ⊙	2.822
2¾	2.750	+ 0.110	**3.284** ⊙	3.415
3	3.000	+ 0.120	**3.909** ⊙	4.065
3¼	3.250	+ 0.130	4.591	4.775
3½	3.500	+ 0.140	**5.322** ⊙	5.535
4	4.000	+ 0.160	**6.750** ⊙	7.020
4½	4.500	+ 0.180	**8.839** ⊙	9.193
5	5.000	+ 0.200	10.540	10.961
6	6.000	+ 0.240	15.180	15.787

Stock item Colors: ⊙ natural

Lengths are nominal *Tolerances on request

E-CTFE (HALAR)

GEHR E-CTFE™ (HALAR)

Ethylen-Chlortrifluorethylene exhibits an extraordinary impact strength at temperatures ranging from -104 °F to +302 °F. A great part of the product properties attributes to the very smooth surface and differentiates HALAR™ from other fluoropolymers. Due to the fact that E-CTFE is very pure, this material is being used to process chemicals and ultrapure water for the semiconductor industry. Also the permeation resistance to oxygen, carbon dioxide, chlorine gas and hydrochlorid acid is 10 to 100 times better than PTFE.

Properties GEHR E-CTFE™ (HALAR)

» Extremely high impact strength (down to -104 °F)
» Good insulation properties
» Very good weather resistance
» High resistance to radiation
» Very high chemical resistance
» Very good sliding properties
» Physiologically harmless
» High density
» Limited protection against stress cracking at temperatures > 284 °F

Applications GEHR E-CTFE™ (HALAR)

» Parts which come in contact with aggressive media (e.g. plant construction industry)
» Lining of tanks, pumps, flanges, fittings, parts in centrifuges
» Parts for ultra pure applications

ROUND RODS

∅ inch		Tol. inch	GEHR E-CTFE™ lbs/ft
1	1,000	+ 0,030	**0.600** ⊙
1 ¼	1,250	+ 0,037	**0.938** ⊙
1 ½	1,500	+ 0,045	**1.351** ⊙
1 ¾	1,750	+ 0,052	1.838
2	2,000	+ 0,060	**2.402** ⊙
2 ¼	2,250	+ 0,067	**3.039** ⊙
2 ½	2,500	+ 0,080	**3.753** ⊙
3	3,000	+ 0,090	**5.405** ⊙
3 ½	3,500	+ 0,105	7.350
4	4,000	+ 0,120	**9.608** ⊙
5	5,000	+ 0,135	**15.080** ⊙
6	6,000	+ 0,150	21.619

Stock Lengths

∅ 1" – 1¾" = 8 ft
∅ 2" – 5" = 4 ft

Stock item Colors: ⊙ natural
Custom extrusion Time of delivery on request

PVDF (KYNAR)

GEHR PVDF™ (KYNAR)

Polyvinylidene fluoride shows a higher tensile strength, pressure resistance and dimensional stability than the related PTFE, but friction and insulation properties are lower. PVDF has a high mechanical strength and toughness at lower temperatures and it's self-extinguishing. The operating temperature ranges from -22 °F to +302 °F. PVDF shows a high resistance to chlorine, bromine and high-energy radiation.

Properties GEHR PVDF™ (KYNAR)

- High tensile strength
- High mechanical strength
- High rigidity (also at low temperature)
- High chemical resistance
- Very low water absorption
- Good friction and wear and tear values
- Self-extinguishing
- High UV-resistance
- Toxic fumes when burned
- Relatively high coefficient of thermal expansion

Applications GEHR PVDF™ (KYNAR)

- Gaskets
- Pumps
- Rotation discs
- Valves
- Check valves
- Extraction centrifuges
- Fittings
- Slide rails
- Gear wheels

ROUND RODS

Stock Lengths

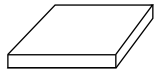
∅ ¼" – 2" = 8 ft

∅ 2⅛" – 6" = 4 ft

∅ 7" and above = 1 m

∅ inch		Tol. -0 inch	GEHR PVDF™ lbs/ft
¼	0.250	+ 0.010	0.039
⅜	0.375	+ 0.015	**0.087** ⊙
½	0.500	+ 0.020	**0.155** ⊙
⅝	0.625	+ 0.025	**0.243** ⊙
¾	0.750	+ 0.030	**0.349** ⊙
⅞	0.875	+ 0.035	**0.477** ⊙
1	1.000	+ 0.040	**0.624** ⊙
1⅛	1.125	+ 0.045	**0.789** ⊙
1¼	1.250	+ 0.050	**0.974** ⊙
1⅜	1.375	+ 0.055	**1.189** ⊙
1½	1.500	+ 0.060	**1.403** ⊙
1⅝	1.625	+ 0.065	1.644
1¾	1.750	+ 0.070	**1.910** ⊙
1⅞	1.875	+ 0.075	**2.191** ⊙
2	2.000	+ 0.080	**2.495** ⊙
2¼	2.250	+ 0.090	**3.158** ⊙
2⅜	2.375	+ 0.030	3.519
2½	2.500	+ 0.100	**3.894** ⊙
2¾	2.750	+ 0.110	**4.714** ⊙
3	3.000	+ 0.120	**5.615** ⊙
3¼	3.250	+ 0.130	6.587
3½	3.500	+ 0.140	**7.641** ⊙
3¾	3.750	+ 0.150	**8.770** ⊙
4	4.000	+ 0.160	**9.982** ⊙
4¼	4.250	+ 0.170	11.260
4½	4.500	+ 0.180	**12.626** ⊙
5	5.000	+ 0.200	**15.598** ⊙
6	6.000	+ 0.240	**22.461** ⊙
7*	7.000	+ 0.280	**30.572** ⊙
8*	8.000	+ 0.320	**39.931** ⊙
10*	10.000	+ 0.400	**63.000** ⊙
12*	12.000	+ 0.500	90.141

PLATES



Stock Lengths

48"

inch		Tol. -0 inch	GEHR PVDF™ Width 24" lbs/sft
¼	0.250	+ 0.025	2.390
⅜	0.375	+ 0.025	3.570
½	0.500	+ 0.025	4.719
⅝	0.625	+ 0.025	5.854
¾	0.750	+ 0.102	7.032
⅞	0.875	+ 0.025	8.189
1	1.000	+ 0.025	9.390
1¼	1.250	+ 0.050	11.660
1½	1.500	+ 0.050	14.018
1¾	1.750	+ 0.050	16.286
2	2.000	+ 0.150	18.645
2¼	2.250	+ 0.150	20.958
2½	2.500	+ 0.150	23.273
2¾	2.750	+ 0.150	25.485
3	3.000	+ 0.150	27.944
3¼	3.250	+ 0.200	30.212
3½	3.500	+ 0.200	32.618
3¾	3.750	+ 0.200	34.884
4	4.000	+ 0.200	37.198

Stock item Colors: ⊙ natural

Custom extrusion Time of delivery on request

Lengths and widths are nominal * Produced in metric

PC

GEHR PC™

Polycarbonate exhibits high rigidity and extreme impact strength. Also it has a high glass transition temperature and temperature resistance (approx. +266 °F). The operating temperature ranges from -76 °F to approx. +248 °F.

Properties GEHR PC™

- Extremely high impact strength
- High mechanical strength
- High dimensional stability
- High temperature resistance
- Good insulating properties
- High resistance to radiation
- Medium chemical resistance
- Notch-sensitive and susceptible to stress crack formation
- Hydrolysis-sensitive

Applications GEHR PC™

- Transparent parts where high impact strength and simultaneously a high flexural strength is requested.

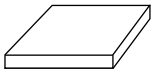
ROUND RODS

Stock Lengths

1 | 3 m

∅	Tolerances mm		GEHR PC™
mm	min.	max.	kg/m
10	+ 0,1	+ 0,8	**0,100** ⊕
12	+ 0,2	+ 0,9	**0,148** ⊕
15	+ 0,2	+ 0,9	0,224
16	+ 0,2	+ 0,9	**0,258** ⊕
20	+ 0,2	+ 0,9	**0,398** ⊕
25	+ 0,2	+ 1,2	**0,622** ⊕
30	+ 0,2	+ 1,2	**0,888** ⊕
36	+ 0,2	+ 1,6	**1,283** ⊕
40	+ 0,2	+ 1,6	**1,576** ⊕
50	+ 0,3	+ 2,0	**2,466** ⊕
60	+ 0,3	+ 2,5	**3,550** ⊕
70	+ 0,3	+ 2,5	**4,850** ⊕
80	+ 0,4	+ 3,0	**6,290** ⊕
90	+ 0,6	+ 3,8	7,970
100	+ 0,6	+ 3,8	**9,840** ⊕
120	+ 1,2	+ 7,4	14,596
140	+ 1,2	+ 7,4	19,310
150	+ 1,2	+ 7,4	22,180
180	+ 1,2	+ 7,4	**32,010** ⊕
200	+ 1,3	+ 8,5	39,570

PLATES



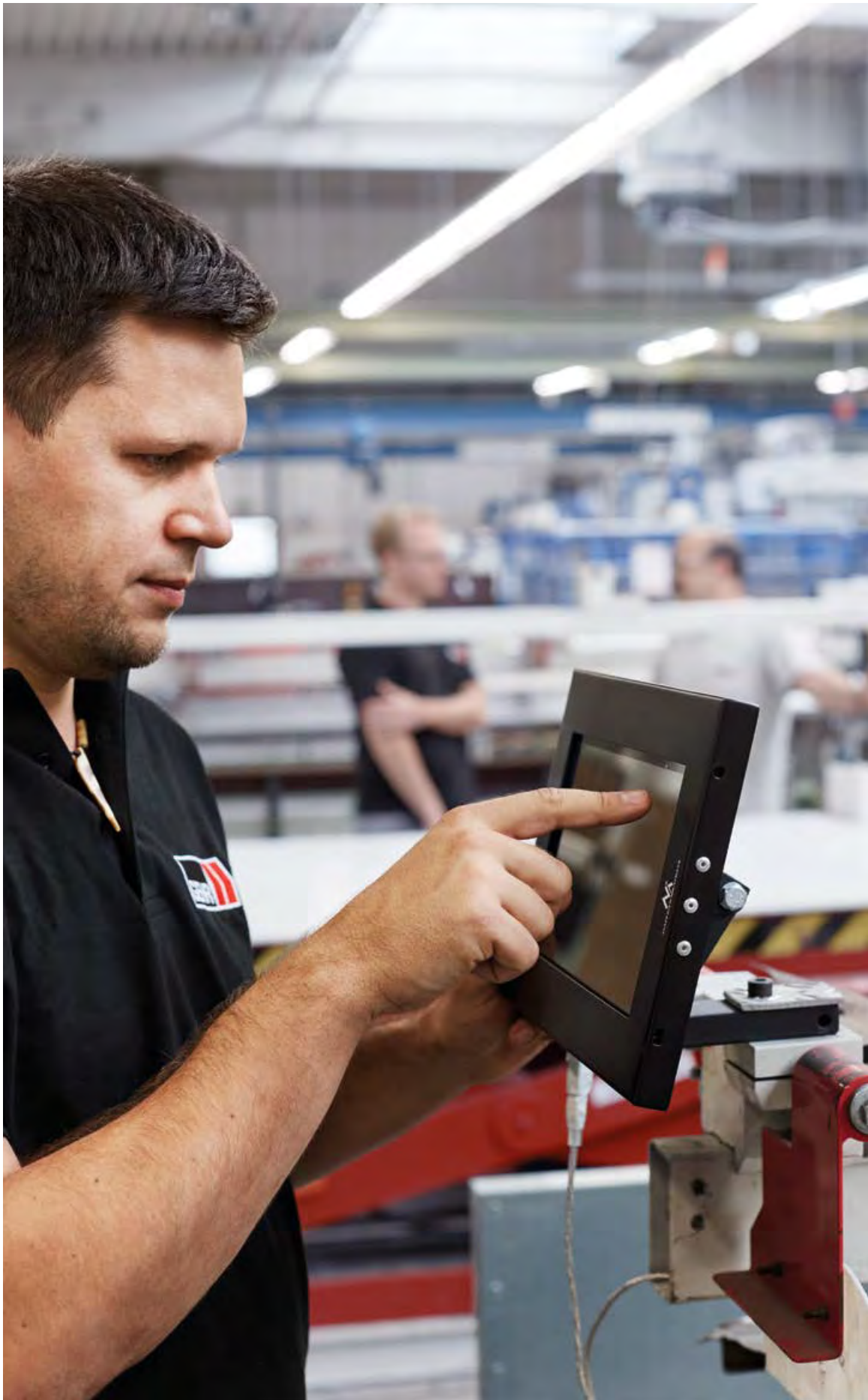
Stock Lengths

1 m

↕	Tolerances mm		GEHR PC™ Width 620 mm
mm	min.	max.	kg/m
10	+ 0,2	+ 1,1	8,200
15	+ 0,3	+ 1,5	**12,550** ⊕
20	+ 0,3	+ 1,5	**16,400** ⊕
25	+ 0,3	+ 1,5	**20,250** ⊕
30	+ 0,5	+ 2,5	**24,750** ⊕
40	+ 0,5	+ 2,5	**32,500** ⊕
50	+ 0,5	+ 2,5	40,250

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊕ transparent

Custom extrusion Time of delivery on request



PBT

GEHR PBT™

The mechanical properties of Polybutylene terephthalate comprise hardness, stiffness, stability and toughness. In particular the material's extremely high toughness allows the use of self-tapping screws or inserts. The good sliding properties and the high dimensional stability also open up a wide range of possible applications. Very good results can be achieved in joining processes with two-component adhesives on the basis of e.g. epoxy resins or cyanoacrylates as well as silicones. Painting of the part or high vacuum coating of the component surface is also possible. The continuous operating temperature ranges from approx. -76 °F to +212 °F.

Properties GEHR PBT™

- High stability, stiffness and toughness, even at low temperatures
- Good creep resistance
- High surface hardness
- Good polishability
- High dimensional stability
- Easy to metallize
- Good sliding properties
- Good electrical insulation characteristics
- High resistance to chemicals
- Easy to paint
- Good UV and weather resistance
- Sensitive to hydrolysis

Applications GEHR PBT™

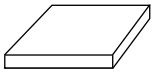
- Components with metal inserts
- Pump components
- Housing components
- Tank caps
- Gear wheels
- Insulating parts in electrical engineering
- Applications with UV exposure

ROUND RODS

Stock Lengths
1 | 2 | 3 m

∅	Tolerances mm		GEHR PBT™
mm	min.	max.	kg/m
10	+ 0,1	+ 0,7	0,110
12	+ 0,2	+ 0,8	0,158
16	+ 0,2	+ 0,8	0,281
18	+ 0,2	+ 0,8	0,355
20	+ 0,2	+ 0,8	0,439
22	+ 0,2	+ 1,0	0,531
25	+ 0,2	+ 1,0	0,686
28	+ 0,2	+ 1,0	0,860
30	+ 0,2	+ 1,0	0,987
32	+ 0,2	+ 1,2	1,123
36	+ 0,2	+ 1,2	1,421
40	+ 0,2	+ 1,2	**1,755** ⊙
45	+ 0,3	+ 1,3	2,221
50	+ 0,3	+ 1,3	**2,742** ⊙
56	+ 0,3	+ 1,3	3,440
60	+ 0,3	+ 1,6	3,949
65	+ 0,3	+ 1,6	4,634
70	+ 0,3	+ 1,6	5,374
75	+ 0,4	+ 2,0	6,170
80	+ 0,4	+ 2,0	7,020
85	+ 0,5	+ 2,2	7,924
90	+ 0,5	+ 2,2	**8,884** ⊙
100	+ 0,6	+ 2,5	10,968

PLATES



Stock Lengths
1 | 2 | 3 m

↕	Tolerances mm		GEHR PBT™ Width 1000 mm
mm	min.	max.	kg/m
10	+ 0,2	+ 1,1	9,726
12	+ 0,3	+ 1,5	11,829
16	+ 0,3	+ 1,5	15,334
20	+ 0,3	+ 1,5	18,838
25	+ 0,3	+ 1,5	23,219
30	+ 0,5	+ 2,5	28,477
35	+ 0,5	+ 2,5	32,858
40	+ 0,5	+ 2,5	37,239
45	+ 0,5	+ 2,5	41,620
50	+ 0,5	+ 2,5	46,001

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural
Custom extrusion Time of delivery on request


GEHR
GEHR

PET

GEHR PET™

Polyethylene terephthalate exhibits high tensile and mechanical strength, hardness and toughness, low friction and high dimensional stability. Operating temperatures ranging from -4 °F to approx. +212 °F.

Properties GEHR PET™

- High mechanical resistance and tensile strength
- High creep resistance
- High surface strength
- Easy to varnish and polish
- High dimensional stability
- High toughness
- Good insulations for electrical properties
- High chemical resistance
- Easy to lacquer
- Limited dielectric properties
- Sensitive to hydrolysis

Applications GEHR PET™

- Bearings
- Pumps and parts for housings
- Frame components
- Tank lids
- Gear wheels
- Insulators for the electrical engineering
- Deflection rollers for the filament industry
- Levers
- Handles
- Control discs

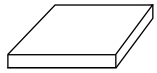
ROUND RODS

Stock Lengths

1 | 2 | 3 m

∅	Tolerances mm		GEHR PET™
mm	min.	max.	kg/m
10	+ 0,1	+ 0,5	0,118
12	+ 0,2	+ 0,8	**0,179** ⊙
16	+ 0,2	+ 0,8	**0,310** ⊙
18	+ 0,2	+ 0,8	0,400
20	+ 0,2	+ 0,8	**0,480** ⊙●
22	+ 0,2	+ 1,0	0,590
25	+ 0,2	+ 1,0	**0,750** ⊙●
28	+ 0,2	+ 1,0	0,930
30	+ 0,2	+ 1,0	**1,060** ⊙●
32	+ 0,2	+ 1,2	1,200
36	+ 0,2	+ 1,2	**1,500** ⊙●
40	+ 0,2	+ 1,2	**1,880** ⊙●
45	+ 0,3	+ 1,3	**2,380** ⊙●
50	+ 0,3	+ 1,3	**2,920** ⊙●
56	+ 0,3	+ 1,3	3,510
60	+ 0,3	+ 1,6	**4,210** ⊙●
65	+ 0,3	+ 1,6	**4,920** ⊙
70	+ 0,3	+ 1,6	**5,690** ⊙●
75	+ 0,3	+ 1,6	6,510
80	+ 0,4	+ 2,0	**7,460** ⊙●
85	+ 0,4	+ 2,0	8,390
90	+ 0,5	+ 2,2	**9,420** ⊙
100	+ 0,6	+ 2,5	**11,650** ⊙●
110	+ 0,7	+ 3,0	**14,150** ⊙
120	+ 0,8	+ 3,5	**16,910** ⊙
125	+ 0,9	+ 3,8	18,310
130	+ 0,9	+ 3,8	**19,760** ⊙
140	+ 1,0	+ 4,2	22,930
150	+ 1,0	+ 4,2	**26,230** ⊙●
160	+ 1,2	+ 5,0	29,880
180	+ 1,2	+ 5,0	**37,940** ⊙
200	+ 1,3	+ 5,5	**46,810** ⊙

PLATES



Stock Lengths

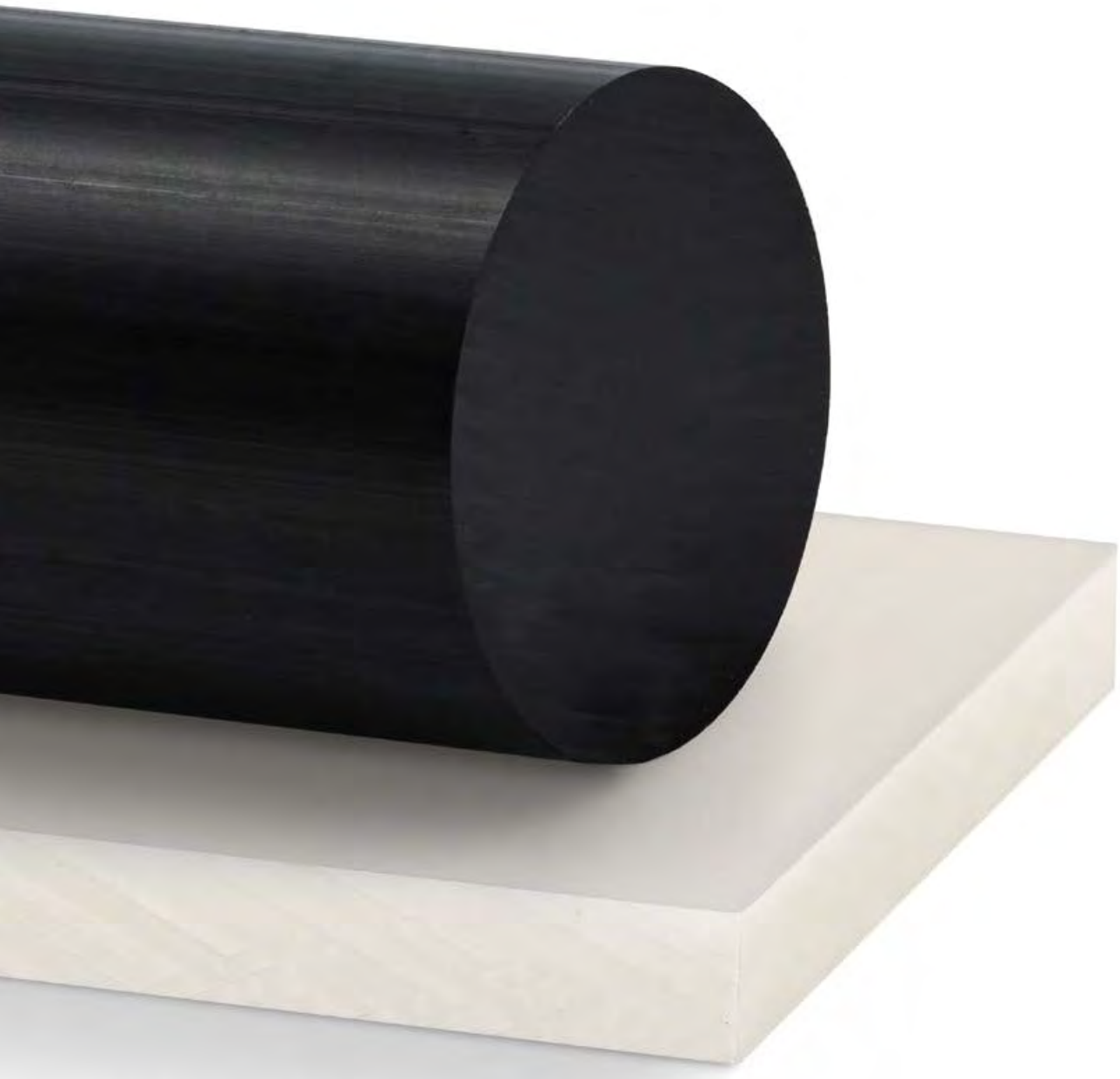
1 | 3 m

	Tolerances mm		GEHR PET™
			Width 610 mm
mm	min.	max.	kg/m
10	+ 0,2	+ 1,1	**9,590** ⊙
12	+ 0,3	+ 1,5	**11,880** ⊙●
16	+ 0,3	+ 1,5	**15,000** ⊙●
20	+ 0,3	+ 1,5	**18,920** ⊙
25	+ 0,3	+ 1,5	**23,310** ⊙●
30	+ 0,5	+ 2,5	**28,000** ⊙
35	+ 0,5	+ 2,5	33,000
40	+ 0,5	+ 2,5	**37,390** ⊙●
45	+ 0,5	+ 2,5	41,300
50	+ 0,5	+ 2,5	**46,190** ⊙
60	+ 0,5	+ 3,5	**55,050** ⊙
80	+ 0,5	+ 5,0	**73,500** ⊙
100	+ 0,5	+ 5,0	91,250

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural ● black

Custom extrusion Time of delivery on request

ACETAL



GEHR ACETAL™ (POM-C)

The continuous operating temperature of polyoxymethylene ranges between -40 °F and +212 °F. The high surface strength is only surpassed by a few materials. POM exhibits good sliding properties and high resistance to wear and tear because of its high strength and smooth surface. There is a very low risk of stress cracks. POM-C (Copolymer) exhibits a high thermal stability and a high resistance to chemicals (high resistance to hydrolysis).

GEHR ACETAL-ELS™ (ELECTRICALLY CONDUCTIVE)

Variant of POM (Copolymer) with an improved electrical conductivity.
Volume resistivity ≤ 10^1 Ω x cm,
Surface resistivity ≤ 10^4 Ω.

GEHR ACETAL-10PE™

Variant of POM (Copolymer) with improved sliding properties for tribological applications with an increased abrasion. The modified POM-10PE offers in particular additionally a food approval.

GEHR ACETAL-ESD-FG™ (ELECTRICALLY CONDUCTIVE)

is a enhanced Polyoxymethylene (POM) that offers improved electrical conductivity above and beyond that of GEHR Acetal ESD™.
Volume resistivity ≤ 10^{10} Ω,
Surface resistivity ≤ 10^{12} Ω.

Properties GEHR ACETAL™

- Pressure tested quality
- High strength and stiffness
- High rigidity (to -40 °F)
- High thermal stability
- Low water absorption
- High dimension stability
- Good electrical insulating properties
- Very good sliding properties
- High resistance to solvents
- Very high resistance to stress cracks

Applications GEHR POM-C™

- Bearings
- Fittings
- Gear wheels
- Parts for pumps
- Screws
- Bobbins
- Parts for the textile industry
- Carrier for coating lines
- Food industry

ROUND RODS

Stock Lengths

∅ 1/4" – 4 3/4" = 10 ft
∅ 5" – 9" = 5 ft
∅ 10" – 20" = 1 m

∅ inch		Tol. -0 inch	GEHR ACETAL COPOLYMER™ lbs/ft
3/16	0.187	+ 0.002	0.017
1/4	0.250	+ 0.002	**0.030** ⊙●
5/16	0.312	+ 0.002	0.048
3/8	0.375	+ 0.002	**0.069** ⊙●
7/16	0.438	+ 0.002	0.093
1/2	0.500	+ 0.002	**0.122** ⊙●
9/16	0.563	+ 0.002	0.154
5/8	0.625	+ 0.002	**0.190** ⊙●
3/4	0.750	+ 0.002	**0.274** ⊙●
7/8	0.875	+ 0.002	**0.373** ⊙●
1	1.000	+ 0.002	**0.487** ⊙●
1 1/8	1.125	+ 0.005	**0.617** ⊙●
1 1/4	1.250	+ 0.005	**0.761** ⊙●
1 3/8	1.375	+ 0.005	**0.921** ⊙●
1 5/8	1.625	+ 0.005	**1.287** ⊙●
1 3/4	1.750	+ 0.005	**1.493** ⊙●
1 7/8	1.875	+ 0.005	**1.713** ⊙●
2	2.000	+ 0.005	**1.949** ⊙●
2 1/8	2.125	+ 0.030	**2.200** ⊙●
2 1/4	2.250	+ 0.030	**2.466** ⊙●
2 3/8	2.375	+ 0.030	**2.748** ⊙●
2 1/2	2.500	+ 0.030	**3.045** ⊙●
2 5/8	2.625	+ 0.030	3.356
2 3/4	2.750	+ 0.080	**3.684** ⊙●
2 7/8	2.875	+ 0.080	4.027
3	3.000	+ 0.120	**4.385** ⊙●
3 1/4	3.250	+ 0.130	**5.144** ⊙●
3 1/2	3.500	+ 0.140	**5.968** ⊙●
3 3/4	3.750	+ 0.150	**6.852** ⊙●
4	4.000	+ 0.160	**7.796** ⊙●
4 1/4	4.250	+ 0.170	**8.800** ⊙●
4 1/2	4.500	+ 0.180	**9.860** ⊙●
4 3/4	4.750	+ 0.190	**10.987** ⊙
5	5.000	+ 0.200	**12.181** ⊙●
5 1/2	5.500	+ 0.220	**14.738** ⊙●
6	6.000	+ 0.240	**17.540** ⊙●
6 1/2	6.500	+ 0.260	**20.584** ⊙●
7	7.000	+ 0.330	**23.875** ⊙●
7 1/2	7.500	+ 0.300	27.405
8*	8.000	+ 0.320	**31.183** ⊙●
9*	9.000	+ 0.360	**39.475** ⊙●
10*	10.000	± 0.400	**48.723** ⊙●
12*	12.000	± 0.480	**70.162** ⊙●
14*	14.000	± 0.560	**96.100** ⊙●
16*	16.000	± 0.640	**125.200** ⊙●
20*	20.000	± 0.800	**194.894** ⊙●

ROUND RODS

Stock Lengths

∅ 5 – 130 mm = 1 | 2 | 3 m

∅	Tolerances mm		GEHR ACETAL-ELS™*	GEHR ACETAL-ESD-FG™*	GEHR ACETAL-10PE™*
mm	min.	max.	kg/m	kg/m	kg/m
5	+ 0.1	+ 0.6	0.022	0.022	
6	+ 0.1	+ 0.6	0.030	0.031	
8	+ 0.1	+ 0.7	0.052	0.054	
10	+ 0.1	+ 0.7	0.081	0.083	0.083
12	+ 0.2	+ 0.8	0.118	0.120	0.114
15	+ 0.2	+ 0.8	0.181	0.185	0.175
16	+ 0.2	+ 0.8	0.205	0.209	0.220
18	+ 0.2	+ 0.8	0.257	0.263	0.250
20	+ 0.2	+ 0.8	0.316	0.323	**0.309** ●
22	+ 0.2	+ 1.0	0.384	0.392	0.372
25	+ 0.2	+ 1.0	0.494	0.505	0.488
28	+ 0.2	+ 1.0	0.620	0.634	0.602
30	+ 0.2	+ 1.0	**0.708** ●	0.722	**0.701** ●
32	+ 0.2	+ 1.2	0.808	0.825	0.784
36	+ 0.2	+ 1.2	1.014	1.036	0.983
40	+ 0.2	+ 1.2	1.248	1.275	**1.230** ●
45	+ 0.3	+ 1.3	1.581	1.615	1.567
50	+ 0.3	+ 1.3	**1.949** ●	1.990	**1.925** ●
56	+ 0.3	+ 1.3	2.435	2.488	2.364
60	+ 0.3	+ 1.6	2.803	2.863	**2.771** ●
65	+ 0.3	+ 1.6	3.283	3.354	3.245
70	+ 0.3	+ 1.6	3.797	3.879	3.754
75	+ 0.4	+ 2.0	4.384	4.479	4.256
80	+ 0.4	+ 2.0	**4.978** ●	5.085	4.915
85	+ 0.5	+ 2.2	5.625	5.746	5.461
90	+ 0.5	+ 2.2	6.292	6.428	6.221
100	+ 0.6	+ 2.5	7.773	7.941	**7.699** ●
110	+ 0.7	+ 3.0			9.166
120	+ 0.8	+ 3.5			11.067
125	+ 0.8	+ 3.5			11.854
130	+ 0.9	+ 3.8			13.061

Stock item Colors: ⊙ natural ● black ● light blue

Custom extrusion Time of delivery on request

Lengths are nominal * Produced in metric

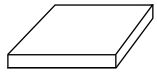
HOLLOW RODS

Stock Lengths

1 | 3 m

D d D x d	Tolerances mm				GEHR ACETAL COPOLYMER™
	D		d		
mm	min.	max.	min.	max.	kg/m
20 x 10	+ 0,4	+ 1,1	- 0,4	- 1,1	**0,390** ⊙
25 x 12	+ 0,4	+ 1,1	- 0,4	- 1,1	0,610
28 x 12	+ 0,4	+ 1,1	- 0,4	- 1,1	0,790
28 x 20	+ 0,4	+ 1,1	- 0,4	- 1,1	0,510
30 x 20	+ 0,4	+ 1,1	- 0,4	- 1,1	**0,640** ⊙
32 x 15	+ 0,6	+ 2,0	- 0,6	- 2,0	1,040
36 x 17	+ 0,6	+ 2,0	- 0,6	- 2,0	1,290
36 x 25	+ 0,6	+ 2,0	- 0,6	- 2,0	0,930
40 x 20	+ 0,6	+ 2,0	- 0,6	- 2,0	**1,520** ⊙
40 x 30	+ 0,6	+ 2,0	- 0,6	- 2,0	**0,990** ⊙
50 x 20	+ 0,6	+ 2,0	- 0,6	- 2,0	2,570
50 x 30	+ 0,6	+ 2,0	- 0,6	- 2,0	**2,030** ⊙
50 x 40	+ 0,6	+ 2,0	- 0,6	- 2,0	1,270
55 x 35	+ 0,8	+ 2,5	- 0,8	- 2,5	2,360
60 x 30	+ 0,8	+ 2,5	- 0,8	- 2,5	**3,370** ⊙
60 x 40	+ 0,8	+ 2,5	- 0,8	- 2,5	**2,620** ⊙
70 x 30	+ 0,8	+ 3,0	- 0,8	- 3,0	**4,970** ⊙
70 x 50	+ 0,8	+ 3,0	- 0,8	- 3,0	**3,210** ⊙
80 x 40	+ 0,8	+ 3,0	- 0,8	- 3,0	**5,910** ⊙
80 x 50	+ 0,8	+ 3,0	- 0,8	- 3,0	4,940
80 x 60	+ 0,8	+ 3,0	- 0,8	- 3,0	**3,750** ⊙
90 x 40	+ 1,2	+ 3,6	- 1,6	- 5,0	8,080
90 x 50	+ 1,2	+ 3,6	- 1,6	- 5,0	**7,150** ⊙
100 x 40	+ 1,2	+ 3,6	- 1,6	- 5,0	10,350
100 x 50	+ 1,2	+ 3,6	- 1,6	- 5,0	**9,330** ⊙
100 x 60	+ 1,2	+ 3,6	- 1,6	- 5,0	8,170
100 x 80	+ 1,2	+ 3,6	- 1,6	- 5,0	**5,170** ⊙
150 x 80	+ 1,5	+ 4,5	- 2,0	- 6,5	**19,850** ⊙
150 x 100	+ 1,5	+ 4,5	- 2,0	- 6,5	16,000
150 x 120	+ 1,5	+ 4,5	- 2,0	- 6,5	**11,250** ⊙
160 x 100	+ 1,8	+ 5,4	- 2,2	- 7,5	**19,900** ⊙
180 x 90	+ 1,8	+ 5,4	- 2,2	- 7,5	29,750
180 x 120	+ 1,8	+ 5,4	- 2,2	- 7,5	**23,000** ⊙
200 x 100	+ 2,0	+ 6,0	- 2,5	- 8,5	36,750
200 x 150	+ 2,0	+ 6,0	- 2,5	- 8,5	**23,300** ⊙

PLATES



Stock Lengths

¼"–2" = 120" | 96" | 48"
2¼"–4" = 120" | 96" | 48"
5"–8" = 48"
10" = 40"

inch		Tol. -0 inch	GEHR ACETAL COPOLYMER™ 24" Width lbs/ft	GEHR ACETAL COPOLYMER™ 48" Width lbs/ft
¼	0.250	+ 0.025	**1.862** ⊙●	**1.862** ⊙●
⅜	0.375	+ 0.025	**2.810** ⊙●	**2.810** ⊙●
½	0.500	+ 0.025	**3.818** ⊙●	**3.818** ⊙●
⅝	0.625	+ 0.025	**4.746** ⊙●	**4.746** ⊙●
¾	0.750	+ 0.025	**5.709** ⊙●	**5.709** ⊙●
⅞	0.875	+ 0.025	**6.636** ⊙●	**6.636** ⊙●
1	1.000	+ 0.025	**7.563** ⊙●	**7.563** ⊙●
1 ¼	1.250	+ 0.050	**9.491** ⊙●	**9.491** ⊙●
1 ½	1.500	+ 0.050	**11.345** ⊙●	**11.345** ⊙●
1 ¾	1.750	+ 0.050	**13.198** ⊙●	**13.198** ⊙●
2	2.000	+ 0.050	**15.052** ⊙●	**15.052** ⊙●
2 ¼	2.250	+ 0.150	**17.054** ⊙●	
2 ½	2.500	+ 0.150	**18.908** ⊙	**18.908** ⊙●
2 ¾	2.750	+ 0.150	**20.761** ⊙●	
3	3.000	+ 0.150	**22.615** ⊙●	**22.615** ⊙●
3 ¼	3.250	+ 0.200	24.469	
3 ½	3.500	+ 0.200	**26.320** ⊙●	
3 ¾	3.750	+ 0.200	28.176	
4	4.000	+ 0.200	**30.014** ⊙●	**30.014** ⊙●
4 ½	4.500	+ 0.400	**33.803** ⊙	
5*	5.000	+ 0.400	**37.239** ⊙●	
6*	6.000	+ 0.400	**44.963** ⊙●	
7*	7.000	+ 0.400	**52.646** ⊙●	
8*	8.000	+ 0.400	**60.061** ⊙●	
10* **	10.000		**75.000** ⊙	

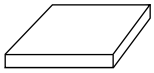
Stock item Colors: ⊙ natural ● black

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural

Custom extrusion Time of delivery on request

Lengths + widths are nominal *Produced in metric **Tolerances on request

PLATES

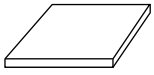


Stock Lengths

3 m

inch		Tol -0 inch	GEHR ACETAL-ELS™ 24" Width lbs/sft	GEHR ACETAL-10 PE™ 24" Width lbs/sft
¾*	0.750	+ 0.050	5.585	5.500
1*	1.000	+ 0.050	6.870	6.600
1 ⅛*	1.125	+ 0.050	8.400	10.100
2*	2.000	+ 0.050	14.896	14.300
4*	4.000	+ 0.200	29.791	29.700

PLATES (CALENDERED)



Stock Lengths

2 m

mm	Tolerances mm min.	max.	GEHR ACETAL™ Width 1000 mm kg/m
2	- 0,15	+ 0,15	**2,990** ⊙●
3	- 0,20	+ 0,20	**4,490** ⊙●
4	- 0,20	+ 0,20	**5,980** ⊙●
5	- 0,25	+ 0,25	**7,480** ⊙●
6	- 0,25	+ 0,25	**8,970** ⊙●

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural ● black

Custom extrusion Time of delivery on request

Lengths + widths are nominal

PA (NYLON)

GEHR PA™ (NYLON™)

Polyamide has high thermostability (temperature resistant from -40 °F to approx. +212 °F) and high stiffness, hardness and toughness. These are some of the main characteristics. Due to the fact, that the good mechanical characteristics will be achieved only after conditioning, this material must be conditioned again after annealing. In addition, this conditioning occurs with a longer storage in air automatically.

GEHR PA 6 XT™ (EXTRUDED)

Very tough (also in cold condition), high hardness.

GEHR PA 6.6™

Polyamide with the highest hardness, rigidity, resistance to wear and heat deflection temperature.

GEHR PA 6.6-30GF™

The 30 % glass fiber reinforced PA 6.6 has an improved dimensional stability, a very high stiffness and heat resistance that opens up further applications.

ECO-GEHR PA 6.10™

This PA is obtained from the oil of the castor bean seed and is therefore based over more than 60 % on renewable resources.

GEHR PA 12-TR™

Many components in optical applications can be realized by the transparency and the dynamic strength.

Properties GEHR PA™ (NYLON™)

- High strength and stiffness
- High impact and notch impact strength
- High heat deflection temperature
- Shock-absorbing properties
- Good sliding and dry running operating features
- Good chemical stability against organic solvents and fuels
- Size alteration by humidity absorption must be considered
- Dimension stability, electrical and mechanical properties may become affected by water absorption

Applications GEHR PA™ (NYLON™)

- Bearing parts (good sliding properties)
- Gear wheels
- Pump parts
- Sliding rails
- Rollers (reduction of the noise level)
- Fittings

Properties GEHR PA 12-TR™

- Transparency
- Extremely dynamic strength
- High chemical resistance
- High stress-cracking resistance
- Very high toughness
- Good weather resistance

ROUND RODS

Stock Lengths

∅ ½"–4" = 10 ft

∅ 4½"–6" = 5 ft

∅ inch		Tol. -0 inch	GEHR PA 6.6™ lbs/ft
½	0.750	+ 0.040	**0.097** ⊙
⅝	0.875	+ 0.040	**0.160** ⊙
¾	0.750	+ 0.002	**0.218** ⊙
⅞	0.875	+ 0.040	**0.305** ⊙
1	1.000	+ 0.040	**0.407** ⊙
1¼	1.250	+ 0.040	**0.607** ⊙
1½	1.500	+ 0.060	**0.917** ⊙
1¾	1.750	+ 0.060	**1.190** ⊙
2	2.000	+ 0.060	**1.650** ⊙
2¼	2.250	+ 0.080	**1.970** ⊙
2½	2.500	+ 0.080	**2.430** ⊙
3	3.000	+ 0.110	3.663
3½	3.500	+ 0.110	4.986
4	4.000	+ 0.130	6.474
4½	4.500	+ 0.130	8.156
5	5.000	+ 0.180	10.033
5½	5.500	+ 0.180	12.103
6	6.000	+ 0.190	14.368

ROUND RODS

Stock Lengths

1 | 3 m

∅	Tolerances mm		GEHR PA 6 XT™	GEHR PA6.6-30GF™**	GEHR PA 12-TR™	ECO-GEHR PA 6.10™
mm	min.	max.	kg/m	kg/m	kg/m	kg/m
6	+ 0,1	+ 0,6	**0,035** ⊙	0,041	0,032	0,035
8	+ 0,1	+ 0,7	**0,063** ⊙	0,074	0,057	0,062
10	+ 0,1	+ 0,7	**0,096** ⊙●	0,113	0,086	0,093
12	+ 0,2	+ 0,8	**0,141** ⊙	0,166	0,127	0,137
15	+ 0,2	+ 0,8	**0,217** ⊙	0,258	0,195	0,210
16	+ 0,2	+ 0,8	**0,246** ⊙●	0,290	0,221	0,238
18	+ 0,2	+ 0,8	**0,309** ⊙	0,365	0,278	0,300
20	+ 0,2	+ 0,8	**0,380** ⊙●	**0,450** ●	0,339	0,366
22	+ 0,2	+ 1,0	**0,462** ⊙	0,547	0,413	0,446
25	+ 0,2	+ 1,0	**0,595** ⊙●	**0,705** ●	0,531	**0,573** ⊙
28	+ 0,2	+ 1,0	**0,740** ⊙	0,877	0,661	0,713
30	+ 0,2	+ 1,0	**0,850** ⊙●	**1,007** ●	0,759	0,819
32	+ 0,2	+ 1,1	0,970	1,149	0,866	0,935
36	+ 0,2	+ 1,2	**1,220** ⊙●	1,446	1,089	1,126
40	+ 0,2	+ 1,2	**1,500** ⊙●	**1,778** ●	**1,339** ⊕	1,446
45	+ 0,3	+ 1,3	**1,910** ⊙●	2,263	1,705	1,841
50	+ 0,3	+ 1,3	**2,350** ⊙●	**2,785** ●	2,098	**2,266** ⊙
56	+ 0,3	+ 1,3	**2,930** ⊙●	3,472	2,616	2,825
60	+ 0,3	+ 1,6	**3,380** ⊙●	**4,005** ●	3,018	3,259
65	+ 0,3	+ 1,6	**3,950** ⊙	4,680	3,527	3,809
70	+ 0,3	+ 1,6	**4,640** ⊙●	**5,498** ●	4,143	4,474
75	+ 0,4	+ 2,0	**5,300** ⊙	6,281	4,732	5,110
80	+ 0,4	+ 2,0	**6,050** ⊙●	**7,169** ●	**5,402** ⊕	5,834
85	+ 0,5	+ 2,2	**6,850** ⊙	8,117	6,116	6,605
90	+ 0,5	+ 2,2	**7,670** ⊙●	9,089	6,848	7,396
100	+ 0,6	+ 2,5	**9,450** ⊙●	**11,198** ●	**8,438** ⊕	9,113
110	+ 0,7	+ 3,0	**11,500** ⊙	13,628		
120	+ 0,8	+ 3,5	**13,700** ⊙	**16,235** ●		
130	+ 0,9	+ 3,8	**16,100** ⊙	19,079		
135	+ 0,9	+ 3,8	17,300	20,501		
140	+ 0,9	+ 3,8	**18,700** ⊙	22,160		
150	+ 1,0	+ 4,2	**21,400** ⊙	**25,359** ●*		
160	+ 1,1	+ 4,5	24,400			
165	+ 1,2	+ 5,0	25,300			
180	+ 1,2	+ 5,0	**30,800** ⊙			
200	+ 1,3	+ 5,5	**38,100** ⊙			
250	+ 1,5	+ 6,2	58,550			

Stock item Colors: ⊙ natural ⊕ transparent

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural ● black

Custom extrusion Time of delivery on request

Lengths are nominal * Length 1m ** Tolerances on request

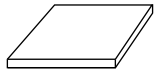
HOLLOW BARS

Stock Lengths

1 | 3 m

D d	Tolerances mm				GEHR PA 6 XT™
D x d	D		d		
mm	min.	max.	min.	max.	kg/m
20 x 10	+ 0,4	+ 1,1	- 0,4	- 1,1	0,314
25 x 15	+ 0,4	+ 1,1	- 0,4	- 1,1	0,418
30 x 15	+ 0,6	+ 2,0	- 0,6	- 2,0	0,675
30 x 20	+ 0,6	+ 2,0	- 0,6	- 2,0	0,525
32 x 15	+ 0,6	+ 2,0	- 0,6	- 2,0	0,835
36 x 17	+ 0,6	+ 2,0	- 0,6	- 2,0	1,040
36 x 25	+ 0,6	+ 2,0	- 0,6	- 2,0	0,755
40 x 20	+ 0,6	+ 2,0	- 0,6	- 2,0	**1,230** ⊙
45 x 20	+ 0,6	+ 2,0	- 0,6	- 2,0	1,630
45 x 25	+ 0,6	+ 2,0	- 0,6	- 2,0	1,440
50 x 20	+ 0,6	+ 2,0	- 0,6	- 2,0	**2,070** ⊙
50 x 25	+ 0,8	+ 2,5	- 0,8	- 2,5	1,880
56 x 25	+ 0,8	+ 2,5	- 0,8	- 2,5	2,420
56 x 35	+ 0,8	+ 2,5	- 0,8	- 2,5	1,910
60 x 30	+ 0,8	+ 2,5	- 0,8	- 2,5	**2,720** ⊙
60 x 40	+ 0,8	+ 2,5	- 0,8	- 2,5	**2,120** ⊙
70 x 40	+ 0,8	+ 3,0	- 0,8	- 3,0	3,380
70 x 50	+ 0,8	+ 3,0	- 0,8	- 3,0	2,600
80 x 40	+ 0,8	+ 3,0	- 0,8	- 3,0	**4,780** ⊙
80 x 50	+ 1,2	+ 3,6	- 1,6	- 5,0	3,990
80 x 60	+ 1,2	+ 3,6	- 1,6	- 5,0	3,030
90 x 40	+ 1,2	+ 3,6	- 1,6	- 5,0	6,530
90 x 60	+ 1,2	+ 3,6	- 1,6	- 5,0	**4,840** ⊙
100 x 60	+ 1,2	+ 3,6	- 1,6	- 5,0	6,610
100 x 80	+ 1,2	+ 3,6	- 1,6	- 5,0	4,180
125 x 50	+ 1,5	+ 4,5	- 2,0	- 6,5	12,920
150 x 80	+ 1,5	+ 4,5	- 2,0	- 6,5	15,980
150 x 100	+ 1,5	+ 4,5	- 2,0	- 6,5	12,880
180 x 90	+ 1,8	+ 5,4	- 2,2	- 7,5	23,840
180 x 120	+ 1,8	+ 5,4	- 2,2	- 7,5	18,410
180 x 140	+ 1,8	+ 5,4	- 2,2	- 7,5	13,980
200 x 100	+ 2,0	+ 6,0	- 2,5	- 8,5	29,550
200 x 120	+ 2,0	+ 6,0	- 2,5	- 8,5	25,780
200 x 150	+ 2,0	+ 6,0	- 2,5	- 8,5	18,760

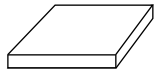
PLATES (CALENDERED)



Stock Lengths
2 m

	Tolerances mm		GEHR PA 6 X™
			Width 1000 mm
mm	min.	max.	kg/m
2	- 0,15	+ 0,15	**2,370** ⊙
3	- 0,20	+ 0,20	**3,560** ⊙
4	- 0,20	+ 0,20	**4,740** ⊙
5	- 0,25	+ 0,25	**5,930** ⊙
6	- 0,25	+ 0,25	**7,120** ⊙
8	- 0,20	+ 0,25	**10,320** ⊙

PLATES



Stock Lengths
1 | 2 | 3 m

	Tolerances mm		GEHR PA 6 XT™	GEHR PA 6.6™	GEHR PA 6.6-30GF™ *
			Width 610 mm	Width 610 mm	Width 620 mm
mm	min.	max.	kg/m	kg/m	kg/m
8	+ 0,2	+ 0,9	7,750	7,828	
10	+ 0,2	+ 1,1	**7,800** ⊙	**7,878** ⊙	**9,243** ●
12	+ 0,3	+ 1,5	**9,700** ⊙	**9,797** ⊙	11,495
15	+ 0,3	+ 1,5	**11,500** ⊙	11,615	13,628
16	+ 0,3	+ 1,5	**12,100** ⊙	**12,221** ⊙	
20	+ 0,3	+ 1,5	**15,400** ⊙	**15,554** ⊙	**18,249** ●
25	+ 0,3	+ 1,5	**18,900** ⊙	**19,089** ⊙	22,397
30	+ 0,5	+ 2,5	**22,750** ⊙	**22,978** ⊙	**26,959** ●
35	+ 0,5	+ 2,5	**26,700** ⊙	26,967	31,640
40	+ 0,5	+ 2,5	**30,500** ⊙	**30,805** ⊙	**36,143** ●
50	+ 0,5	+ 2,5	**37,800** ⊙	**38,178** ⊙	**44,793** ●
60	+ 0,5	+ 3,5	**46,100** ⊙	46,561	**54,629** ●
70	+ 0,5	+ 3,5	**52,150** ⊙	52,672	61,798
80	+ 0,5	+ 5,0	**60,000** ⊙	60,600	**71,100** ●
100	+ 0,5	+ 5,0	**75,400** ⊙	76,154	89,349

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural ● black
Custom extrusion Time of delivery on request
* Tolerances on request

PMMA (ACRYLIC)

GEHR PMMA XT™ (ACRYLIC)

Polymethylmethacrylate is brittle and shows a good mechanical strength, tensile strength and hardness. PMMA is also scratch resistant and easy to polish. It exhibits good temperature resistance and UV-stability. The operating temperature of PMMA ranges from -40 °F to approx. +158 °F.

Properties GEHR PMMA XT™ (ACRYLIC)

- Very high mechanical strength and hardness
- High mechanical rigidity
- Excellent transparency
- Easy to polish
- Good thermal stability
- Good insulation properties
- Low water absorption
- Excellent weather resistance
- Possible stress problems
- Low chemical resistance
- Brittle

Applications GEHR PMMA XT™ (ACRYLIC)

- Display
- Signage
- Advertisement
- Food industry
- Tubes for lamps
- Automotive
- Milk pipes
- Hand rails

ROUND RODS

Stock Lengths

∅ 5–120 mm = 2 m

∅ 150–200 mm = 1 m

∅		Tol. -0	GEHR PMMA XT™
mm	inch	inch.	lbs/ft
5	0,196	+ 0,008	**0.020** ⊕
6	0,236	+ 0,008	**0.027** ⊕
7	0,276	+ 0,008	0.034
8	0,315	+ 0,008	**0.047** ⊕
10	0,394	+ 0,016	**0.067** ⊕
12	0,472	+ 0,016	**0.094** ⊕
15	0,591	+ 0,016	**0.155** ⊕
18	0,709	+ 0,016	**0.215** ⊕
20	0,787	+ 0,016	**0.269** ⊕
22	0,866	+ 0,024	0.329
25	0,984	+ 0,024	**0.417** ⊕
28	1,100	+ 0,024	0.517
30	1,181	+ 0,047	**0.605** ⊕
35	1,378	+ 0,047	**0.786** ⊕
40	1,575	+ 0,047	**1.028** ⊕
50	2.000	+ 0.060	**1.558** ⊕
60	2.362	+ 0.071	**2.401** ⊕
65	2.559	+ 0.071	2.856
70	2.756	+ 0.083	**3.256** ⊕
75	2.953	+ 0.089	**3.771** ⊕
80	3.150	+ 0.095	**4.104** ⊕
90	3.543	+ 0.106	**5.149** ⊕
100	3.937	+ 0.118	**6.352** ⊕
120	4.724	+ 0.142	**9.094** ⊕
150	5.906	+ 0.177	**14.042** ⊕
180	7.087	+ 0.213	24.741
200	7.874	+ 0.236	**25.643** ⊕

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊕ transparent

Custom extrusion Time of delivery on request

Lengths are nominal

ABS / PPO

GEHR ABS™

Acrylnitrile Butadiene Styrene copolymer has good thermal and dimensional stability and high impact strength (also at low temperatures). Exhibits good scratch resistance and has good dimensional stability. ABS can be used in temperatures ranging from -58 °F to +158 °F.

Properties GEHR ABS™

- Good mechanical strength and stiffness
- Scratch resistant
- High surface strength
- High impact strength
- High dimensional stability
- Not weather resistant
- Limited resistance to acid and lyes

Applications GEHR ABS™

- Mostly applications where high impact strength at low temperatures is required
- Model construction
- Galvanized components

GEHR PPO™ (NORYL)

is a Polyphenylene Oxide that offers high impact strength very high dimensional stability. GEHR PPO also displays excellent electrical properties that will not be influenced by surrounding frequencies and therefore is the material of choice for electrical applications.

Properties GEHR PPO™ (NORYL)

- High impact properties
- Very high dimensional stability
- Excellent electrical insulative properties
- Self-extinguishing
- High impact strength
- High resistance to hydrolysis
- Low tendency to creep
- High thermal stability
- Maximum operating temperature 221 °F

Applications GEHR PPO™ (NORYL)

- Parts for electrical engineering and household utensils
- Shafts
- Gear wheels
- Spacers etc.

GEHR PPO-30GF™

is a Polyphenylenoxide that is reinforced with 30% glass fiber which greatly enhances mechanical properties as well as the temperature profile. This product excels in electrical applications that require superior dimensional stability.

ROUND RODS

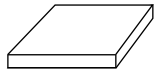
Stock Lengths

∅ ¼" – 2" = 8 ft

∅ 2⅛" – 6" = 4 ft

∅ inch		Tol -0 inch	GEHR ABS™ lbs/ft	GEHR PPO™ lbs/ft	GEHR PPO-30GF™ lbs/ft
¼	0.250	+ 0.010	**0.023** ⊙●	0.023	0.028
⅜	0.375	+ 0.015	**0.051** ⊙●	**0.053** ●	0.064
½	0.500	+ 0.020	**0.092** ⊙●	**0.093** ●	**0.114** ⊙
⅝	0.625	+ 0.025	**0.144** ⊙●	**0.145** ●	0.177
¾	0.750	+ 0.030	**0.206** ⊙●	**0.209** ●	**0.256** ⊙
⅞	0.875	+ 0.035	0.281	**0.284** ●	0.345
1	1.000	+ 0.040	**0.368** ⊙●	**0.371** ●	**0.450** ⊙
1¼	1.250	+ 0.050	**0.575** ⊙●	**0.590** ●	**0.716** ⊙
1⅜	1.375	+ 0.055	**0.695** ⊙	0.714	0.868
1½	1.500	+ 0.060	**0.828** ⊙●	**0.851** ●	**1.032** ⊙
1⅝	1.625	+ 0.065	0.972	0.998	1.212
1¾	1.750	+ 0.070	**1.127** ⊙●	**1.160** ●	1.406
1⅞	1.875	+ 0.075	1.294	1.329	1.615
2	2.000	+ 0.080	**1.477** ⊙●	**1.514** ●	**1.836** ⊙
2⅛	2.125	+ 0.085	1.662	1.708	2.072
2¼	2.250	+ 0.090	**1.956** ●	1.914	2.321
2½	2.500	+ 0.100	**2.300** ⊙●	**2.360** ●	**2.689** ⊙
2¾	2.750	+ 0.110	**2.784** ●	2.860	3.470
3	3.000	+ 0.120	**3.313** ⊙●	**3.404** ●	4.133
3¼	3.250	+ 0.130	3.888	3.992	4.848
3½	3.500	+ 0.140	**4.509** ⊙●	**4.636** ●	**5.624** ⊙
3¾	3.750	+ 0.150	5.077	5.322	6.457
4	4.000	+ 0.160	**5.890** ⊙●	**6.057** ●	7.348
4¼	4.250	+ 0.170	6.649	6.832	8.288
4½	4.500	+ 0.180	7.454	**7.661** ●	9.301
5	5.000	+ 0.200	**9.200** ●	**9.460** ●	11.482
5½	5.500	+ 0.220	11.136	11.441	13.888
6	6.000	+ 0.240	**13.253** ⊙	13.520	16.531

PLATES



Stock Lengths

¾"–2" = 48" | 96"

2 ½"–4" = 48"

inch		Tol. -0 inch	GEHR ABS™ Width 24" lbs/sft
⅜	0.375	+ 0.025	2.223
½	0.500	+ 0.025	2.910
⅝	0.625	+ 0.025	3.651
¾	0.750	+ 0.102	**4.459** ⊙●
1	1.000	+ 0.106	**5.831** ⊙●
1¼	1.250	+ 0.118	**7.386** ⊙●
1½	1.500	+ 0.196	**8.824** ⊙●
1¾	1.750	+ 0.196	**10.197** ⊙●
2	2.000	+ 0.196	**11.377** ⊙●
2¼	2.250	+ 0.196	12.943
2½	2.500	+ 0.196	**14.315** ⊙●
2¾	2.750	+ 0.196	15.688
3	3.000	+ 0.196	**17.061** ⊙●
3¼	3.250	+ 0.196	18.433
3½	3.500	+ 0.196	**19.807** ⊙
3¾	3.750	+ 0.196	21.306
4	4.000	+ 0.196	**22.679** ⊙●

Stock item Colors: ⊙ natural ● black

Custom extrusion Time of delivery on request

Lengths are nominal

PP

GEHR PP-C™ Copolymer

Polypropylene exhibits high mechanical and tensile strength, but a low notch impact strength. PP resists stress cracking and it is easy to weld. At minus temperatures it can become brittle. The chemical and electrical properties are very good. The continous operating temperatures ranges between -22 °F and +190 °F.

Properties GEHR PP-C™ Copolymer

- Excellent impact strength
- High mechanical strength
- High tensile strength
- Good notched impact strength
- Easy to fabricate and weld
- Excellent resistance to stress cracking
- Very good chemical resistance
- Food safe
- Excellent dielectric properties
- Poor resistance to UV
- Low abrasion resistance

GEHR PP-H™ Homopolymer

Is a Homopolymer Polypropylene that offers slightly improved chemical resistance and upper temperature resistance as well as tensile strength and is a higher density than GEHR PP-C™. The continous operating temperatures ranges between +41 °F to +212 °F

Properties GEHR PP-H™ Homopolymer

- Excellent chemical resistance
- Improved upper temperature range
- Improved tensile strength
- Higher density

GEHR PP-30GF™

The 30 % glass fiber reinforced PP has an improved dimensional stability, very high stiffness and high heat resistance that opens up additional applications.

Properties GEHR PP-30GF™

- Very high dimensional stability
- Very high tensile strength
- High temperature resistance
- Heat deflection temperature (HDT/A) of +284 °F

Applications

- Pumps
- Valves
- Seals
- Toys
- Bushings

ROUND RODS

Stock Lengths

PP-C™/PP-30GF™

∅ ¼" – 2" = 8 ft

∅ 2⅛" – 14" = 4 ft

PP-H™

∅ 7" – 14" = 1 m

∅ inch		Tolerances -0 inch	GEHR PP-C™ lbs/ft	GEHR PP-H™ lbs/ft	GEHR PP-30GF™* lbs/ft
¼	0.250	+ 0.010	**0.019** ⊙	0.019	
⅜	0.375	+ 0.015	**0.044** ⊙	0.044	
½	0.500	+ 0.020	**0.079** ⊙	**0.079** ○●	
⅝	0.625	+ 0.025	**0.124** ⊙	**0.124** ●	
¾	0.750	+ 0.030	**0.179** ⊙	**0.179** ●	**0.225** ●
⅞	0.875	+ 0.035	**0.244** ⊙	0.244	0.297
1	1.000	+ 0.040	**0.319** ⊙	**0.319** ○●	0.400
1⅛	1.125	+ 0.045	**0.403** ⊙	**0.388** ●	0.491
1¼	1.250	+ 0.050	**0.498** ⊙	**0.498** ●	0.606
1⅜	1.375	+ 0.055	**0.603** ⊙	**0.603** ●	0.733
1½	1.500	+ 0.060	**0.718** ⊙	**0.718** ○●	0.899
1⅝	1.625	+ 0.065	0.809	0.809	1.055
1¾	1.750	+ 0.070	**0.976** ⊙	**0.976** ○●	1.224
1⅞	1.875	+ 0.075	**1.121** ⊙	1.121	1.405
2	2.000	+ 0.080	**1.277** ⊙	**1.277** ○●	**1.598** ●
2⅛	2.125	+ 0.085	1.439	1.383	1.804
2¼	2.250	+ 0.090	**1.615** ⊙	**1.615** ○●	2.023
2⅜	2.375	+ 0.095	1.800	1.732	2.254
2½	2.500	+ 0.100	**1.995** ⊙	**1.995** ○●	2.497
2¾	2.750	+ 0.110	**2.414** ⊙	**2.414** ●	3.022
3	3.000	+ 0.120	**2.873** ⊙	**2.873** ○●	3.596
3¼	3.250	+ 0.130	**3.372** ⊙	3.372	4.220
3½	3.500	+ 0.140	**3.911** ⊙	3.911	4.895
3¾	3.750	+ 0.150	**4.489** ⊙	4.489	5.619
4	4.000	+ 0.160	**5.103** ⊙	**4.900** ○●	6.393
4¼	4.250	+ 0.170	5.760	5.760	7.217
4½	4.500	+ 0.180	**6.465** ⊙	**6.465** ○	8.091
5	5.000	+ 0.200	**7.981** ⊙	**7.981** ○●	9.989
5½	5.500	+ 0.220	**9.658** ⊙	9.658	12.087
6	6.000	+ 0.240	**11.626** ⊙	**11.626** ○	14.385
7	7.000	+ 0.280	**15.644** ⊙	**15.644** ○●	19.579
8	8.000	+ 0.320	**21.428** ⊙	**21.428** ○	
9	9.000	+ 0.360	**26.714** ⊙	**26.714** ○	
10	10.000	+ 0.400	**32.400** ⊙	**32.400** ○	
12	12.000	+ 0.480	**46.427** ⊙	**46.427** ○	
14	14.000	+ 0.560	**63.000** ⊙	**63.000** ○	

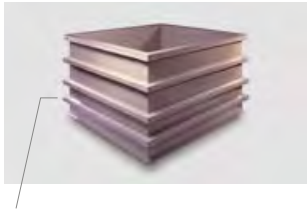
STANDARD PROFILES

GEHR PP-H™

Angle Profiles				U-Channels			
A	B	C	lbs/ft	A	B	C	lbs/ft
2	2	¼	**0.275** ⊙	2½	2¼	3/16	**0.500** ⊙
				2½	3¼	3/16	**0.650** ⊙
				3½	6	3/16	1.040

Stock Lengths

3 m / 10 ft



Profiles

Stock item Colors: ⊙ natural (available in PP-H upon request) ● black (available in PP-C upon request) ◍ euro gray

Custom extrusion Time of delivery on request

Lengths are nominal *Tolerances on request

UHMWPE

GEHR UHMWPE™

The ultra high molecular weight Polyethylene has a high abrasion resistance (very good glide characteristics) and a high toughness at the same time. The chemical and crack resistance are optimum in comparison to the standard HDPE The operating temperature of UHMWPE ranges from -238 °F to +194 °F.

Properties GEHR UHMWPE™

- Low density
- Very good wear resistance
- Very high abrasion resistance
- High toughness (also at low temperature)
- High elongation at break
- Very good electrical and dielectric properties
- Very low water absorption
- Low steam permeability
- High chemical resistance
- Good protection against stress cracking
- Food safe

Applications GEHR UHMWPE™

- Pumping and valve parts
- Gaskets
- Slide profiles
- Parts for the food industry

ROUND RODS

Stock Lengths

1 | 2 m

∅	Tolerances mm		GEHR UHMWPE™
mm	min.	max.	kg/m
20	+ 0,2	+ 1,2	**0,317** ⊙ ●
25	+ 0,2	+ 1,2	**0,491** ⊙
30	+ 0,2	+ 1,2	**0,703** ⊙● ●
35	+ 0,2	+ 1,3	**0,970** ⊙
40	+ 0,2	+ 1,5	**1,240** ⊙●●●
45	+ 0,3	+ 2,0	1,570
50	+ 0,3	+ 2,0	**1,950** ⊙●●●
55	+ 0,3	+ 2,0	2,289
60	+ 0,3	+ 2,3	**2,800** ⊙●●●
65	+ 0,3	+ 2,3	**3,269** ⊙
70	+ 0,3	+ 2,5	**3,800** ⊙●●●
75	+ 0,3	+ 2,5	4,355
80	+ 0,4	+ 3,0	**4,947** ⊙●●●
90	+ 0,5	+ 3,4	**6,264** ⊙●●●
100	+ 0,6	+ 3,8	**7,728** ⊙●●●
110	+ 0,7	+ 4,2	**9,330** ⊙●●
120	+ 0,8	+ 4,6	**11,230** ⊙●●●
125	+ 0,8	+ 4,6	**12,750** ⊙
130	+ 0,9	+ 5,4	**13,130** ⊙●●
150	+ 1,0	+ 5,8	**17,380** ⊙●●
160	+ 1,1	+ 6,3	**19,760** ⊙●●
165	+ 1,1	+ 6,3	20,589
180	+ 1,2	+ 7,4	**24,990** ⊙●●
200	+ 1,3	+ 8,5	**31,110** ⊙●●

ROUND RODS

Stock Lengths

1"–4" = 10 ft

4¼"–8" = 5 ft

∅ inch		Tol. -0 inch	GEHR UHMWPE™ lbs/ft
¾	0.750	+ 0.040	0.190
⅞	0.875	+ 0.040	0.250
1	1.000	+ 0.040	**0.350** ⊙
1⅛	1.125	+ 0.040	0.420
1¼	1.250	+ 0.040	**0.540** ⊙
1⅜	1.375	+ 0.060	**0.630** ⊙
1½	1.500	+ 0.060	**0.800** ⊙
1¾	1.750	+ 0.060	**1.050** ⊙
2	2.000	+ 0.060	**1.380** ⊙
2¼	2.250	+ 0.080	**1.730** ⊙
2⅜	2.375	+ 0.080	**1.850** ⊙
2½	2.500	+ 0.080	**2.060** ⊙
2¾	2.750	+ 0.080	**2.560** ⊙
3	3.000	+ 0.110	**3.130** ⊙
3¼	3.250	+ 0.110	3.520
3½	3.500	+ 0.110	4.120
3¾	3.750	+ 0.110	4.730
4	4.000	+ 0.130	**5.390** ⊙
4¼	4.250	+ 0.130	6.050
4½	4.500	+ 0.130	6.770
5	5.000	+ 0.180	**8.260** ⊙
5½	5.500	+ 0.180	10.260
6	6.000	+ 0.190	**12.180** ⊙
7	7.000	+ 0.240	**16.960** ⊙
8	8.000	+ 0.280	**22.540** ⊙

Stock item Colors: ⊙ natural

Stock item Germany (Product available from stock shipped from Mannheim/Germany) Colors: ⊙ natural ● black ● green (~RAL 6024) ● blue (~RAL 5015)

Custom extrusion Time of delivery on request

Lengths are nominal

HDPE

GEHR HDPE™

Polyethylene has good chemical resistance to almost all acids, lyes, many organic solvents and hot water. PE has good insulation properties and is easy to weld. The operating temperature is from -58 °F to +194 °F.

GEHR PE-ELS™ (ELECTRICALLY CONDUCTIVE)

A variant of HDPE with improved electrical conductivity.
Volume resistivity ≤ 10^4 Ω x cm
Surface resistivity ≤ 10^5 Ω

Properties GEHR HDPE™

- Low density
- High toughness (also at low temperature)
- High elongation at break
- Very good electrical and dielectric properties
- Very low water absorption
- Low steam permeability
- High chemical resistance
- Good protection against stress cracking
- Food safe
- Soft surface (low tensile strength)
- HF welding not recommended
- Natural color is not weather resistant

Applications GEHR HDPE™

- Transport containers
- Pumps and valve parts
- Parts in the tank construction
- Components with medical applications
- Gaskets
- Sliding profiles
- Components for the food industry

ROUND RODS

Stock Lengths

∅ ¼" – 2" = 8 ft

∅ 2⅛" – 6" = 4 ft

∅ inch		Tol. -0 inch	GEHR HDPE™ lbs/ft
¼	0.250	+ 0.010	0.021
⅜	0.375	+ 0.015	0.047
½	0.500	+ 0.020	**0.084** ⊙●
⅝	0.625	+ 0.025	**0.131** ⊙●
¾	0.750	+ 0.030	**0.189** ⊙●
⅞	0.875	+ 0.035	**0.258** ⊙●
1	1.000	+ 0.040	**0.337** ⊙●
1⅛	1.125	+ 0.045	**0.426** ⊙●
1¼	1.250	+ 0.050	**0.527** ⊙●
1⅜	1.375	+ 0.055	0.637
1½	1.500	+ 0.060	**0.758** ⊙●
1⅝	1.625	+ 0.065	0.890
1¾	1.750	+ 0.070	**1.033** ⊙●
1⅞	1.875	+ 0.075	1.185
2	2.000	+ 0.080	1.349
2⅛	2.125	+ 0.085	1.521
2¼	2.250	+ 0.090	1.706
2⅜	2.375	+ 0.095	1.901
2½	2.500	+ 0.100	**2.108** ⊙●
2¾	2.750	+ 0.110	2.549
3	3.000	+ 0.120	**3.035** ⊙●
3¼	3.250	+ 0.130	3.560
3½	3.500	+ 0.140	**4.132** ⊙
3¾	3.750	+ 0.150	4.740
4	4.000	+ 0.160	**5.397** ⊙
4¼	4.250	+ 0.170	6.090
4½	4.500	+ 0.180	**6.830** ⊙
5	5.000	+ 0.200	**8.433** ⊙
5½	5.500	+ 0.220	10.203
6	6.000	+ 0.240	12.143

ROUND RODS

Stock Lengths

∅ 10–100 mm = 2 m

∅	Tolerances mm		GEHR PE-ELS™
mm	min.	max.	kg/m
10	+ 0,1	+ 0,6	0,086
12	+ 0,2	+ 0,7	0,129
16	+ 0,2	+ 0,8	0,213
20	+ 0,2	+ 1,2	0,343
25	+ 0,2	+ 1,2	0,531
30	+ 0,2	+ 1,2	0,758
32	+ 0,5	+ 1,1	0,842
35	+ 0,2	+ 1,3	1,040
40	+ 0,2	+ 1,5	1,347
50	+ 0,3	+ 2,0	2,116
55	+ 0,3	+ 2,0	2,484
60	+ 0,3	+ 2,3	3,032
65	+ 0,3	+ 2,5	3,547
70	+ 0,3	+ 2,5	4,116
75	+ 0,4	+ 3,0	4,726
80	+ 0,4	+ 3,0	5,368
90	+ 0,5	+ 3,4	6,789
100	+ 0,6	+ 3,8	8,379

Stock item

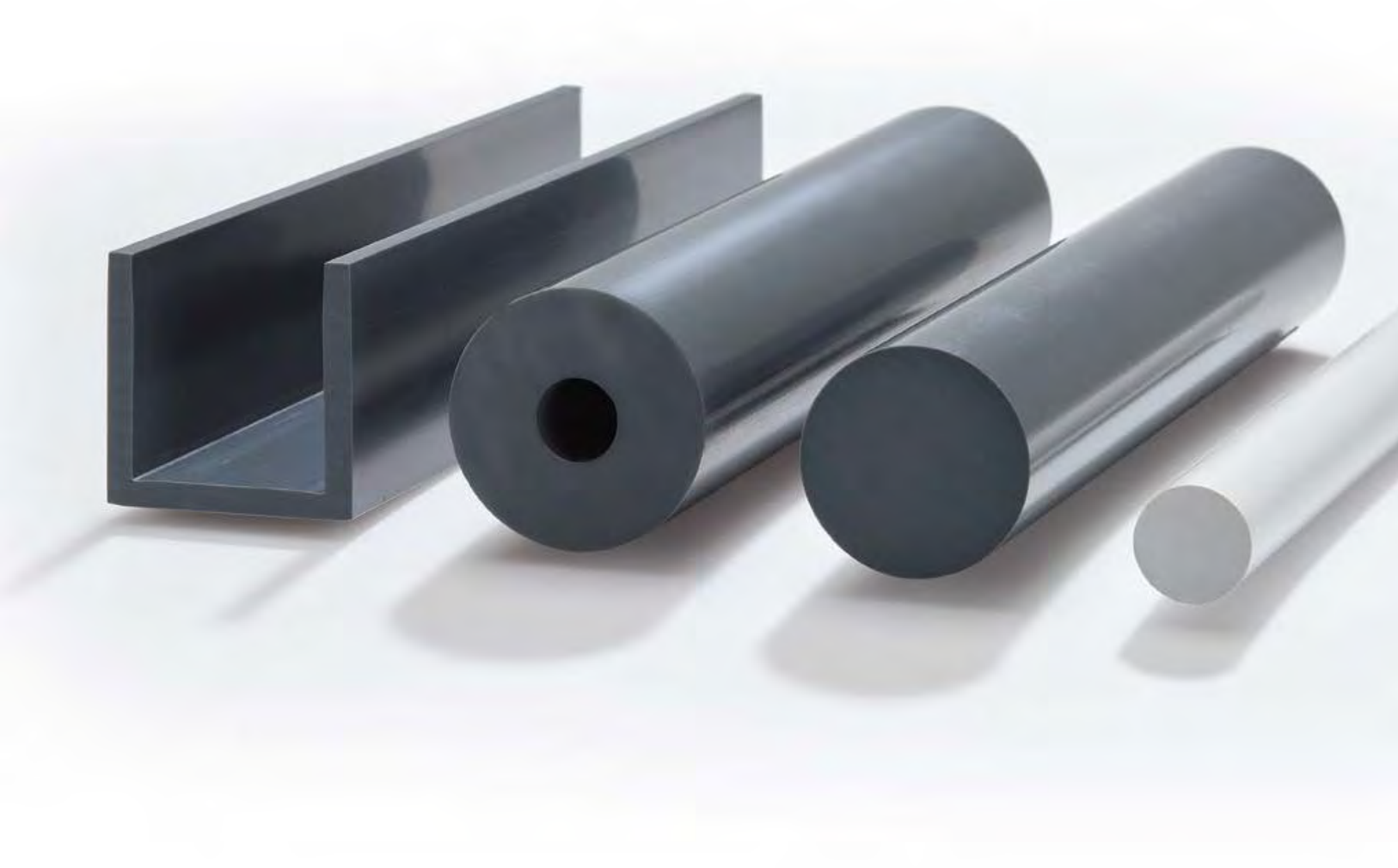
Custom extrusion

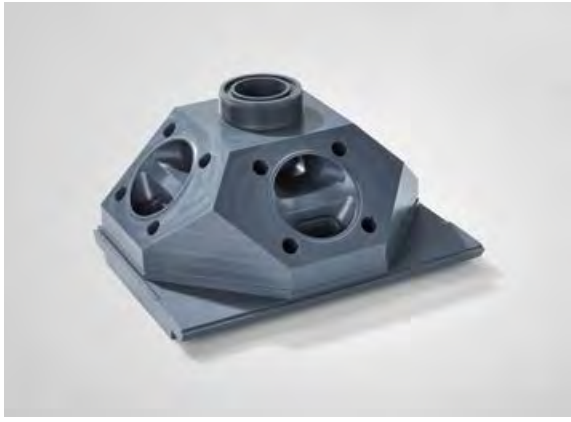
Lengths are nominal

Colors: ⊙ natural ● black

Time of delivery on request

PVC/CPVC





GEHR PVC TYPE I™

Polyvinyl chloride is a self-extinguishing material with exceptional chemical resistance and also with lower stress cracking. PVC TYPE I™ possesses high mechanical strength, tensile strength and a continuous operating temperature from +5 °F to +140 °F. It can also be easily glued and welded.

Properties GEHR PVC TYPE I™

- Self-extinguishing
- Excellent chemical resistance
- Good mechanical strength
- Good tensile strength
- Easy to fabricate, glue, cement and bond
- Good insulative properties
- Low water absorption
- Good impact strength
- Limited weather resistance
- Operating temperature range from +5 °F to +140 °F

GEHR PVC TYPE II™

is a rigid Polyvinylchloride that has been enhanced to improve the impact strength. GEHR PVC Type II™ has many of the benefits of GEHR PVC Type I™ but also provides a wider operating temperature range especially in colder environments.

GEHR CPVC™

High rigidity, strength and hardness at increased temperatures +185 °F.

Properties GEHR CPVC™

- Improved upper temperature limit
- Tested but not listed to UL 94 V-0
- Limiting Oxygen Index (LOI) is 65
- Operating temperature range from +5 °F to +185 °F

Applications GEHR PVC™ / CPVC™

- Lamp housing
- Seals
- Pipe systems
- Parts for the dental medicine
- Chemical tanks

APPROVALS GEHR PVC™/CPVC™

GEHR PVC Type I+II™ and GEHR CPVC™ round rods in gray are physiologically harmless and NSF listed to 14 & 61.

GEHR PVC Type I™ round rods in any color up to and including 7" diameter are listed to NSF 14, 51 & 61 which includes food handling equipment and drinking water system components.

GEHR PVC Type II™ round rods in light gray color up to 6" diameter are listed to NSF 51 & 61.

Our GEHR CPVC™ round rods in gray color up to 8" diameter are listed to NSF 14 & 61 which included plastic piping components and related products.

ROUND RODS

Stock Lengths

PVC™
- ∅ ¼"–2" = 10 ft
- ∅ 2⅛"–8" = 5 ft
- ∅ 9"–10" = 2 ft
- ∅ 11" = 3 ft
- ∅ 12"–14" = 2 ft
- ∅ 16" = 20"

CPVC™
- ∅ ¼"–2" = 10 ft
- ∅ 2⅛"–4½" = 5 ft
- ∅ 5"–9" = 4 ft

∅ inch		Tol -0 inch	GEHR PVC TYPE I™ lbs/ft	GEHR PVC TYPE II™ lbs/ft	GEHR CPVC™ lbs/ft	Tol -0 inch	GEHR PVC TYPE I™ centerless Ground lbs/ft
¼	0.250	+ 0.008	**0.030** ●●○	0.030	**0.033** ●	+ 0.005	**0.029** ●
5/16	0.312	+ 0.009	0.052	0.052	0.053	+ 0.005	0.051
⅜	0.375	+ 0.011	**0.068** ●●○	**0.068** ●	**0.079** ●	+ 0.005	**0.066** ●
7/16	0.437	+ 0.013	0.093	0.093	0.104	+ 0.005	0.089
½	0.500	+ 0.015	**0.122** ●●○	**0.122** ●	**0.135** ●	+ 0.005	**0.117** ●
9/16	0.562	+ 0.017	0.155	0.155	0.172	+ 0.005	0.157
⅝	0.625	+ 0.019	**0.190** ●●○	0.190	**0.218** ●	+ 0.005	**0.183** ●
¾	0.750	+ 0.022	**0.274** ●●○	**0.274** ●	**0.305** ●	+ 0.005	**0.265** ●
⅞	0.875	+ 0.026	**0.372** ●	**0.372** ●	**0.415** ●	+ 0.005	**0.358** ●
1	1.000	+ 0.030	**0.488** ●●○	**0.488** ●	**0.586** ●	+ 0.005	**0.476** ●
1 1/16	1.062	+ 0.032	0.548	0.548	0.675	+ 0.005	0.533
1⅛	1.125	+ 0.034	**0.611** ●●	0.611	**0.688** ●	+ 0.005	**0.594** ●
1¼	1.250	+ 0.038	**0.755** ●●○	**0.755** ●	**0.842** ●	+ 0.005	**0.736** ●
1⅜	1.375	+ 0.041	**0.914** ●	**0.914** ●	**1.030** ●	+ 0.005	**0.891** ●
1½	1.500	+ 0.045	**1.087** ●●○	**1.087** ●	**1.231** ●	+ 0.005	**1.060** ●
1⅝	1.625	+ 0.049	**1.276** ●●○	1.276	1.485	+ 0.005	**1.244** ●
1¾	1.750	+ 0.052	**1.480** ●●○	**1.480** ●	**1.677** ●	+ 0.005	**1.440** ●
1⅞	1.875	+ 0.056	**1.699** ●	1.699	**1.930** ●	+ 0.005	**1.657** ●
2	2.000	+ 0.060	**1.924** ●●○	**1.924** ●	**2.193** ●	+ 0.005	**1.890** ●
2⅛	2.125	+ 0.064	**2.181** ●	2.181	2.454	+ 0.005	**2.120** ●
2¼	2.250	+ 0.068	**2.447** ●●○	**2.447** ●	**2.793** ●	+ 0.005	**2.384** ●
2⅜	2.375	+ 0.071	**2.727** ●	2.727	**3.230** ●	+ 0.005	**2.690** ●
2½	2.500	+ 0.075	**3.017** ●●○	**3.017** ●	**3.496** ●	+ 0.005	**2.963** ●
2⅝	2.625	+ 0.079			**3.819** ●		
2¾	2.750	+ 0.082	**3.653** ● ○	3.653	**4.143** ●		
3	3.000	+ 0.090	**4.400** ●●○	**4.400** ●	**4.930** ●		
3¼	3.250	+ 0.097	**5.105** ●●○	**5.105** ●	**5.782** ●		
3½	3.500	+ 0.105	**5.921** ●●○	**5.921** ●	**6.712** ●		
3¾	3.750	+ 0.113	**6.799** ●	6.799	7.640		
4	4.000	+ 0.120	**7.736** ●●○	**7.736** ●	**8.767** ●		
4⅛	4.125	+ 0.124	8.224	8.224	9.240		
4½	4.500	+ 0.135	**9.785** ●●○	**9.785** ●	**11.210** ●		
5	5.000	+ 0.150	**12.083** ● ○	**12.083** ●	**14.010** ●		
5⅛	5.125	+ 0.154	12.500	12.500	14.220		
5¼	5.250	+ 0.157	**13.324** ●	13.324	14.900		
5½	5.500	+ 0.165	**14.624** ●	14.624	16.575		
6	6.000	+ 0.180	**17.407** ● ○	**17.407** ●	**20.400** ●		
6½	6.500	+ 0.195	**20.500** ●	20.500	22.950		
7	7.000	+ 0.210	**24.200** ●	24.200	26.800		
8	8.000	+ 0.240	**31.500** ●	**31.500** ●	**28.310** ●		
9	9.000	+ 0.315	**39.600** ●		**36.850** ●		
10	10.000	+ 0.345	**47.600** ●				
11	11.000	+ 0.393	**60.600** ●				
12	12.000	+ 0.393	**71.750** ●				
14	14.000	+ 0.551	**93.500** ●				
16	16.000	+ 0.787	**120.000** ●				

Stock item Colors: ● gray ● black ○ white (Costum colors available on request)

Custom extrusion Time of delivery on request

Lengths are nominal

HOLLOW BARS**

Stock Lengths

10 ft

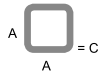
D d D x d inch	GEHR PVC TYPE I™ lbs/ft
1.625 x 0.562	1.154
1.900 x 0.562	**1.647** ●
1.900 x 0.906	**1.410** ●
2.000 x 1.250	**1.285** ●
2.125 x 0.750	2.010
2.250 x 1.125	2.025
2.250 x 1.500	1.625
2.375 x 1.000	2.393
2.500 x 1.000	**2.680** ●
2.500 x 1.500	**2.209** ●
2.625 x 1.500	2.511
2.750 x 1.000	3.299
2.875 x 1.500	3.976
3.000 x 1.000	3.770
3.000 x 1.250	3.375
3.000 x 1.500	2.798

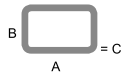
STANDARD PROFILES

Stock Lengths

10 ft

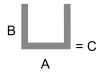
GEHR PVC TYPE I™





Square Tubes				Rectangular Tubes					
A		C	lbs/ft	A		B		C	lbs/ft
5⁄8*	0.625	0.060	0.091	1 9⁄16	1.563	1 3⁄16*	1.187	0.078	0.250
3⁄4*	0.750	0.060	**0.109** ●	2	2.000	1*	1.000	0.078	**0.270** ●
7⁄8*	0.875	0.118	**0.213** ●	2 3⁄4	2.750	1 3⁄8*	1.375	0.098	**0.468** ●
1*	1.000	0.078	**0.181** ●	3.346	3.346	1 3⁄8*	1.375	0.098	**0.556** ●
1 3⁄16	1.188	0.078	**0.141** ●	3 3⁄8	3.375	2.283*	2.283	0.098	**0.619** ●
1 3⁄8*	1.375	0.078	**0.244** ●	4	4.000	2*	2.000	0.098	**0.760** ●
1 9⁄16*	1.563	0.078	**0.282** ●						
2*	2.000	0.078	**0.393** ●						
2 3⁄8*	2.375	0.078	**0.444** ●						
3*	3.000	0.078	**0.593** ●						
3.540*	3.540	0.078	**0.769** ●						
4.720*	4.720	0.098	1.156						

GEHR PVC TYPE I™



Angle Profiles						U-Channels				
A		B		C	lbs/ft	A	B	C	lbs/ft
½*	0.500	½	0.500	0.080	**0.056** ●	0.510*	0.590	0.060	**0.062** ●
½*	0.500	½	0.500	0.125	0.109	0.944*	0.787	0.066	**0.106** ●
¾*	0.750	¾	0.750	0.080	0.081	0.944*	1.570	0.080	**0.182** ●
1*	1.000	1	1.000	0.040	0.050	1.140*	1.650	0.080	**0.193** ●
1*	1.000	1	1.000	0.080	0.100	1.810*	2.510	0.120	0.226
1	1.000	1	1.000	0.125	**0.150** ●	1.870*	0.787	0.137	**0.263** ●
1	1.000	1	1.000	0.187	0.242	2.510*	1.456	0.080	**0.262** ●
1	1.000	1	1.000	0.250	0.265	2.750*	1.370	0.196	0.633
1¼	1.250	1¼	1.250	0.125	**0.193** ●	3.540*	0.787	0.100	**0.289** ●
1¼	1.250	1¼	1.250	0.187	**0.264** ●	4.330*	0.787	0.098	0.345
1¼	1.250	1¼	1.250	0.250	0.331	4.720*	2.360	0.236	1.331
1½*	1.500	¾	0.750	0.080	**0.113** ●				
1½*	1.500	¾	0.750	0.157	**0.212** ●				
1½	1.500	1½	1.500	0.125	**0.230** ●				
1½	1.500	1½	1.500	0.187	**0.313** ●				
1½	1.500	1½	1.500	0.250	**0.419** ●				
2*	2.000	2	2.000	0.080	0.200				
2	2.000	2	2.000	0.125	**0.298** ●				
2	2.000	2	2.000	0.187	**0.463** ●				
2	2.000	2	2.000	0.250	**0.574** ●				
2⅜*	2.375	2⅜	2.375	0.275	**0.762** ●				
2½*	2.500	2½	2.500	0.250	0.756				
3*	3.000	¾	0.750	0.125	0.275				
3½*	3.500	3½	3.500	0.275	**1.142** ●				

STANDARD PROFILES

Stock Lengths

10 ft

GEHR PVC TYPE I™

Square Bars				Hexagonal Bars			
A		Tol. -0	lbs/ft	A		C	lbs/ft
⅛	0.125	+ 0.004	0.010	⅜	0.375	+ 0.011	0.083
¼	0.250	+ 0.008	0.038	7⁄16	0.438	+ 0.013	0.108
⅜	0.375	+ 0.011	**0.087** ●	½	0.500	+ 0.015	**0.142** ●
½	0.500	+ 0.015	**0.157** ●	9⁄16	0.563	+ 0.017	0.180
⅝	0.625	+ 0.019	0.238	⅝	0.625	+ 0.019	0.222
¾	0.750	+ 0.023	**0.358** ●	¾	0.750	+ 0.023	0.320
1	1.000	+ 0.030	**0.626** ●	⅞	0.875	+ 0.026	0.435
1¼	1.250	+ 0.038	**1.033** ●	15⁄16	0.938	+ 0.028	0.502
1½	1.500	+ 0.045	**1.464** ●	1	1.000	+ 0.030	**0.569** ●
1¾	1.750	+ 0.060	1.904	1⅛	1.125	+ 0.034	0.721
2	2.000	+ 0.071	**2.452** ●	1¼	1.250	+ 0.038	**0.890** ●
3.15*	3.150	+ 0.095	6.250	1⅜	1.375	+ 0.041	**1.080** ●
3½*	3.500	+ 0.105	7.551	1½	1.500	+ 0.045	**1.230** ●
4*	4.000	+ 0.120	9.850	2	2.000	+ 0.060	**2.280** ●
6*	6.000	+ 0.180	22.490				

STANDARD PROFILES

Stock Lengths

Hexagonal Bars

10 ft

Square Bars

⅛"–2" = 10 ft

3.150"–6" = 1 m

Stock item Colors: ● gray

Custom extrusion Time of delivery on request

Lengths are nominal *Length 3 m **Tolerances on request

» ECO-GEHR™

ECO-GEHR™ PLASTICS

stand for semi-finished products based on renewable resources. These sustainable materials possess regenerative raw material contents between 60 % to 100 % and hence a positive CO_2 balance. In addition to that ECO-GEHR™ offers an alternative to the non-renewable resource crude oil. As a basis we use all sorts of organic materials such as sugar/ starch, lignin, cellulose, castor, oil wood fibers. After polymerization these raw materials are adjusted by compounding so that they are suitable for the extrusion process on the existing machines.

Applications ECO-GEHR™ Plastics

- Mechanical engineering
- Display construction
- Furniture industry
- Toy industry
- Playground equipment
- Writing instruments
- Instruments
- Drumsticks
- Billiard cues
- Gear wheels
- Slide rails

ECO-GEHR WPC-30PP™

Wood Plastic Composite belongs to wood fiber reinforced plastics. The fiber content is approx. 70 %.

Properties ECO-GEHR WPC-30PP™

- Good mechanical strength
- Weatherproof compared to wood
- Antibacterial optional, UV-resistant

ECO-GEHR PA 6.10™

is obtained from the oil of the castor bean seed and is therefore based over more than 60 % on renewable resources.

Properties ECO-GEHR PA 6.10™

- Low water absorption in comparison to PA 6
- High dimensional stability
- Good chemical resistance

ECO-GEHR PLA-LF™

is a blend of Polylactid acid, lignin, lingocellulosic, natural fatty acid, waxes and wood fibers. This material possesses good mechanical properties similar to ABS. This bioplastic has an operating range from -22 °F to max. +140 °F.

Properties ECO-GEHR PLA-LF™

- Preparation from environmental friendly raw materials, thus physiologically harmless
- PLA is biodegradable
- Disposal by composting resp. incineration (regional regulations need to be observed)
- Good mechanical properties similar to ABS
- High stiffness, modulus of elasticity up to 2800 MPa
- Good resistance to polar media

ECO-GEHR CL™

consists of the wood components cellulose, natural fibers, lignin and fatty acids. It possesses a lot of interesting properties which, taken as a whole, remind very much of the natural material wood. Compared to naturally grown wood the advantages of ECO-GEHR™ clearly lie in the homogeneity of the material.

Properties ECO-GEHR CL™

- Bio-degradable material
- Carbon footprint is largely neutral
- Isotropic material structure
- Disposal by composting resp. incineration (regional regulations need to be observed)
- Good mechanical properties
- High stiffness/modulus of elasticity up to 4248 MPa

ROUND RODS

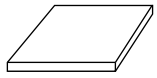
∅	ECO-GEHR PA 6.10™	ECO-GEHR WPC-30PP™
mm	kg/m	kg/m
10	0,085	
20	0,340	0,390
25	**0,573** ⊙	**0,610** ⊙
30	0,760	**0,880** ⊙
40	1,360	1,560
50	**2,266** ⊙	**2,430** ⊙

Stock Lengths

ECO-GEHR PA 6.10™
10 ft (3 m)

ECO-GEHR WPC-30PP™
6,5 ft (2 m)

PLATES (CALENDERED)



	ECO-GEHR PLA-LF™	ECO-GEHR CL™
	Width 1000 mm	Width 1000 mm
mm	kg/m	kg/m
1,5	2,016	2,016
2,0	2,688	2,688
2,5	3,360	3,360
3,0	4,032	4,032
5,0	6,720	6,720

Stock Lengths

6,5 ft (2 m)

Stock item Colors: ⊙ natural

Custom extrusion Time of delivery on request

Lengths are nominal Produced in metric Tolerances on request

GEHR ROUND RODS (lbs/ft)

inch	color	¼	5/16	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2⅝	2¾
GEHR PEEK™	⊙			0.062	0.111	0.173	0.249	0.339	0.443		0.692		0.996		1.360		1.770		2.240		2.770		
GEHR PEI™	⊙	0.028		0.062	0.110	0.171	0.246		0.442		0.695		1.001		1.362		1.780				2.779		
GEHR PEI™	●		0.044								0.695												
GEHR PEI-30GF™	⊙			0.074	0.131	0.204	0.293		0.519		0.826		1.190				2.117				3.304		
GEHR PSU™	⊙			0.061	0.109	0.167	0.240		0.426		0.678		0.990				1.738		2.197		2.713		3.284
GEHR E-CTFE™	⊙								0.600		0.938		1.351				2.402		3.039		3.753		
GEHR PVDF™	⊙			0.087	0.155	0.243	0.349	0.477	0.624	0.789	0.974	1.189	1.403		1.910	2.191	2.495		3.158		3.894		4.714
GEHR ACETAL™	●	0.030		0.069	0.122	0.190	0.274	0.373	0.487	0.617	0.761	0.921		1.287	1.493	1.713	1.949	2.200	2.466	2.748	3.045		3.684
GEHR ACETAL™	⊙	0.030		0.069	0.122	0.190	0.274	0.373	0.487	0.617	0.761	0.921		1.287	1.493	1.713	1.949	2.200	2.466	2.748	3.045		3.684
GEHR PA 6.6™	⊙				0.097	0.160	0.218	0.305	0.407		0.607		0.917		1.190		1.650		1.970		2.430		
GEHR ABS™	⊙	0.023		0.051	0.092	0.144	0.206		0.368		0.575	0.695	0.828		1.127		1.477				2.300		
GEHR ABS™	●	0.023		0.051	0.092	0.144	0.206		0.368		0.575		0.828		1.127		1.477		1.956		2.300		2.784
GEHR PPO™	●			0.053	0.093	0.145	0.209	0.284	0.371		0.590		0.851		1.160		1.514				2.360		
GEHR PPO-30GF™	⊙				0.114		0.256	0.343	0.450		0.716		1.032				1.836				2.689		
GEHR PP-C™	⊙	0.019		0.044	0.079	0.124	0.179	0.244	0.319	0.403	0.498	0.603	0.718		0.976	1.121	1.277		1.615		1.995		2.414
GEHR PP-H™	●				0.079	0.124	0.179		0.319	0.388	0.498	0.603	0.718		0.976		1.277		1.615		1.995		2.414
GEHR PP-H™	euro gray				0.079				0.319				0.718		0.976		1.277		1.615		1.995		
GEHR PP-30GF™	●						0.225										1.598						
GEHR UHMWPE™	⊙								0.350		0.540	0.630	0.800		1.050		1.380		1.730	1.850	2.060		2.560
GEHR HDPE™	⊙				0.084	0.131	0.189	0.258	0.337	0.426	0.527		0.758		1.033		1.349				2.108		
GEHR HDPE™	●				0.084	0.131	0.189	0.258	0.337	0.426	0.527		0.758		1.033		1.349				2.108		
GEHR PVC™ Type I	●	0.030		0.068	0.122	0.190	0.274	0.372	0.488	0.611	0.755	0.914	1.087	1.276	1.480	1.699	1.924	2.181	2.447	2.727	3.017		3.653
GEHR PVC™ Type I	●	0.030		0.068	0.122	0.190	0.274		0.488	0.611	0.755		1.087		1.480		1.924		2.447		3.017		
GEHR PVC™ Type I	○	0.030		0.068	0.122	0.190	0.274		0.488		0.755		1.087		1.480		1.924		2.447		3.017		3.653
GEHR PVC™ Type II	●			0.068	0.122		0.274	0.372	0.488		0.755	0.914	1.087		1.480		1.924		2.447		3.017		
GEHR CPVC™	●	0.033		0.079	0.135	0.218	0.305	0.415	0.586	0.688	0.842	1.030	1.231		1.677	1.930	2.193		2.793	3.230	3.496	3.819	4.143

mm	color	5	6	8	10	12	15	16	18	20	22	25	28	30	35	36	40	45	50	56	60	65	70
GEHR PEEK™	●																						
GEHR PEEK-mod™	●				0.088					0.344				0.750			1.310		2.113		2.970		
GEHR PEEK-30GF™	⊙				0.088					0.345				0.751			1.312		2.116		2.984		
GEHR PC™	⊕				0.100	0.148		0.258		0.398		0.622		0.888		1.283	1.576		2.466		3.550		4.850
GEHR PBT™	⊙																1.755		2.742				
GEHR PET™	⊙					0.179		0.310		0.480		0.750		1.060		1.500	1.880	2.380	2.920		4.210	4.920	5.690
GEHR PET™	●									0.480		0.750		1.060		1.500	1.880	2.380	2.920		4.210		5.690
GEHR ACETAL-ELS™	●													0.708					1.949				
GEHR ACETAL-10PE™	●									0.309				0.701			1.230		1.925		2.771		
GEHR PA 6 XT™	⊙		0.035	0.063	0.096	0.141	0.217	0.246	0.309	0.380	0.462	0.595	0.740	0.850		1.220	1.500	1.910	2.350	2.930	3.380	3.950	4.640
GEHR PA 6 XT™	●				0.096			0.246		0.380		0.595		0.850		1.220	1.500	1.910	2.350	2.930	3.380		4.640
GEHR PA 12 TR™	⊕																1.339						
GEHR PA 6.6-30GF™	●									0.450		0.705		1.007			1.778		2.785		4.005		5.498
GEHR PMMA™ (Acrylic)	⊕	0.020	0.027	0.047	0.067	0.094	0.155		0.215	0.269		0.417		0.605			1.028		1.558		2.401		3.256
GEHR UHMWPE™	⊙									0.317		0.491		0.703	0.970		1.240		1.950		2.800	3.269	3.800
GEHR UHMWPE™	●													0.703			1.240		1.950		2.800		3.800
GEHR UHMWPE™	●																1.240		1.950		2.800		3.800
GEHR UHMWPE™	●									0.317				0.703			1.240		1.950		2.800		3.800
ECO-GEHR PA 6.10™	⊙											0.530							2.120				
ECO-GEHR WPC-PP™	⊙											0.610		0.880					2.430				

3	3¼	3½	3¾	4	4¼	4½	4¾	5	5¼	5½	6	6½	7	8	9	10	11	12	14	16	20
3.980		5.420		7.080																	
4.006		5.452		7.123				11.125													
3.909		5.322		6.750		8.839															
5.405				9.608				15.080													
5.615		7.641	8.770	9.982		12.626		15.598			22.461		30.572	39.931		63.000					
4.385	5.144	5.968	6.852	7.796	8.800	9.860		12.181		14.738	17.540	20.584	23.875	31.183	39.475	48.723		70.162	96.100	125.200	194.894
4.385	5.144	5.968	6.852	7.796	8.800	9.860	10.987	12.181		14.738	17.540	20.584	23.875	31.183	39.475	48.723		70.162	96.100	125.200	194.894
3.313		4.509		5.890							13.253										
3.313		4.509		5.890				9.200													
3.404		4.636		6.057		7.661		9.460													
		5.624																			
2.873	3.372	3.911	4.489	5.103		6.465		7.981		9.658	11.626		15.644	21.428	26.714	32.400		46.427	63.000		
2.873				4.900				7.981					15.644								
2.873				4.900		6.465		7.981			11.626		15.644	21.428	26.714	32.400		46.427	63.000		
3.130				5.390				8.260			12.180		16.960	22.540							
3.035		4.132		5.397		6.830		8.433													
3.035																					
4.400	5.105	5.921	6.799	7.736		9.785		12.083	13.324	14.624	17.407	20.500	24.200	31.500	39.600	47.600	60.600	71.750	93.500	120.000	
4.400	5.105	5.921		7.736		9.785															
4.400	5.105	5.921		7.736		9.785		12.083			17.407										
4.400	5.105	5.921		7.736		9.785		12.083			17.407			31.500							
4.930	5.782	6.712		8.767		11.210		14.010			20.400			28.310	36.850						

75	80	90	100	110	120	125	130	140	150	160	180	200
									16.605		23.828	29.363
	5.468											
	5.488		8.235									
	6.290		9.840								32.010	
		8.884										
	7.460	9.420	11.650	14.150	16.910		19.760		26.230		37.940	46.810
	7.460		11.650						26.230			
	4.978											
			7.699									
5.300	6.050	7.670	9.450	11.500	13.700		16.100	18.700	21.400		30.800	38.100
	6.050	7.670	9.450									
	5.402		8.438									
	7.169		11.198		16.235				25.359			
3.771	4.104	5.149	6.352		9.094				14.042			25.643
	4.947	6.264	7.728	9.330	11.230	12.750	13.130		17.380	19.760	24.990	31.110
	4.947	6.264	7.728	9.330	11.230		13.130		17.380	19.760	24.990	31.110
	4.947	6.264	7.728		11.230							
	4.947											

Stock Item Colors: ⊙ natural ○ white ● black ● gray ● eurogray

Stock Item Germany Colors: ⊙ natural ⊕ transparent ● light blue ● black ◎ ivory ● green (~RAL 6024) ● blue (~RAL 5015)

Custom extrusion Time of delivery on request

GEHR PLATES (lbs/ft)

inch	width	color	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2	2¼	2½	2¾
GEHR PEEK™	24"	⊙		2.540	3.380	4.230	5.070		6.760		8.450	10.100		13.500			
GEHR ACETAL™	24"	●	1.862	2.810	3.818	4.746	5.709	6.636	7.563		9.491	11.345	13.198	15.052	17.054		20.761
GEHR ACETAL™	24"	⊙	1.862	2.810	3.818	4.746	5.709	6.636	7.563		9.491	11.345	13.198	15.052	17.054	18.908	20.761
GEHR ACETAL™	48"	●	1.862	2.810	3.818	4.746	5.709	6.636	7.563		9.491	11.345	13.198	15.052		18.908	
GEHR ACETAL™	48"	⊙	1.862	2.810	3.818	4.746	5.709	6.636	7.563		9.491	11.345	13.198	15.052		18.908	
GEHR ABS™	24"	●					4.459		5.831		7.386	8.824	10.197	11.377		14.315	
GEHR ABS™	24"	⊙					4.459		5.831		7.386	8.824	10.197	11.377		14.315	

mm	width	color	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	15.0	16.0	20.0	25.0	30.0	35.0	40.0
GEHR PEEK™	24"	⊙															
GEHR PC™	620 mm	⊕									12.550		16.400	20.250	24.750		32.500
GEHR PET™	610 mm	⊙							9.590	11.880		15.000	18.920	23.310	28.000		37.390
GEHR PET™	610 mm	●								11.880		15.000		23.310			37.390
GEHR ACETAL™ (Calendered)	1000 mm	⊙	2.990	4.490	5.980	7.480	8.970										
GEHR ACETAL™ (Calendered)	1000 mm	●	2.990	4.490	5.980	7.480	8.970										
GEHR PA 6 XT™ (Calendered)	1000 mm	⊙	2.370	3.560	4.740	5.930	7.120	10.320									
GEHR PA 6 XT™	610 mm	⊙							7.800	9.700	11.500	12.100	15.400	18.900	22.750	22.700	30.500
GEHR PA 6.6™	610 mm	⊙							7.878	9.797		12.221	15.554	19.089	22.978		30.805
GEHR PA 6.6-30GF™	620 mm	●							9.243				18.249		26.959		36.143
ECO-GEHR PA-LF™	1000 mm	⊙	2.720														
ECO-GEHR CL™	1000 mm	⊙	2.720														

	3	3½	4	4½	5	6	7	8	10
	22.615	**26.320**	**30.014**		**37.239**	**44.963**	**52.646**	**60.061**	
	22.615	**26.320**	**30.014**	**33.803**	**37.239**	**44.963**	**52.646**	**60.061**	**75.000**
	22.615		**30.014**						
	22.615		**30.014**						
	17.061		**22.679**						
	17.061	**19.807**	**22.679**						

	50.0	60.0	70.0	80.0	100.0	120.0
		16.687		**22.000**	**27.310**	**33.125**
	46.190	**55.050**	**73.500**			
	37.800	**46.100**	**52.150**	**60.000**	**75.400**	
	38.178					
	44.793	**54.629**		**71.100**		

Stock Item
Custom extrusion

Colors: ⊙ natural ● black
Time of delivery on request

APPROVALS

GEHR raw material	USA FDA Food approval	EU/USA ISO NORM/ USP NORM Medical	USA NSF 14	USA NSF 51 51	USA NSF 61 61	Flammbility level	UL-No. Remarks	DE/EU 10/2011/EC 1935/2004/EC Food approval	DE/EU Drinking water
ECO-GEHR PLA-LF® ⊙	177.1616	-	-	-	-	-	-	-	-
GEHR PVC Type I™ ●	-	-	+	+	+	V-0	E53006	++	☑++**
GEHR PVC Type II™ ●	-	-	-	+	+	V-0	E249042-1000115641	-	-
GEHR CPVC™ ◎	-	-	+	-	+	V-0	-	-	-
GEHR HDPE™ ⊙	177.1520	-	-	-	-	HB	E62552	-	-
GEHR PE-ELS™ ●	-	-	-	-	-	HB	-	-	-
GEHR UHMWPE™ ●	177.1520	-	-	-	-	-	-	+	-
GEHR UHMWPE™ ⊙	177.1520	-	-	-	-	-	-	+	-
GEHR PP-C™ ⊙	177.1520 / 176.170	-	-	-	-	HB	E363154	+	-
GEHR PP-H™ ● NAT	177.1520	-	-	-	-	HB	-	+	+
GEHR PP-30GF™ ●	-	-	-	-	-	HB	E31765	-	-
GEHR ABS™ ⊙	181.32	-	-	-	-	HB	E333846-E65424	-	-
GEHR PMMA™ Tubes ⊙	177.1010	-	-	-	-	HB	E65495	+	-
GEHR PMMA™ Rods ⊙	177.1010	-	-	-	-	HB	-	-	-
GEHR PPO™ ●	-	-	-	-	-	V-1	E121561-221239	-	-
GEHR PPO-30GF™ ●	-	-	-	-	+	V-1	E121561-221239	-	-
GEHR PA 6 C™ ⊙	177.1500	-	-	-	-	HB	-	-	-
GEHR PA 6 C™ ●	-	-	-	-	-	-	-	-	-
GEHR PA 6 XT™ ⊙ NAT	177.1500	-	-	-	-	HB	E41871	+	-
GEHR PA 6 XT™ ●	-	-	-	-	-	HB	E41871	-	-
GEHR PA 6.6™ ⊙	177.1500 US 3A	-	-	+*	+*	HB, V-2	E70062	+	-
GEHR PA 6.6™ ●	-	-	-	-	-	HB, V-2	E70062	-	-
GEHR PA 6.6-30GF™ ●	-	-	-	-	-	HB	-	-	-
GEHR PA 12 TR™ ⊕	177.1500/ 176.170	-	-	-	+*	HB	E53898	-	-
GEHR PA 6.10™ ⊙	-	-	-	-	-	-	-	-	-
GEHR ACETAL-C™ ⊙	177.2470	-	-	+	+	HB	E36632 / E120354	+	-
GEHR ACETAL-C™ ●	177.2470	-	-	-	+*	HB	E36632 / E120354	+	-
GEHR ACETAL-10PE™ ●	177.2470/177.1520/ 178.2010	-	-	-	-	HB	-	-	-
GEHR ACETAL-ELS™ ●	-	-	-	-	-	HB	E42337	-	-
GEHR PET™ ⊙	177.1630	-	-	-	-	HB	-	+	-
GEHR PET™ ●	-	-	-	-	-	HB	-		
GEHR PBT™ ◎	-	-	-	-	-	-	-	-	-
GEHR PC™ ⊕	177.1580	-		-	-	HB	-	+	-
GEHR PVDF™ ⊙	177.2510 US 3A	USP Class VI	-	+	+*	V-0	E54699-636465	-	-
GEHR PVDF-ELS™ ●	+	-	-	-	-	-	-	-	-
GEHR E-CTFE™ ⊙	-	-	-	-	-	V-0	-	-	-
GEHR PSU™ ⊙	177.1655	-	-	-	-	V-0	-	-	-
GEHR PPSU™ ●	177.1560 178.3297	-	-	+	+	V-0	E36098 E45195	-	-
GEHR PEI™ ⊙	177.1559 US 3A	-	+	+	-	V-0	E121562-101048254	-	-
GEHR PEI-30GF™ ⊙	-	-	-	+	-	V-0	E121562-101048254	-	-
GEHR PPS™ ⊙	+**	-	-	-	-	V-0	E107854	-	-
GEHR PPS-40GF™ ●	+**	-	-	-	-	V-0	E107854	-	-
GEHR PEEK™ ⊙	177.2415	ISO 10993-5* USP Class VI*	-	-	-	V-0, Mil P 46183	E140728-100211981	+	-
GEHR PEEK-mod™ ●	-	-	-	-	-	V-0	-	-	-
GEHR PEEK-30GF™ ⊙	-	-	-	-	-	V-0	-	-	-
GEHR PEEK-30CF™ ●	-	-	-	-	-	V-0	-	-	-

This table shows a list of regulations that GEHR semi-finished products comply with at present, evaluation of the composition of materials compared with the corresponding positive lists and migration regulations. The suitability of above-mentioned regulations (e.g. regarding global migration) has to be checked on the finished part by the convertor or the distributer. The convertor or distributor takes the full responsibility. For a detailed statement regarding the topic “Physiology” please ask our Application Engineering Division at GEHR Plastics Inc.

Colours:
- gray
- light gray
- black
- blue
- light blue
- natural
- transparent
- ivory

☑ **raw material approval (black)**

\+ Complies with the provisions of the above-mentioned directive.

++ German solids, dark grey, up to a diameter of 160 mm physiologically harmless (see page 86).

\- Does not meet the requirements of the above-mentioned directive or has not been tested accordingly.

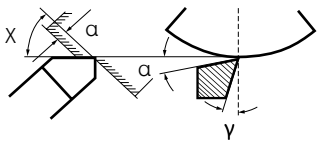
* Available on request

** Currently being tested

Norm	
BfR	German Institute for Risk Assesment
10/2011/EC	Guideline for materials and objects which get in contact with food (2011)
Leitlinie 2005	Drinking water approval of the Federal Environment Agency in Germany (former KTW)
KTW	Plastics and drinking water in Germany
DVGW-W270	Reproduction of micro-organisms on materials for the drinking water sector. Testing and evaluation.
NSF-14	National Sanitation Foundation. Guideline for Plastic pipeline systems.
NSF-51	National Sanitation Foundation. Guideline for materials and objects which come in contact with food.
NSF-61	National Sanitation Foundation. Guideline for materials and objects which come in contact with drinking water.

MACHINING RECOMMENDATIONS

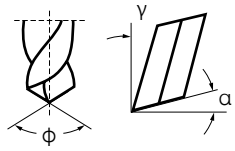
TURNING



α Setting Angle (°)
γ Rake Angle (°)
χ Recessing Angle (°)
v Cutting Speed (ft/min)
s Feed (inch/rev)

Peak Radius r to be min. 0,5 mm

DRILLING



α Setting Angle (°)
γ Rake Angle (°)
ϕ Peak Angle (°)
v Cutting Speed (ft/min)
s Feed (inch/rev)

Twisting Angle ß to be ca. 12° to 16°

	α	γ	χ	v	s	α	γ	ϕ	v	s
GEHR CPVC™ Type I + Type II	8-10	0-5	50-60	600-2500	0.012–0.02	5-10	3-5	60-100	100-400	0,1-0,2
GEHR HDPE™	6-10	0-5	45-60	800-1700	0.004–0.02	5-15	10-20	60-90	165-500	0,004-0,012
GEHR PP™	6-10	0-5	45-60	800-1700	0.004–0.02	5-15	10-20	60-90	165-500	0,004-0,012
GEHR ABS™	5-15	25-30	15	600-1700	0.008–0.02	8-12	10-30	60-90	165-700	0,008-0,012
GEHR PMMA™	5-10	0-4	15	600-1000	0.004–0.008	3-8	0-4	60-90	70-200	0,004-0,02
GEHR PPO™	5-12	6-8	45-60	600-800	0.004–0.02	8-10	10-20	90	165-350	0,004-0,012
GEHR PA™	6-10	0-5	45-60	600-1700	0.004–0.016	5-15	10-25	90	165-500	0,007-0,025
GEHR ACETAL™	6-8	0-5	45-60	600-800	0.004–0.016	5-10	5-30	90	165-700	0,004-0,012
GEHR PET™	5-15	0-15	45-60	600-1700	0.004–0.02	5-16	10-30	90-110	165-350	0,004-0,012
GEHR PBT™	5-15	0-15	45-60	600-1700	0.004–0.02	5-16	10-30	90-110	165-350	0,004-0,012
GEHR PC™	5-12	6-8	45-60	600-800	0.004–0.02	8-10	10-20	90	165-350	0,004-0,012
GEHR PVDF™	5-12	5-15	10	500-1700	0.004–0.012	10-16	5-20	110-130	500-1000	0,004-0,012
GEHR E-CTFE™	6-10	0-5	45-60	800-1700	0.004–0.02	5-15	10-20	60-90	165-500	0,004-0,012
GEHR PSU™	5-10	0-5	45-60	600-800	0.008–0.012	5-15	10-20	60-90	100-300	0,007-0,025
GEHR PPSU™	5-10	0-5	45-60	600-800	0.008–0.012	5-15	10-20	60-90	100-300	0,007-0,025
GEHR PEI™	5-10	0-10	45-60	600-800	0.008–0.012	5-15	10-20	60-90	100-300	0,007-0,025
GEHR PPS™	5-10	0-5	45-60	600-1200	0.004–0.02	5-10	10-30	90	165-700	0,004-0,012
GEHR PEEK™	5-10	3-8	45-60	600-1200	0.004–0.016	5-15	10-25	90-120	250-700	0,004-0,012
GEHR PEEK-30GF™/ -mod™	6-8	2-8	45-60	500-2000	0.004–0.02	6	5-10	90-120	270-350	0,004-0,012

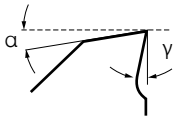
It is recommended to use only sharpened HSS tools (High Speed Steel).

Due to the danger of stress cracking we don't recommend the use of cooling agents which are based on oil (or to clean the parts well after machining). Amorphous materials should be annealed during machining.

To avoid treatment problems we recommend heating up the materials to approx. 248 °F.
Use only sharpened tools with small feed.

With these materials, close attention should be paid to the proper exhaust in machining area.

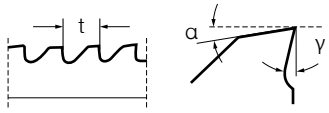
MILLING



α Setting Angle (°)
γ Rake Angle (°)
v Cutting Speed (ft/min)

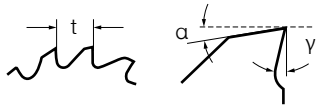
Allow feed up to 0,5 mm/tooth

BELT SAW



α Setting Angle (°)
γ Rake Angle (°)
v Cutting Speed (ft/min)
t Tooth Pitch (inch)
z Tooth per inch

CIRCULAR SAW



α Setting Angle (°)
γ Rake Angle (°)
v Cutting Speed (ft/min)
t Tooth Pitch (inch)
z Numbers of tooth (Ø 22,5 inch)

α	γ	v	α	γ	v	t	z	α	γ	v	t	z
5-10	0-15	1000-3300	30-40	0-5	100	0.12	2-3	5-10	0	3000	0.12-0.2	72
10-20	5-15	800-1650	20-30	2-5	80	0.12-0.32	2-3	20-30	6-10	2000	0.12-0.32	36
10-20	5-15	800-1650	20-30	2-5	80	0.12-0.32	2-3	20-30	6-10	2000	0.12-0.32	36
5-10	0-10	1000-1650	15-30	0-5	90	0.08-0.32	2-3	5-10	0-5	2400	0.08-0.2	36
2-10	2-10	6600	3-8	0-4	60	0.12	2-3	3-10	0-4	3000	0.12-0.2	72
5-20	5-15	800-1650	15-30	5-8	100	0.08-0.32	2-3	15-30	5-8	2200-3000	0.08-0.32	72
10-20	5-15	800-1650	15-30	0-5	80	0.08-0.32	2-3	15-30	0-8	2200-2800	0.08-0.32	22
5-15	5-15	800-1650	20-30	0-5	100	0.08-0.2	2-3	5-10	0-10	2800-3000	0.08-0.2	72
5-15	0-15	800-1650	15-40	0-8	100	0.08-0.32	2-3	10-15	0-15	up to 3000	0.08-0.2	36
5-15	0-15	250-500	15-40	0-8	100	0.08-0.32	2-3	10-15	0-15	up to 3000	0.08-0.2	36
5-20	5-15	800-1650	15-30	5-8	100	0.08-0.32	2-3	15-30	5-8	up to 3000	0.08-0.32	72
5-15	5-15	800-1650	20-30	5-8	90	0.08-0.2	2-3	5-10	0-10	2500-2800	0.08-0.2	36
10-20	5-15	800-1650	20-30	2-8	90	0.12-0.32	2-3	20-30	6-10	2000	0.12-0.32	36
5-15	0-10	800-1650	15-30	0-4	100	0.08-0.2	2-3	15-30	0-15	2000	0.08-0.2	22
5-15	0-10	800-1650	15-30	0-4	100	0.08-0.2	2-3	15-30	0-15	2000	0.08-0.2	22
5-15	0-10	800-1650	15-30	0-4	100	0.08-0.2	2-3	15-25	0-15	2000	0.08-0.2	22
5-15	5-10	800-1650	15-30	0-5	90	0.12-0.2	2-3	15-30	0-10	2800-3000	0.08-0.2	22
5-15	5-15	700-1500	15-30	0-5	90	0.12-0.2	2-3	15-30	0-10	1800-2500	0.00-0.2	72
15-30	6-10	250-400	15-30	10-15	80	0.12-0.2	2-3	15-30	10-15	2500-2700	0.12-0.2	22

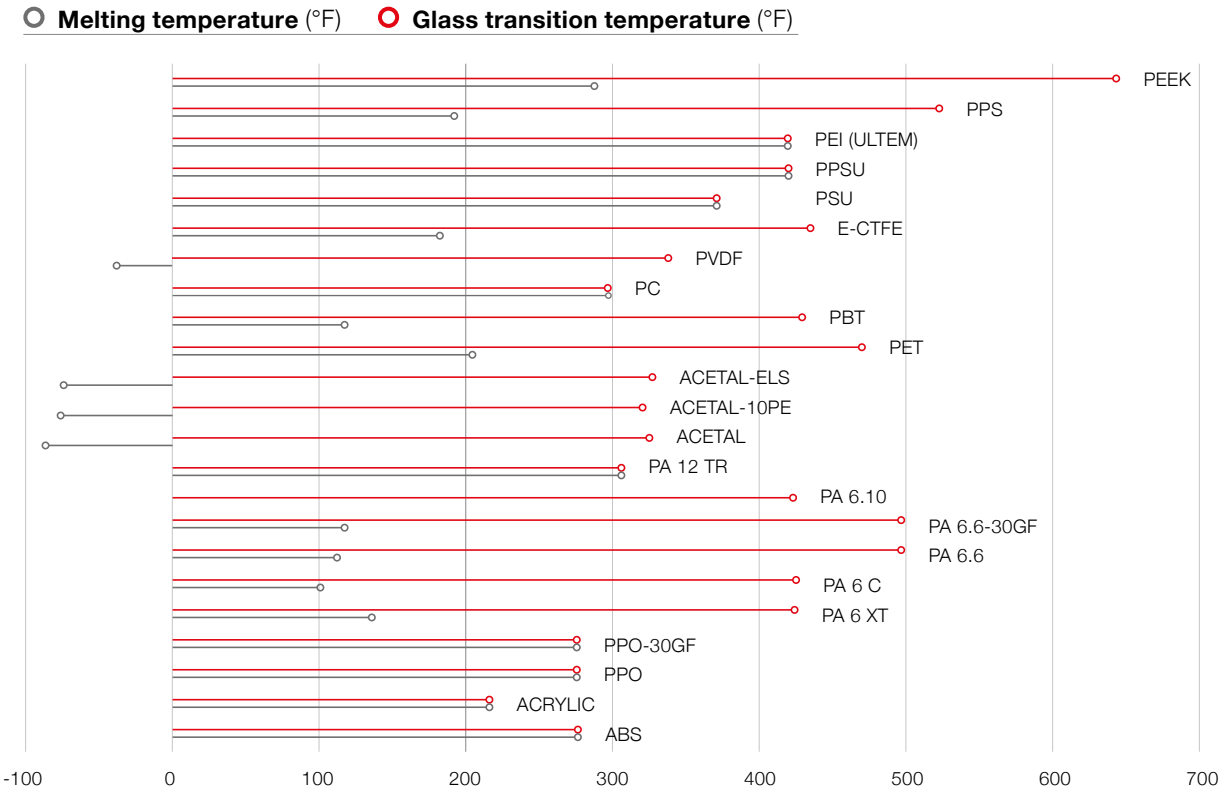
ANNEALING GUIDELINES OF DIFFERENT THERMOPLASTICS

	Heating rate beginning from (10 °F/h)	Annealing guideline (°F)	Cooling rate up to (10 °F/h)
GEHR PVC Type I+II™	-	140	-
GEHR CPVC™	-	194	-
GEHR HDPE™	-	194	-
GEHR PP™	-	212	-
GEHR PP-30GF™	194	302	194
GEHR ABS™	-	158	-
GEHR ACRYLIC™	122	176	122
GEHR PPO™	176	248	176
GEHR PA™ (NYLON)	194	320	194
GEHR ACETAL™	194	302	194
GEHR PET™	194	302	194
GEHR PBT™	194	302	194
GEHR PC™	194	284	194
GEHR PVDF™ (KYNAR)	194	302	194
GEHR E-CTFE™ (HALAR)	176	221	176
GEHR PSU™	293	329	293
GEHR PPSU™	284	392	284
GEHR PEI™ (ULTEM)	284	392	284
GEHR PPS™	302	392	302
GEHR PEEK™	284	392	284

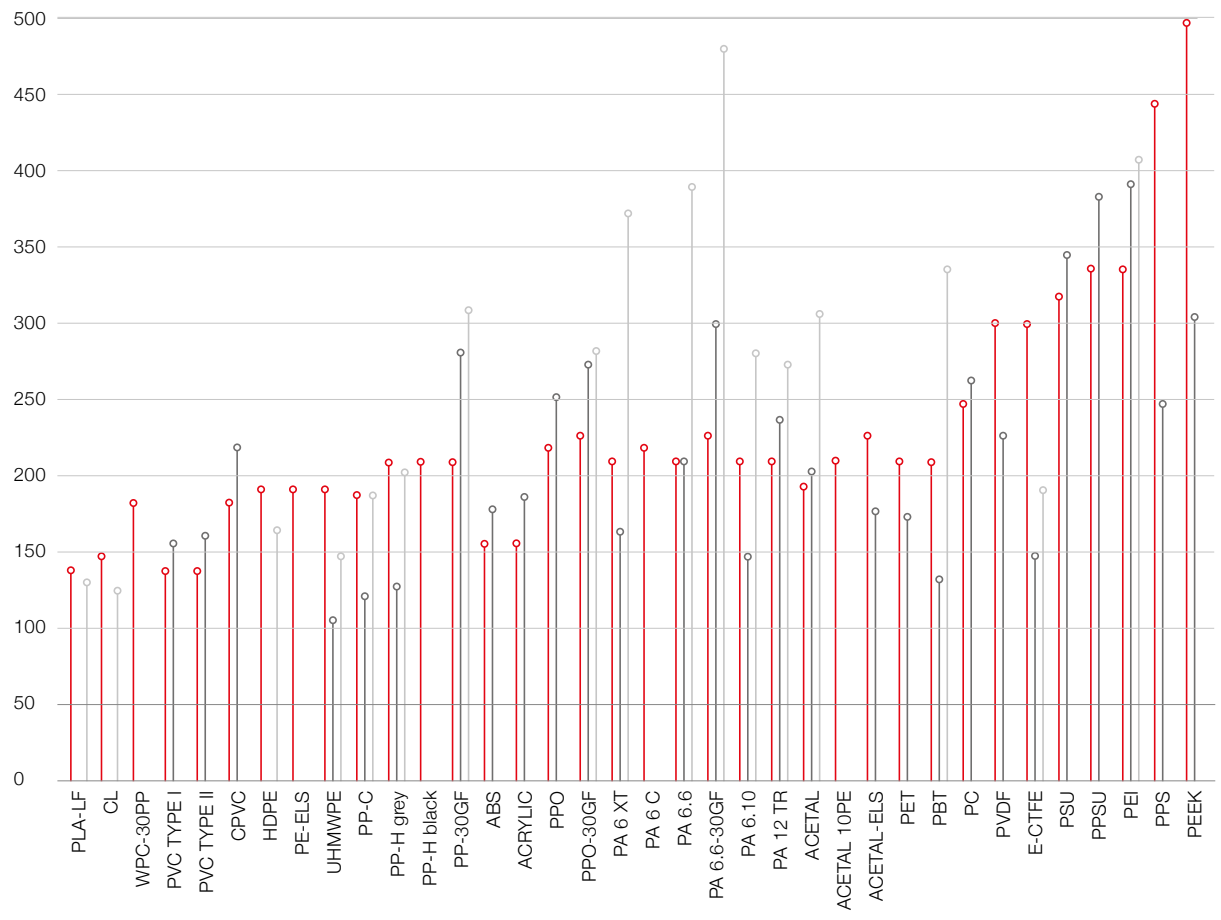
Calculation:

$$°C = \frac{5}{9} \times (°F - 32)$$

Despite all precautionary measures an uneven cooling speed in the production process of the semi-finished material might be inevitable; in this case internal tensions might occur. Likewise tensions can be conferred into the part by the machining process into the part. These tensions can lead to the distortion and in the worst case even to the breaking of the part. To reduce the danger from distortion or breaking annealing e.g. in air or in nitrogen is recommended, with an annealing time of min. 2 hours (4 hours are better) for each 0.4 inch wall thickness. To avoid additional tension while heating or / and cooling down the material, these processes should be carried out very slowly. We recommend using 3-times as much time for the cooling as for the heating. The time of these processes has to be added to the regular annealing time.

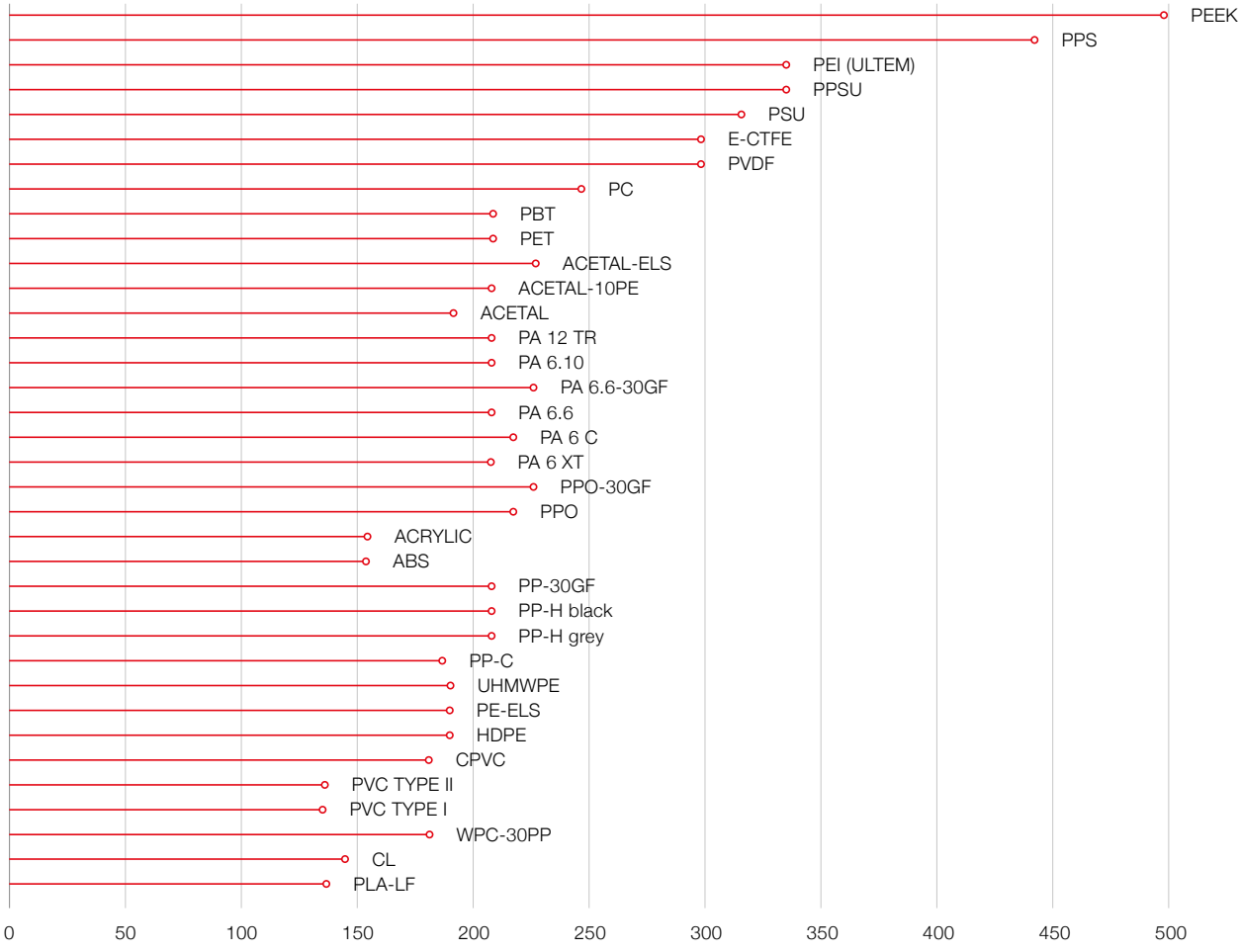


Thermal guidelines

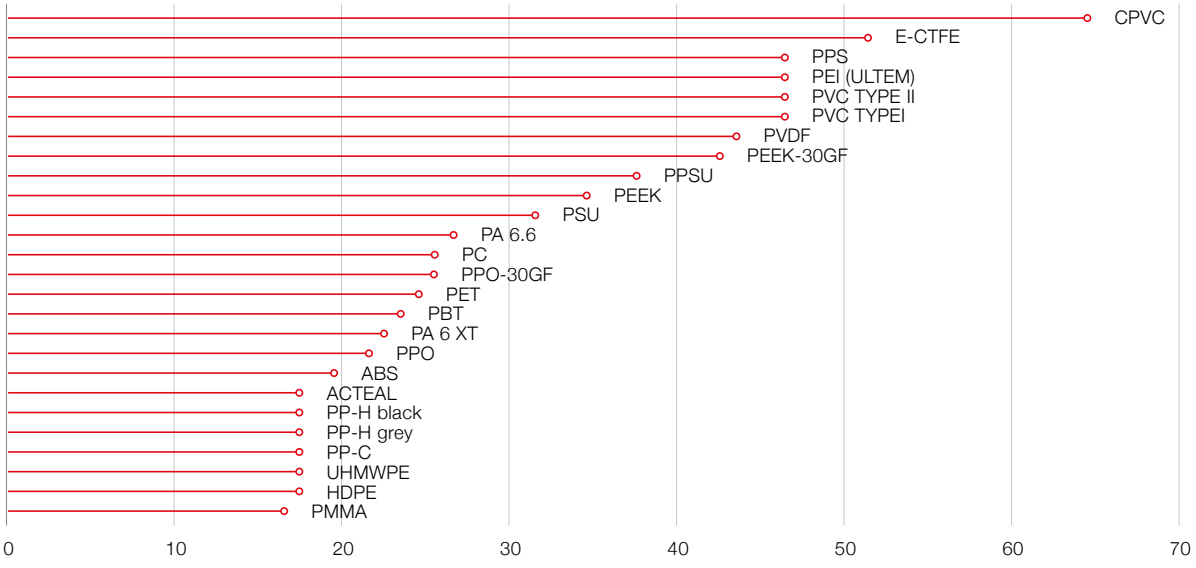


COMPARISON OF PLASTICS' TECHNICAL DATA

Max. permissible service temperature (°F)

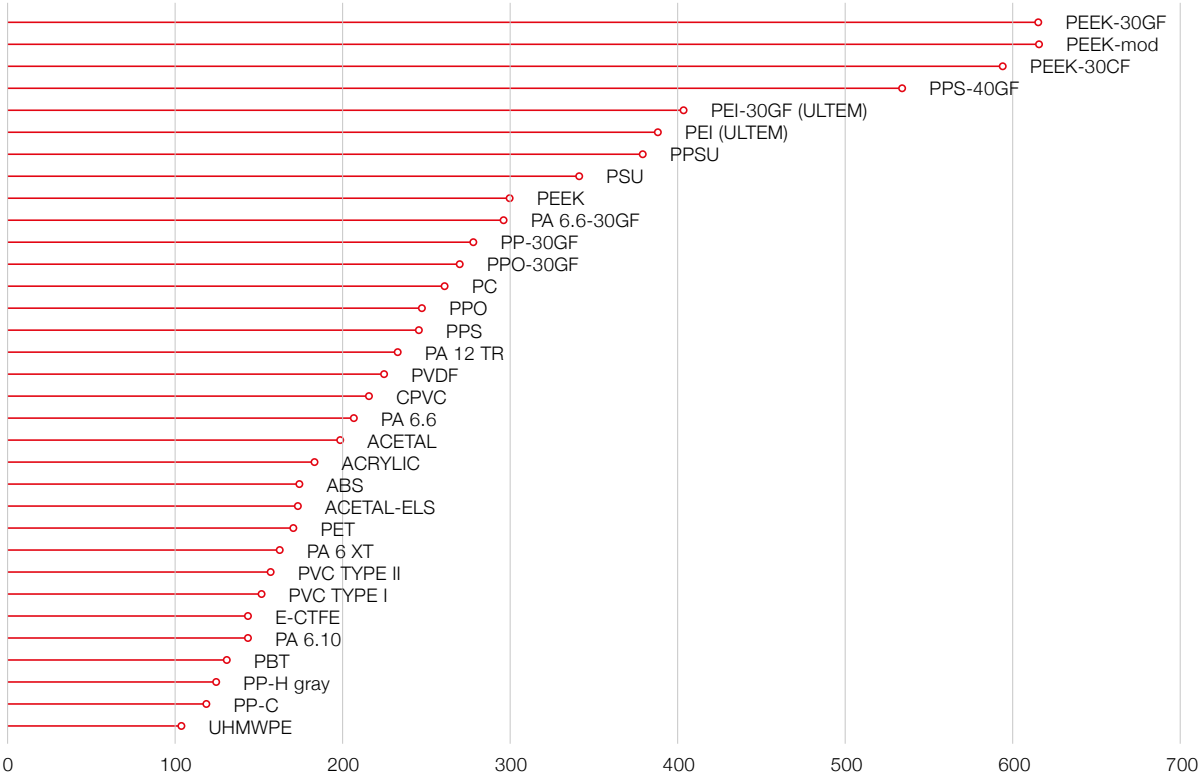


Flammability[1] (LoI in % O_2)

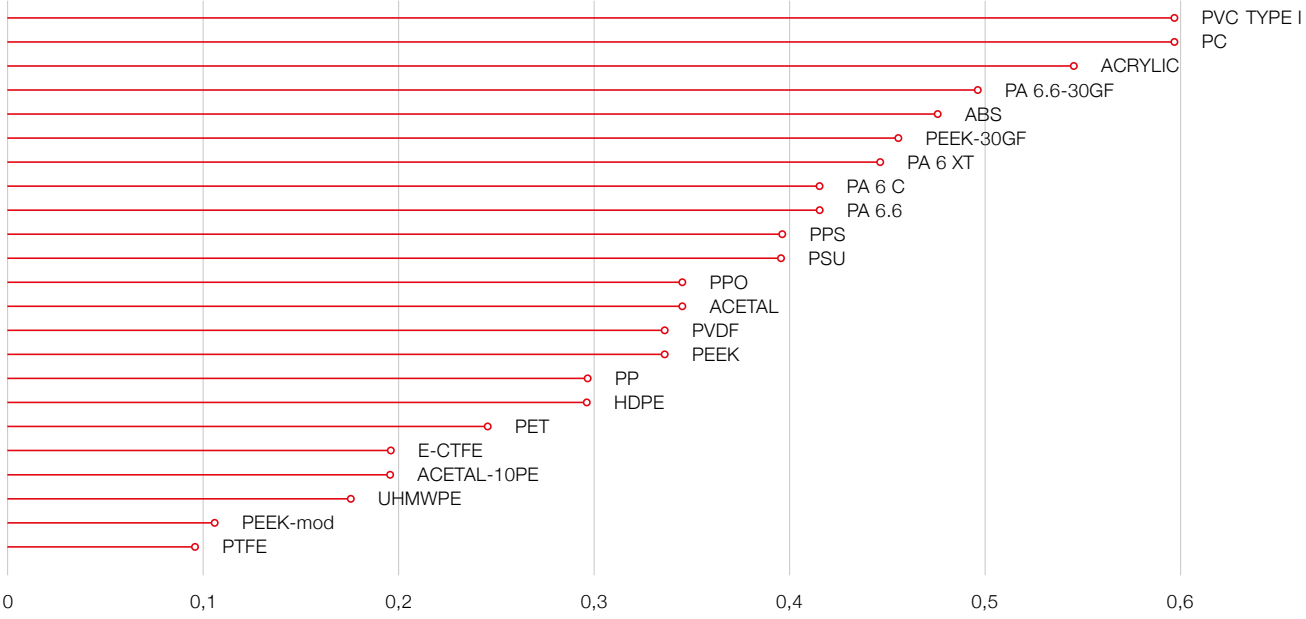


[1] Raw material Measurement

Heat deflection temperature (HDT/A in °F) according ISO 75



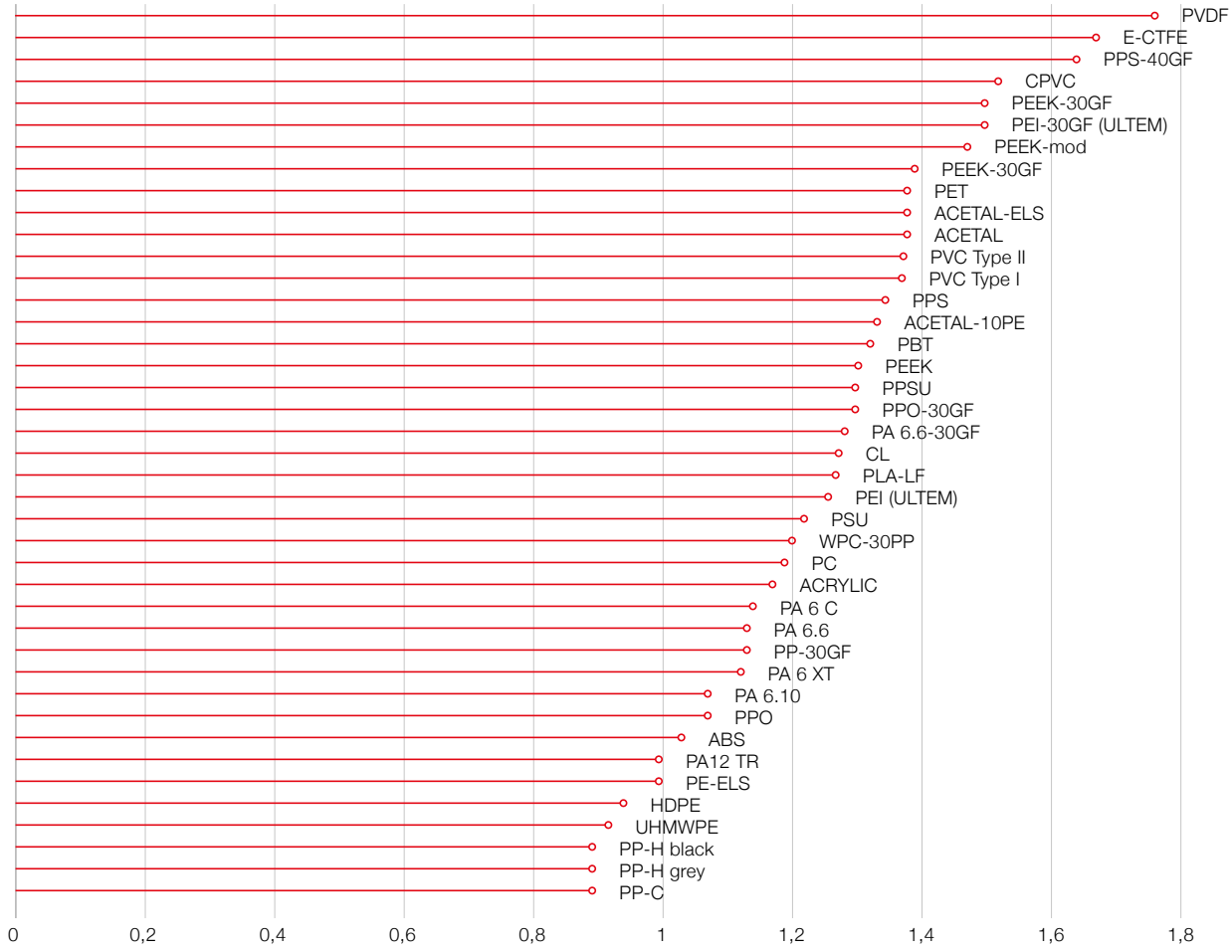
Coefficient of friction against steel



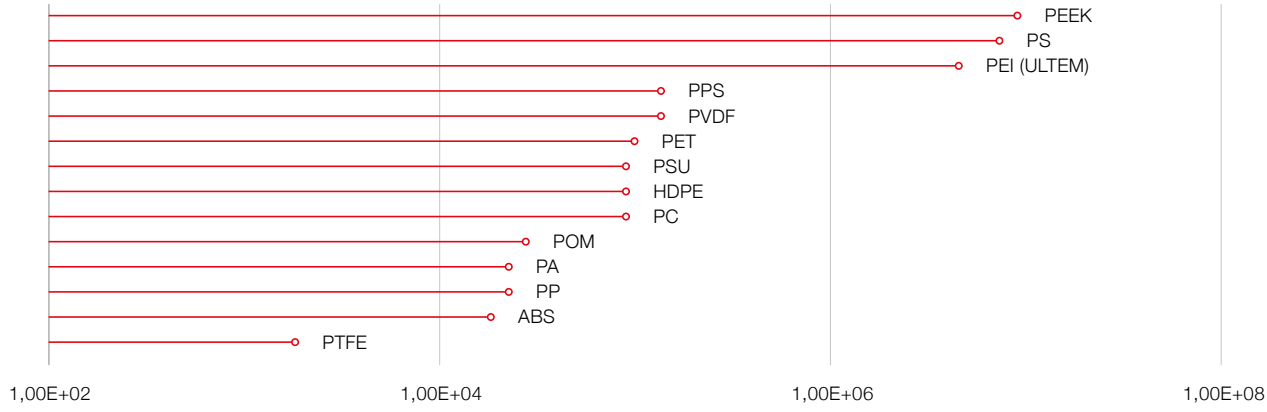
plastic/steel 16 MnCr 5; Rt = 2 mmM, surface pressure = 0.05 MPa, sliding speed = 0,6 m/s; surface temperature = 140 °F

COMPARISON OF PLASTICS' TECHNICAL DATA

Density (g/cm³)



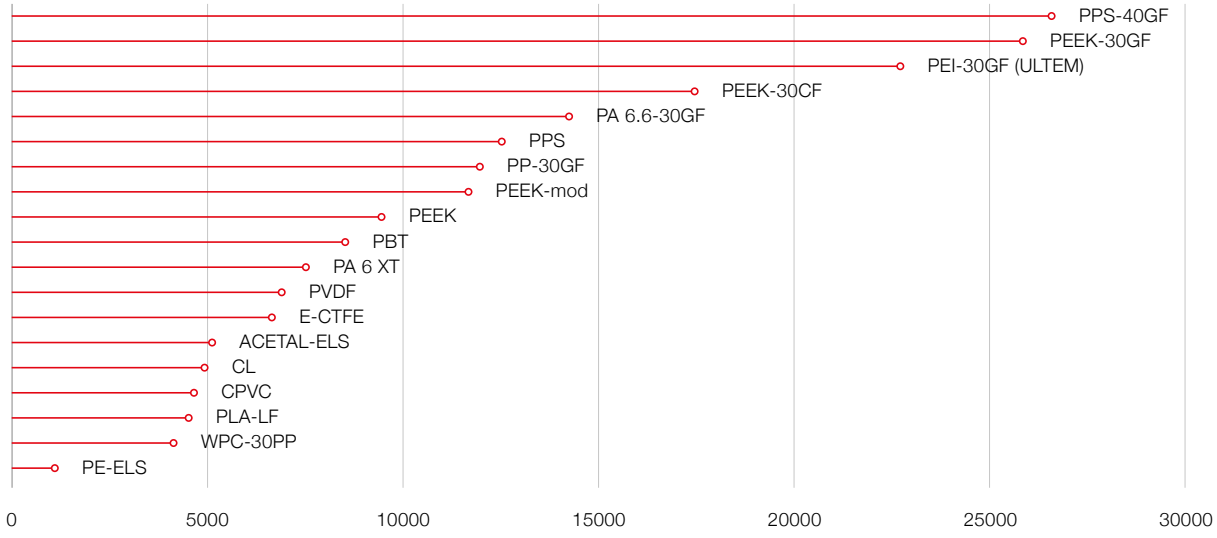
Resistance to γ-rays[1)]



γ-radiation dose in joules/kg (joules/kg = Grey = 100 rad)

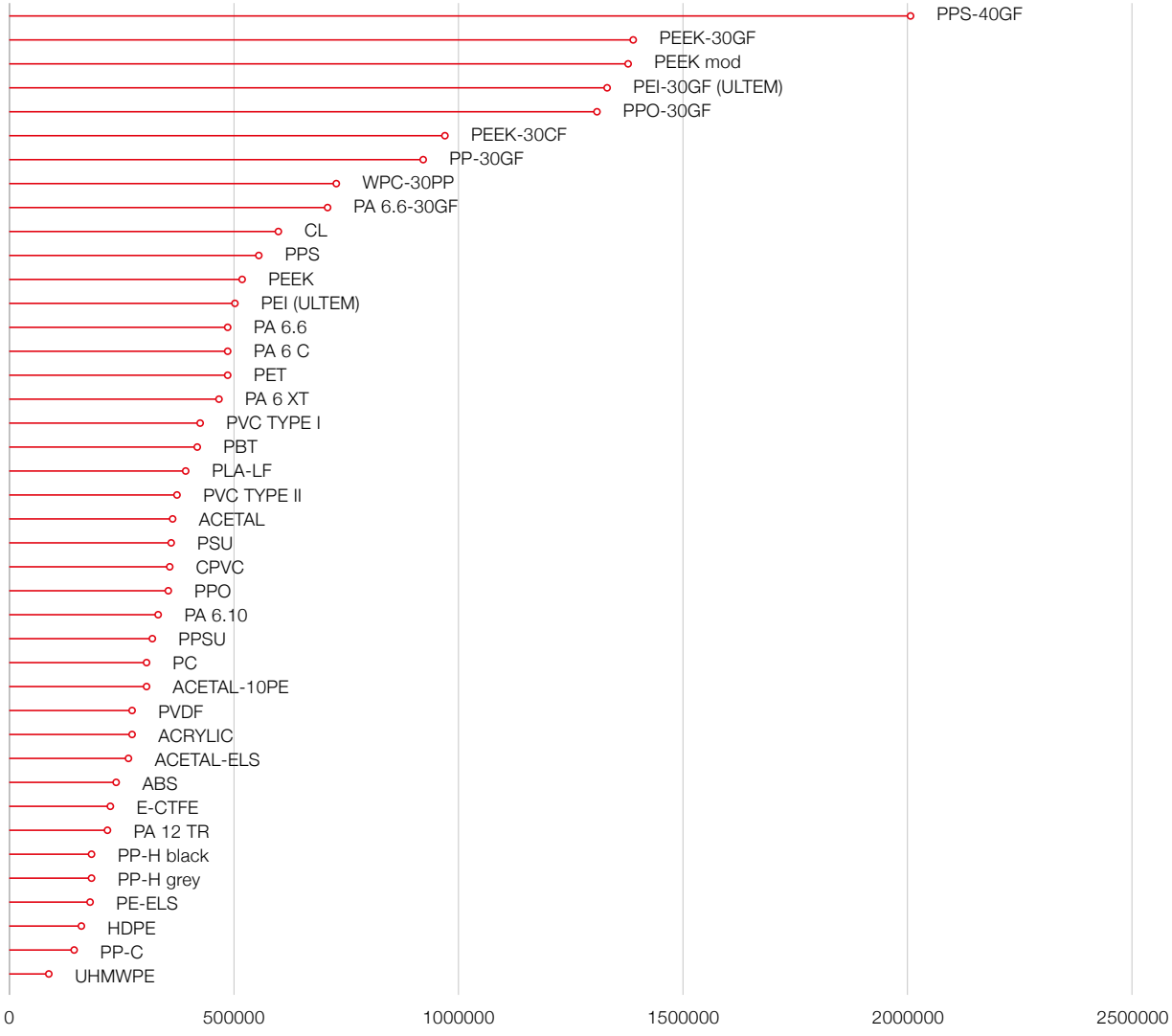
[1)] Raw material Measurement

Tensile strength at break (psi)

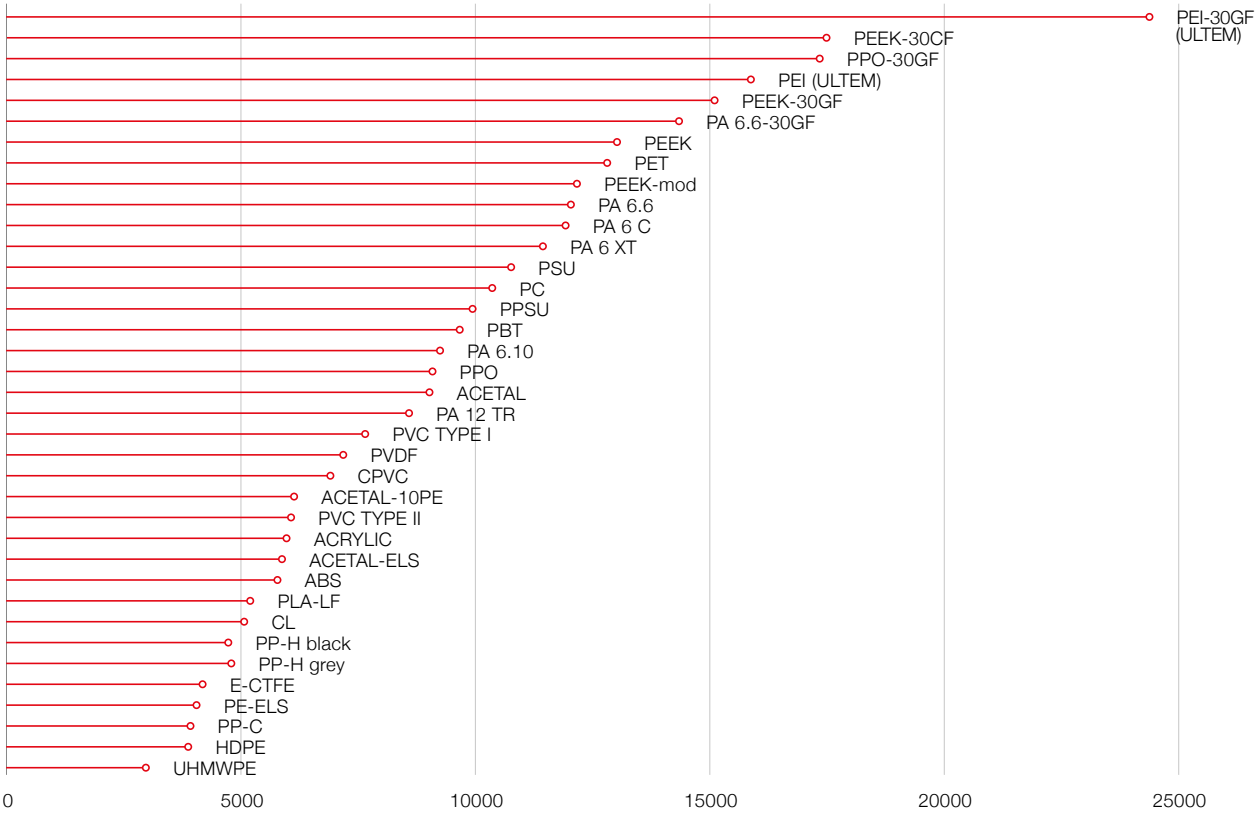


COMPARISON OF PLASTICS' TECHNICAL DATA

Modulus of elasticity (psi)

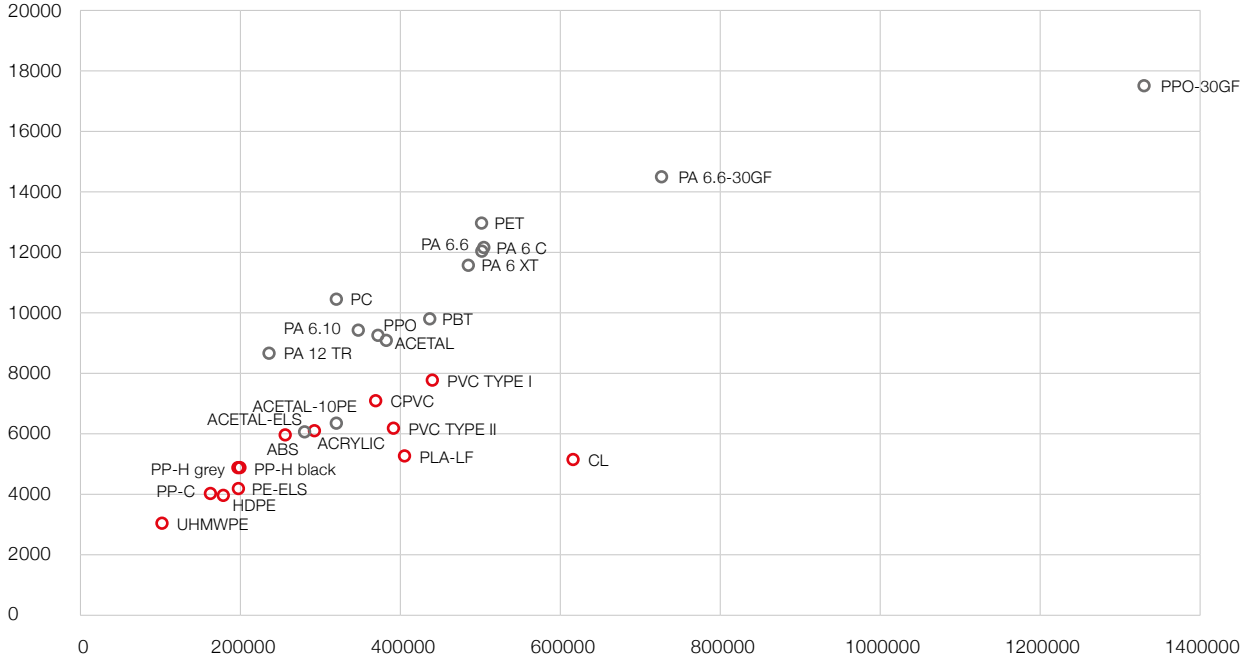


Tensile strength at yield (psi)



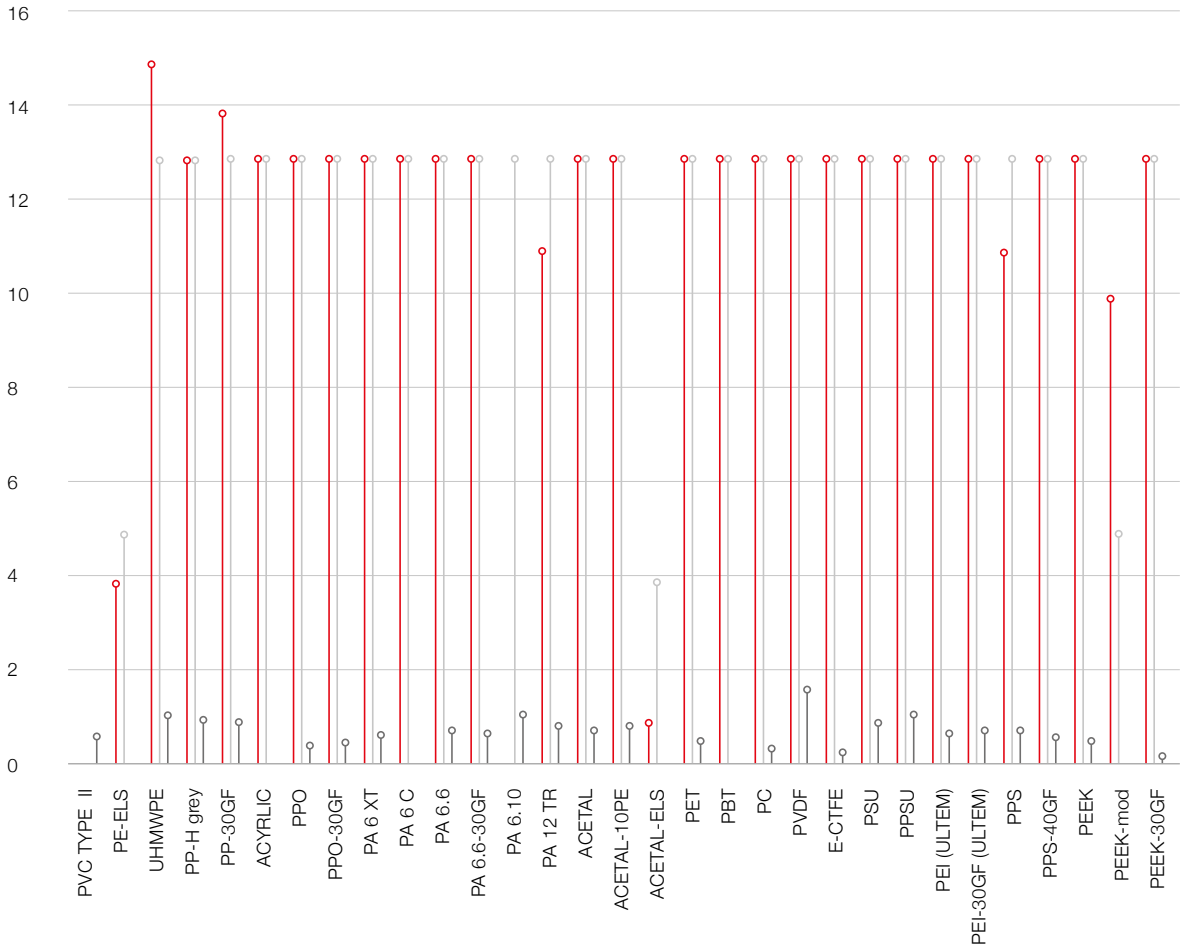
Modulus of elasticity versus tensile strength at yield (psi)

Commodities **Engineering plastics**



DATA COMPARISON OF ELECTRICAL PROPERTIES

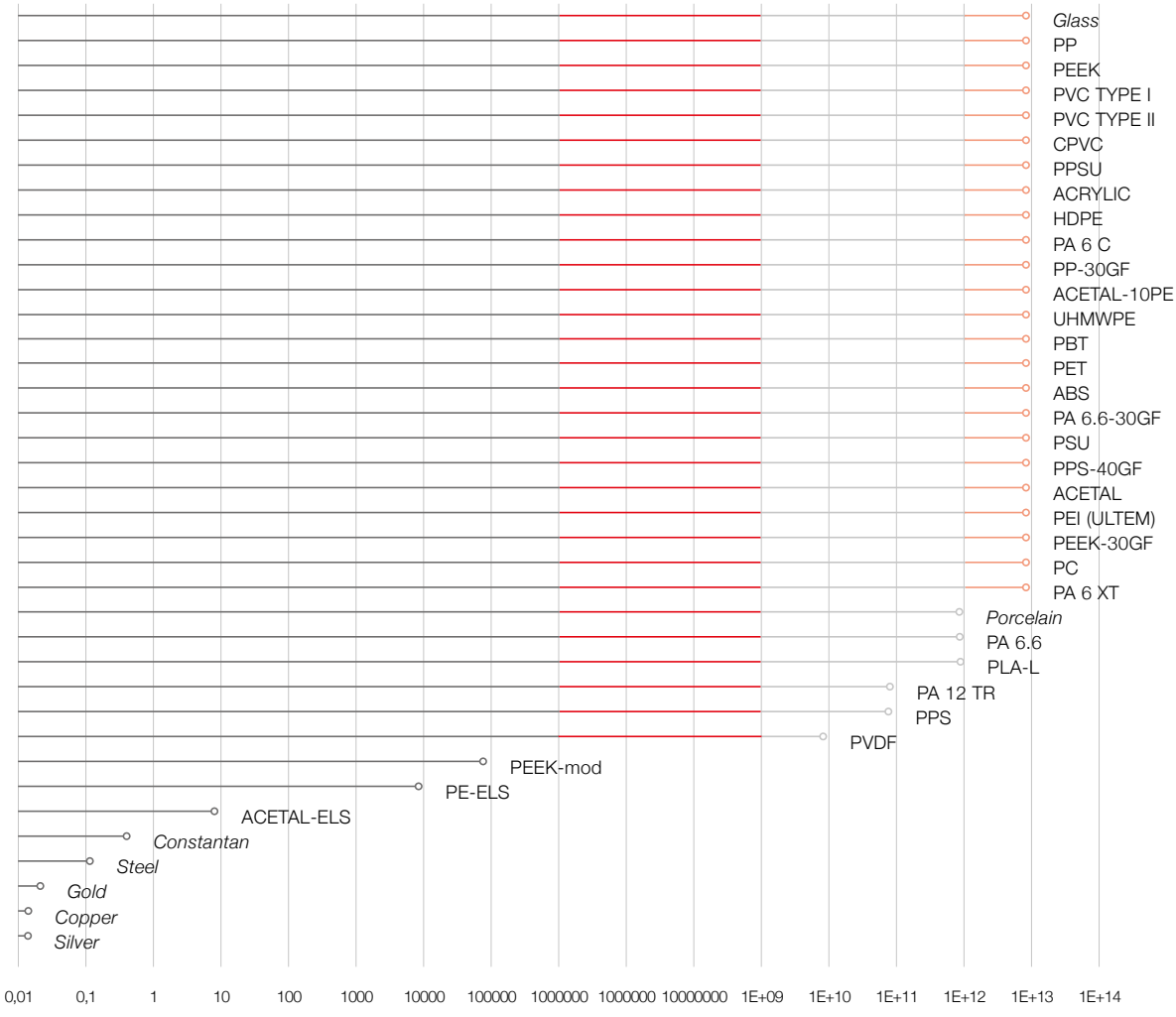
Volume resistivity (10^x Ω x cm)
Surface resistivity (10^x Ω)
Dielectric strength[1] (kV/mm)



[1] Raw material measurement

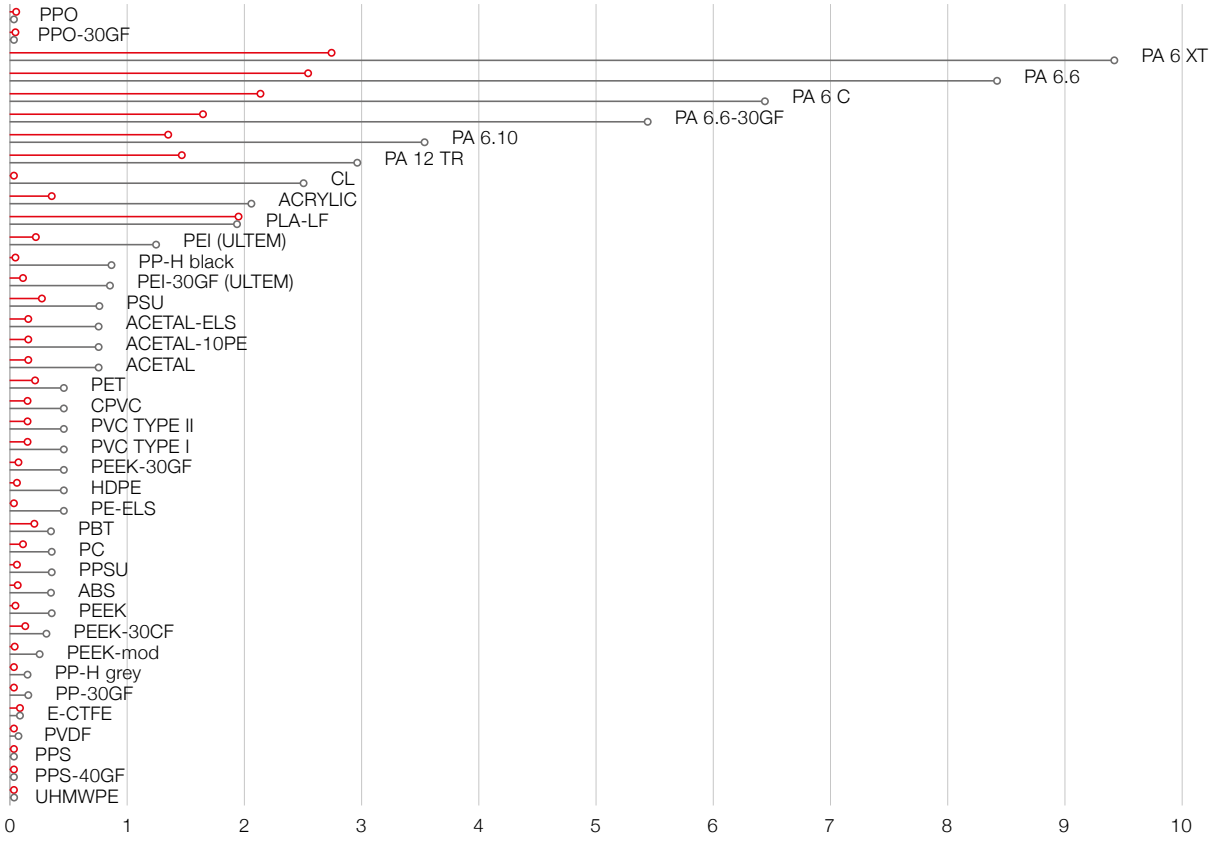
Volume resistivity (Ω x cm)

conductive **statically conductive** **antistatically** **isolating**

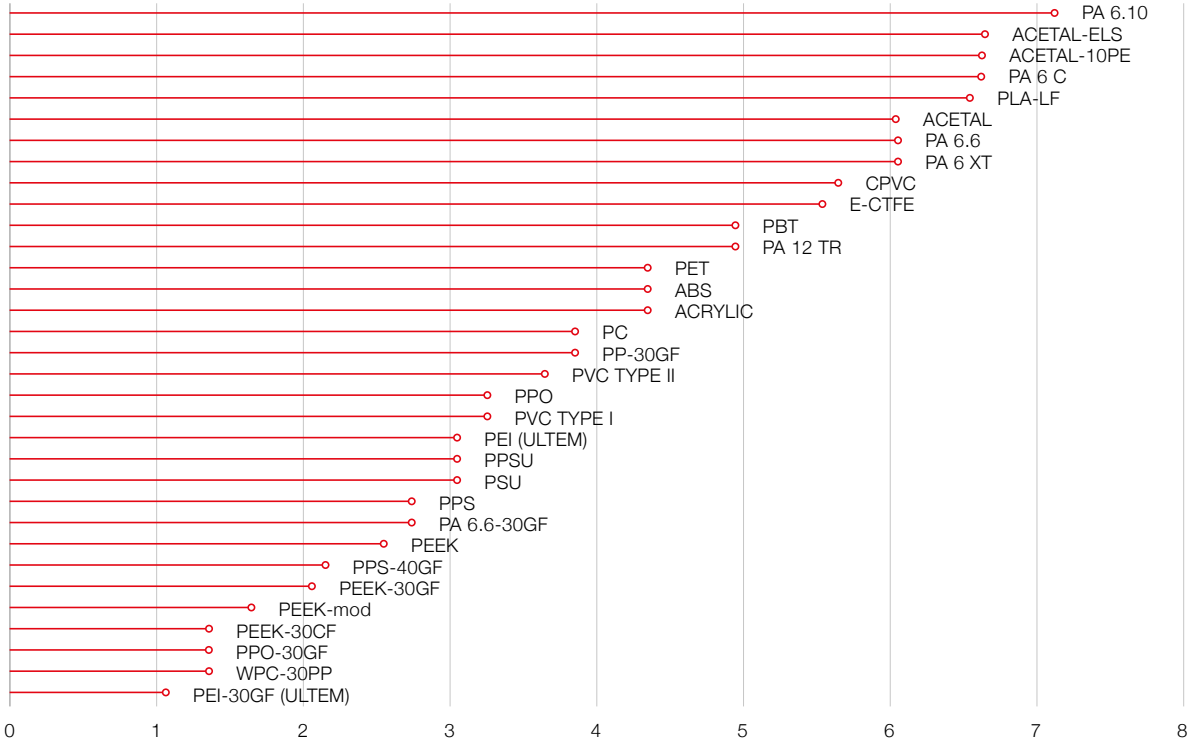


INFLUENCE PARAMETER AT PRODUCTION OF PRECISION PARTS

Humidity absorption (%) **Water absorption** (%)

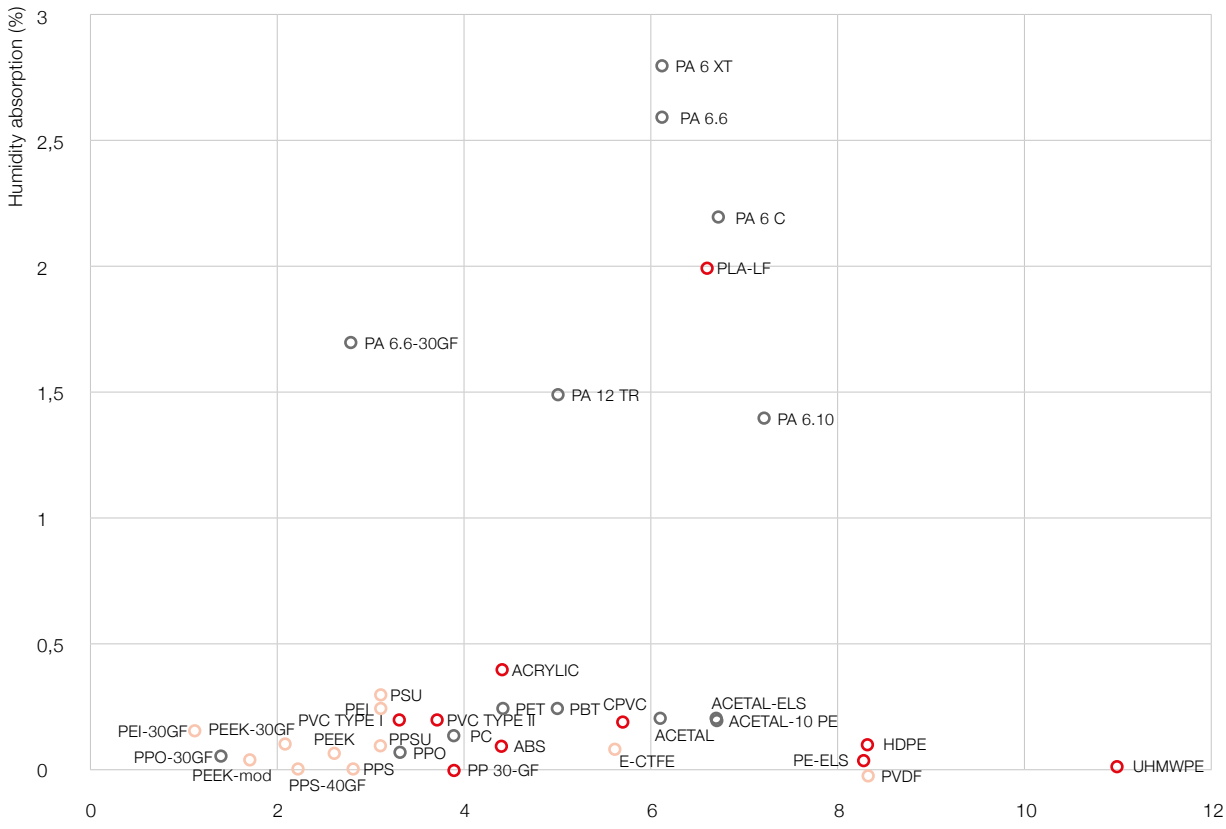


Coefficient of linear expansion (in/in/°F x 10-5)



Linear expansion of the different materials in relation to the absorption of humidity

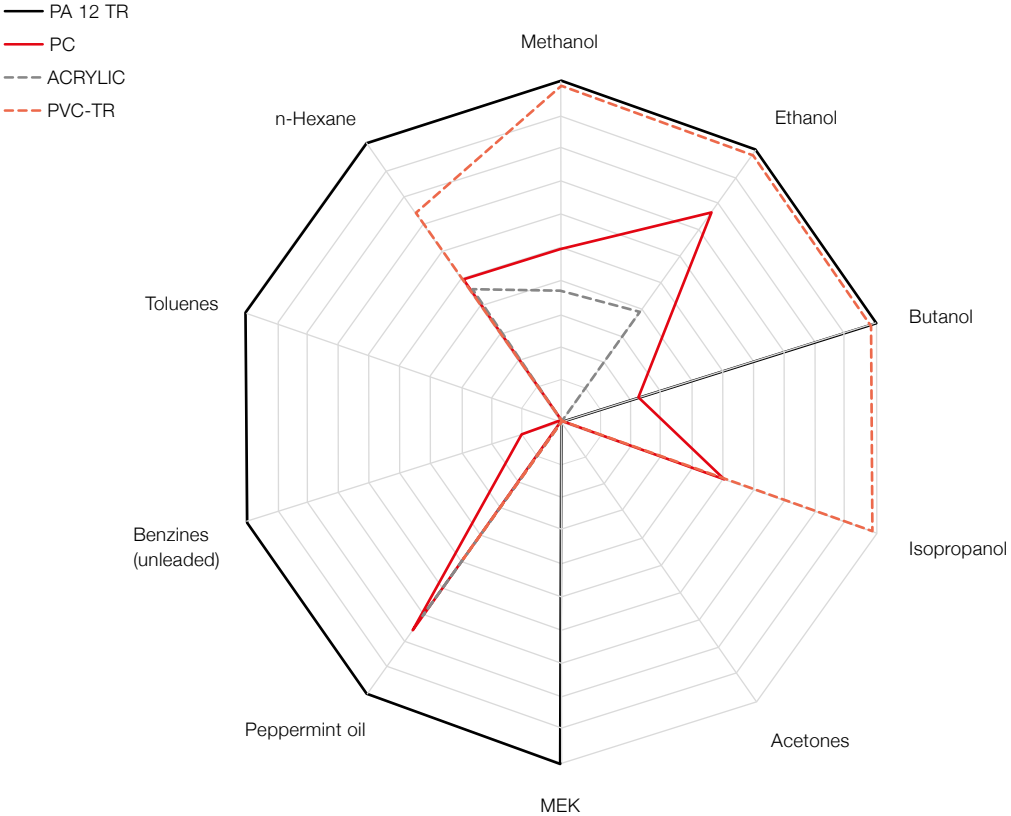
Standard Plastics Engineering plastics High Performance Materials



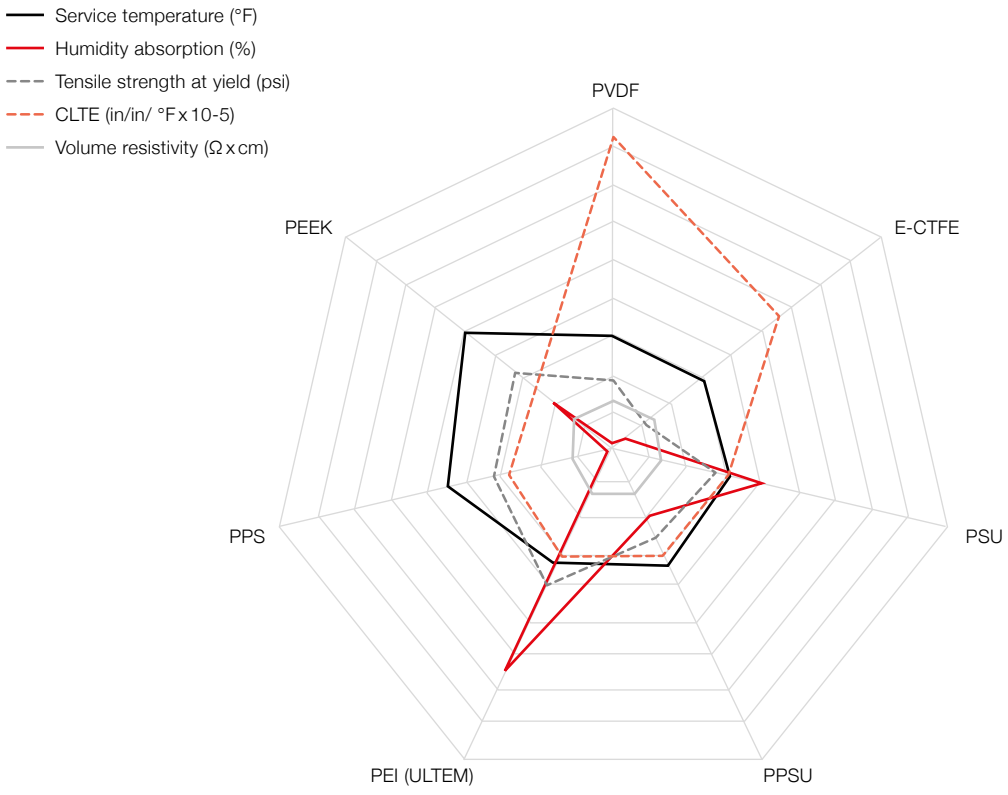
Coef. of linear therm. expansion (CLTE in/in/ °F x 10-5)

DATA COMPARISON OF TRANSPARENT MATERIAL

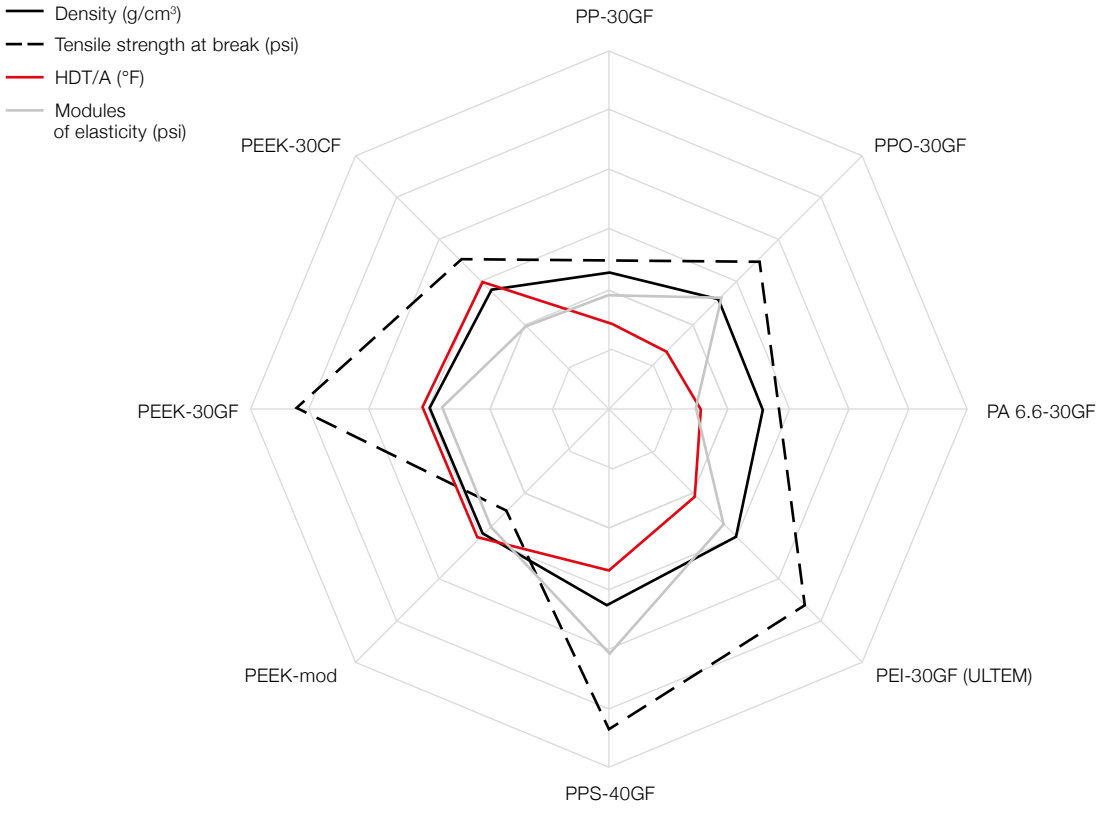
CHEMICAL RESISTANCE OF TRANSPARENT MATERIAL



DATA COMPARISON OF HIGH PERFORMANCE MATERIALS



DATA COMPARISON OF FIBRE REINFORCED THERMOPLASTICS



GEHR TECHNICAL PROPERTIES FOR STOCK SHAPES

Attribute of the used raw materials [1]	Norm	Unit	PLA-LF natural	CL natural	WPC-30PP natural	PVC Type I grey	PVC Type II trans-parent	CPVC light grey
I. Physical Properties								
1. Specific gravity (ρ)	ASTM D792	g/cm^3	1,28	1,28	1,21	1,38	1,38	1,53
2a. Water absorption (saturation)	ASTM D570	%	2	2,5	-	0,5	0,5	0,5
2b. Humidity absorption (saturation)	ASTM D570	%	2	-	-	0,2	0,2	0,2
3a. Max. permissible service temperature	UL 746B	°F	140	149	185	140	140	185
3b. Lower permissible service temperature		°F	-	-	-	5	-40	5
II. Mechanical Properties								
1. Tensile strength at yield (σ_S)	ASTM D638	psi	5365	5220	-	7800	6200	7090
2. Elongation at yield (ε_S)	ASTM D638	%	2	1,1	-	-	-	2,3
3. Tensile strength at break (σ_R)	ASTM D638	psi	4785	5220	4350	-	-	4910
4. Elongation at break (ε_R)	ASTM D638	%	3	1,2	1,6	-	-	23
5. Impact strength (α_n)	ASTM D256	ft-lb/in	7,1	6,2	3,7	-	-	-
6. Notch impact strength (α_k)	ASTM D256	ft-lb/in	1,4	1,4	-	2,2	17	3,4
7. Ball indentation hardn. (H_k) / Rockwell	ASTM D785	R-Scale	105 / -	-	-	-	111	-
8. Shore-D	ASTM D2240	-	77	-	75	80	78	-
9. Flexural strength ($\sigma_{B\,3,5\,\%}$)	ASTM D790	psi	-	-	-	11000	11000	10600
10. Modulus of elasticity (E_t)	ASTM D790	psi	406032	616300	751160	440000	390000	372000
III. Thermal Properties								
1. Vicat softening temp. VST/B/50	ASTM D1525	°F	135	-	-	-	-	-
VST/A/50		°F	-	-	-	-	-	-
2. Heat deflection temperature HDT/B	ASTM D648	°F	133	127	-	-	-	-
HDT/A		°F	-	-	-	158	163	221
3. Coef. of linear therm. expansion (α)	ASTM D696	in/in/°F•10^{-5}	6,6	-	1,4	3,3	3,7	5,7
4. Thermal conductivity at 73 °F (λ)	ASTM C177	BTU/hr-ft•°F	-	-	-	-	-	-
5. Glass transition temperature (T_g)	ASTM D3418	°F	248	-	-	-	176	-
6. Melting temperature (T_m)	ASTM D3418	°F	248	-	302	385	176	-
IV. Electrical Properties								
1. Volume resistivity (ρ_D)	ASTM D257	Ω•cm	-	-	-	-	-	-
2. Surface resistivity (R_o)	ASTM D257	Ω/SQ	-	-	-	-	-	-
3. Dielectric constant at 1 MHz (ε_r)	ASTM D150	-	-	-	-	-	-	-
4. Diel. loss factor at 1 MHz (tanδ)	ASTM D150	-	-	-	-	-	-	-
5. Dielectric strength	ASTM D149	V/mil	-	-	-	-	690	-
6. Tracking resistance	IEC 60112	Grade	-	-	-	-	-	-
V. Additional Data								
1. Bondability		-	+	+	-	+	+	+
2. Physiological indifference [5]	NSF	-	-	-	-	61+51+14	61+51	-
	FDA	-	+	-	-	on request	-	-
3. Flammability	UL 94	-	-	-	-	V-0	V-0	V-0 [7]
4. Limiting Oxygen Index (LOI)	ASTM D2863	%	-	-	-	47	47	65
5. UV stabilisation [6]	-	-	-	-	-	on request	-	-

HDPE	PE-ELS	UHMWPE	PP-C	PP-H grey	PP-H black	PP-30GF	PMMA	ABS	PPO	PPO-30GF	PA 6 XT	PA 6 C
natural	black	natural	natural	grey	black	black	trans-parent	natural	grey	natural	natural	natural
0,95	1,00	0,93	0,9	0,9	0,9	1,14	1,18	1,04	1,08	1,31	1,13	1,15
0,5	0,5	0,01	-	0,2	-	0,2	2,1	0,4	-	-	9,5	6,5
0,1	0,04	0,01	-	0,02	-	0,01	0,4	0,1	0,07	0,06	2,8	2,2
194	194	194	190	212	212	212	158	158	221	230	212	221
-58	-	-238	-22	41	-	41	-	-58	-	-	-40	-40
4000	4205	3100	4060	4900	4900	-	6090	5960	9200	17500	11600	12036
-	13	20	11	9	13	-	-	-	-	5	10	-
-	1450	-	-	-	-	12300	-	-	-	17500	7830	-
500	55	350	-	70	-	3	35	-	25	-	> 50	≥ 50
-	n.b.	38,7	-	n.b.	-	6,5	-	-	-	-	n.b.	n.b.
-	2,4	-	n.b.	1,3	1,3	1,8	0,86	8,3	3,5	2,2		
-	55	-	80	-	-	16000	110	98	119	89	155	165
69	66	63	-	76	-	85	-	70	86	25000	80	83
4600	3480	-	-	-	-	17400	9430	7800	14400	25000	14500	≥ 14500
176000	197215	102000	162000	200000	200000	943000	290000	255000	370000	1330000	482000	503000
261	181	176	-	194	-	320	221	201	-	289	-	-
-	-	-	-	302	-	266	-	-	-	-	399	-
167	-	149	190	205	-	311	-	-	-	285	374	-
-	-	108	124	130	-	284	189	180	254	275	167	-
8,3	8,3	11	8,3	8,3	-	3,9	4,4	4,4	3,3	1,4	6,1	6,7
-	-	2,8	-	-	-	1,9	-	-	-	-	2,2	1,6
-165	-	-	-	50	-	-	220	280	280	280	140	104
265	374	271	-	329	320	-	220	280	280	280	428	428
-	≤ 10^4	> 10^{15}	-	≥ 10^{13}	-	≥ 10^{14}	≥ 10^{13}	-	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}
-	≤ 10^5	≥ 10^{13}	-	≥ 10^{13}	-	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}
-	-	3	-	-	-	2,6	-	-	-	-	-	-
-	-	0,001	-	-	-	-	-	-	-	-	-	-
-	-	1100	-	1015	-	1015	-	-	500	530	760	-
-	-	CTI 600	-	-	-	CTI 600	-	-	-	-	CTI 600	CTI 600
o	o	-	o	o	o	o	+	+	+	+	+	+
-	-	-	-	-	-	-	-	-	-	-	-	-
+	-	+	+	+	-	-	+	+	-	-	+	+
HB [7]	HB	HB [7]	HB	HB [7]	HB [7]	HB	HB [7]	HB	V-1	V-1	HB [7]	HB [7]
18	-	18	18	18	18	-	17	20	22	26	23	-
o	o	-	-	-	o	o	+	-	o	o	-	-

n.b. no break
\+ yes
o limited
\- no / no data available

1) The physical data contained in this table are typical values and reflect the current state of our knowledge. The data are arithmetic average values which are tested by test speciments made out of rods (ø 40-60 mm). These has to be understood as guidelines, and shall not be used for specification purposes for finished parts. Missing data are completed by data of the raw materials.
2) Pretreatment necessary

PA 6.6	PA 6.6-30GF	PA 6.10	PA 12 TR	Acetal	Acetal-10PE	Acetal-ELS	PET	PBT	PC	PVDF	E-CTFE	PSU
natural	black	natural	trans-parent	natural	light blue	black	natural	natural	trans-parent	natural	natural	natural
1,14	1,29	1,08	1,00	1,39	1,34	1,39	1,39	1,33	1,2	1,77	1,68	1,23
8,5	5,5	3,6	3	0,8	0,8	0,8	0,5	0,4	0,4	0,04	0,1	0,8
2,6	1,7	1,4	1,5	0,2	0,2	0,2	0,25	0,25	0,15	0,01	0,09	0,3
212	230	212	212	195	212	230	212	212	250	302	302	320
-22	-4	-	-	-40	-40	-58	-5	-76	-	-22	-104	-148
12180	14500	9425	8700	9135	6300	6050	13000	9860	10500	7300	4350	10900
7	-	4,5	6	15	9	11	4	8	-	-	5	5,7
-	14500	-	-	-	-	5365	-	8845	-	7300	6820	-
≥ 70	5	-	50	30	30	13	15	15	100	50	250	-
n.b.	≥ 50	n.b.	n.b.	-	-	-	n.b.	-	n.b.	50	-	n.b.
		1,5	2,7	1,5	2,5	1,9	0,6	-	1,6	3	n.b.	1,6
165	170	-	-	120	85	-	170/M 96	156/-	-	-	90	-
83	85	80	83	85	80	84	84	-	83	80	75	-
15950	-	12325	-	10800	-	-	-	11890	13000	10000	6820	-
503000	725000	348000	232000	380000	319000	283000	500000	435700	320000	290000	240000	377000
-	-	-	-	-	-	-	-	426	-	-	-	-
-	-	-	-	-	-	-	-	392	-	-	-	-
392	482	284	275	308	-	-	-	338	-	-	194	-
212	302	149	239	205	-	179	176	136	266	230	149	347
6,1	2,8	7,2	5	6,1	6,7	6,7	4,4	5	3,9	8,3	5,6	3,1
2,4	2,2	-	-	-	2,1	-	2	-	1,29	1,32	-	-
116	122	-	311	-85	-76	-74	208	122	302	-40	185	374
500	500	428	311	330	325	330	473	433	302	340	437	374
$\geq 10^{13}$	$\geq 10^{13}$	-	$\geq 10^{11}$	$\geq 10^{13}$	$\geq 10^{13}$	$\leq 10^{1}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$
$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\leq 10^{4}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$	$\geq 10^{13}$
-	-	-	-	3,8	-	-	3,2	-	3,17	4,5	2,57	3,1
-	-	-	-	0,005	-	-	0,014	-	0,0009	-	-	0,006
760	760	1116	860	800	870	-	560	-	398	1700	360	940
CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	-	CTI 600	-	-	-	-	CTI 125
+	+	+	+	-	-	-	+	+	+	o [2)]	o [2)]	+
-	-	-	-	61+51	-	-	-		-	-	-	61
+	+	-	+	+	+	-	+		-	+	-	-
HB [7)]	HB [7)]	-	HB	HB	HB	-	HB [7)]	HB [7)]	HB [7)]	V-0	V-0	HB
27	-	-	-	18	-	-	25	24	26	44	52	32
-	+	-	+	-	-	-	o/-	+	-	+	+	-

5) Physiological indifferences are valid for nature coloured materials on the raw material side. There are alsoapprovals for our semi-finished products available or in preparation. Please check this separatly with us.

6) Valid for nature coloured materials. An additional UV prodection can taken over by special pigments e.g. carbon black.

PPSU black	PEI Ultem natural	PEI-30GF Ultem natural	PPS natural	PPS-40GF black	PEEK natural	PEEK-mod black	PEEK-30GF natural	PEEK-30CF black	Attribute of the used raw materials [1]
									I. Physical Properties
1,31	1,27	1,51	1,35	1,65	1,31	1,48	1,51	1,4	1. Specific gravity (ρ)
0,4	1,3	0,9	0,03	0,02	0,4	0,3	0,5	0,35	2a. Water absorption (saturation)
0,1	0,25	0,16	0,01	0,01	0,07	0,04	0,11	0,16	2b. Humidity absorption (saturation)
338	338	340	446	446	500	500	500	500	3a. Max. permissible service temperature
-58	-	-	-	-	-40	-	-	-4	3b. Lower permissible service temperature
									II. Mechanical Properties
10100	16000	24500	12800	-	13196	12325	15226	17690	1. Tensile strength at yield (σ_S)
7,2	7	-	3	-	7	7	3	7	2. Elongation at yield (ε_S)
-	-	23000	12800	26800	9715	12035	26102	17690	3. Tensile strength at break (σ_R)
60	60	3	15	1,9	11	7	2,7	7	4. Elongation at break (ε_R)
n.b.	25	8	59	-	n.b.	-	-	-	5. Impact strength (α_n)
13	1	1,6	-	3	2,1	3,2	2,4	-	6. Notch impact strength (α_k)
-	-	-	-	125	250/M 90	215/-	315/-	312/M 102	7. Ball indentation hardn. (H_k) / Rockwell
86	82	-	-	-	-	85	90	92	8. Shore-D
15500	24000	33000	20500	40600	23900	30000	33800	28000	9. Flexural strength ($\sigma_{B\,3,5\,\%}$)
333500	520000	1350000	580000	2030000	537000	1394000	1406000	986000	10. Modulus of elasticity (E_t)
									III. Thermal Properties
-	-	442	-	-	-	-	-	-	1. Vicat softening temp. VST/B/50
-	-	-	-	-	-	-	-	-	VST/A/50
-	410	414	-	-	-	-	-	-	2. Heat deflection temperature HDT/B
385	394	410	250	540	306	622	622	599	HDT/A
3,1	3,1	1,1	2,8	2,2	2,6	1,7	2,1	1,4	3. Coef. of linear therm. expansion (α)
1,7	1,5	1,5	2	2,1	2	-	3		4. Thermal conductivity at 73 °F (λ)
424	422	410	194	194	289	295	296		5. Glass transition temperature (T_g)
424	422	410	527	536	649	646	646		6. Melting temperature (T_m)
									IV. Electrical Properties
≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≤ 10^{10}	≥ 10^{13}		1. Volume resistivity (ρ_D)
≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≥ 10^{13}	≤ 10^{5}	≥ 10^{13}		2. Surface resistivity (R_o)
3,7	3,15	3,7	3	4	3,2	-	-		3. Dielectric constant at 1 MHz (ε_r)
0,0089	0,0015	0,0015	0,0013	0,004	0,004	-	-		4. Diel. loss factor at 1 MHz (tanδ)
1100	710	770	760	710	580	-	175		5. Dielectric strength
CTI 150	CTI 150	-	CTI 125	CTI 125	CTI 150	-	-		6. Tracking resistance
									V. Additional Data
+	+	+	+	+	+	o	+		1. Bondability
61+51	51	51	-	-	-	-	-		2. Physiological indifference [5]
+	-	-	-	-	+	+	-		
V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0		3. Flammability
38	47	-	47	-	35	-	43		4. Limiting Oxygen Index (LOI)
+	+	+	o	o	o	+	o		5. UV stabilisation [6]

7) Test results without UL registration
8) Data measured on natural colored Products

* Self-assessment without test report

IN COMPARISON

PAI	PI	Steel	Alu	Copper	Brass	
natural	natural	natural	natural	natural	natural	Attribute of the used raw materials [1]
						I. Physical Properties
1,41	1,43	7,85	2,7	8,92	8,41	1. Specific gravity (ρ)
2,5	0,72	0	0	0	0	2a. Water absorption (saturation)
0,4	0,24	-	-	-	-	2b. Humidity absorption (saturation)
500	500	1112	212	-	300	3a. Max. permissible service temperature
-58	-	-	-	-	-	3b. Lower permissible service temperature
						II. Mechanical Properties
18000	-	26827	12325	-	17401	1. Tensile strength at yield (σ_S)
-	-	-	35	-	-	2. Elongation at yield (ε_S)
-	12470	44953	-	-	44953	3. Tensile strength at break (σ_R)
20	7,5	18	14	4,5	-	4. Elongation at break (ε_R)
n.B.	-	-	-	-	-	5. Impact strength (α_n)
2	0,8	-	-	-	-	6. Notch impact strength (α_k)
200/M 120	-	-	-	-	-	7. Ball indentation hardn. (H_k) / Rockwell
-	-	-	-	-	-	8. Shore-D
24000	-	15951	-	-	-	9. Flexural strength ($\sigma_{B\,3,5\,\%}$)
600000	474912	30452436	10150812	14501160	11310904	10. Modulus of elasticity (E_t)
						III. Thermal Properties
-	-	-	-	-	-	1. Vicat softening temp. VST/B/50
-	-	-	-	-	-	VST/A/50
-	-	-	-	-	-	2. Heat deflection temperature HDT/B
532	680	-	-	-	-	HDT/A
1,7	3	0,7	1,3	0,9	1	3. Coef. of linear therm. expansion (α)
1,8	2	280	970	2773	-	4. Thermal conductivity at 73 °F (λ)
527	-	-	-	1984	-	5. Glass transition temperature (T_g)
-	-	-	-	-	-	6. Melting temperature (T_m)
						IV. Electrical Properties
≥ 10^{16}	≥ 10^{14}	-	-	-	-	1. Volume resistivity (ρ_D)
≥ 10^{13}	≥ 10^{13}	-	-	-	-	2. Surface resistivity (R_o)
4,2	3,55	-	-	-	-	3. Dielectric constant at 1 MHz (ε_r)
0,026	0,0034	-	-	-	-	4. Diel. loss factor at 1 MHz (tanδ)
580	560	-	-	-	-	5. Dielectric strength
-	-	-	-	-	-	6. Tracking resistance
						V. Additional Data
+	+	-	-	-	-	1. Bondability
		-	-	-	-	2. Physiological indifference [5]
		-	-	-	-	
V-0	V-0	-	-	-	-	3. Flammability
-	-	-	-	-	-	4. Limiting Oxygen Index (LOI)
+	+	-	-	-	-	5. UV stabilisation [6]

GEHR CHEMICAL RESISTANCE*

		PVC-U		PE-HD		PE-UHMW		PP		ABS		PMMA		PA 6 XT		PA 6.6	
	Konz. (%)	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60
Acetic acid	100	+	-	+	o	+		+	o	-	-	-	-	-	-	-	-
Acetone	100	-	-	+	+/o	+	+/o	+	+/o	-	-	-	-	o	o	o	o
Ammonium chloride		+	o	+	+	+	+	+	+	+				+	o	+	o
Amyl alcohol		+	o	+	+	+	+	+	+	+	-	-	-	+		+	
Apple juice		+	+	+	+	+	+	+	+	+		+		+		+	
Benzene		-	-	+/o	o/-	+	+/o	o	-	-	-	-	-	+	+	+	+
Bleaching solution	12,5 cl	+	-	o	-			o	o					-	-	-	-
Boric acid	100	+	o	+	+	+	+	+	+					o/-	o/-	o/-	o/-
Brake fluid		+	+	+	+	+	+	+	+	-	-			+	+	+	+
Butyl acetate		-	-	+	o	+		o	-	-	-	-	-	+		+	
Calcium chloride		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carbon disulphide	100	-	-	o	-			o	-	-	-	-	-	+	-	+	-
Carbon tetrachloride		-	-	o/-	-			-	-	-	-	-	-	+		+	
Chlorine, gas	100	o	-	o	-			-	-	-	-	o	o/-	-	-	-	-
Chlorobenzene	100	-	-	o	-			+	o/-	-	-			+		+	
Chloroform		-	-	o/-	-			o	-	-	-	-	-	-	-	o	o/-
Citric acid	10	+	+	+	+	+	+	+	+	+	+	+	+	+		+	
Cresol		-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-
Cyclohexanone	100	-	-	+	+/o	+		+	o/-	-	-	-	-	+		+	
Cyclohexene	100	+	o	+	+	+	+	+	-	+		-	-	+		+	
Diesel fuel		+		+	+	+	+	+	+	+		+		+	+	+	+
Diethylene oxide, THF		-	-	+	o			o	o/-			-	-	+		+	
1,4 Dioxane	100	-	-	+		+		o/-	o/-	-	-			+	+	+	+
Ethyl acetate	100	-	-	+	+/o	+		+	+/o	-	-	-	-	+		+	
Ethyl alcohol	96	+	o	+	+	+	+	+	+	+		+/o	-	+	+	+	+
Ethylene chloride	100	-	-	+/o	o/-			+/o	o/-	-	-	-	-	+		+	
Food oil		+	+	+	+	+	+	+	+	+				+		+	
Formaldehyde, aqu	40	+	+	+	+	+	+	+	+	+	o	+		+/o	o/-	+/o	o/-
Formic acid	10	+	o	+	+	+	+	+	+	+	+	-	-	-	-	-	-
Frost protection agent		+	+	+	+	+	+	+	+	+				+	+	+	+
Fuel, aromatic free		+	+/o	+/o	+/o	+/o	+/o	+/o	+/o	+/o	o/-	+		+	+	+	+
Fuel, premium		-	-	+	+	+	+	+	+	-	-	-	-	+	+	+	+
Glycerin	100	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+
Glycol	100	+	+	+	+	+	+	+	+	+		+		+	o	+	o
Heating oil		+	+	+	+	+	+	+	+/o	+	+	+		+	+	+	+
Heptane	100	+	+	+	+/o	+	+/o	o	o	+		+		+		+	
Hydroaen sulphide		+	+	+	+/o	+		+	+	+		+		+		+	
Hydrochloric acid	10	+	+	+	+	+	+	+	+	+	o/-	+		-	-	-	-
Hydrochloric acid	konz.	+	+	+	+	+	+	+	+/o	+/o	-	+		-	-	-	-
Hydrofluoric acid	40	+	o	+	o	+		+	+	o	o/-	-	-	-	-	-	-
Hydrogen peroxide	10	+	+	+	+	+	+	+	+	+	+	+		+/o	-	+/o	-
2-Hydroxypropionic acid	90	+	+	+	+	+	+	+	+	+/o	o/-			-	-	-	-
Isopropyl alcohol	100	+		+	+	+	+	+	+	o	-	+/o	o/-	+	+	+	+
Linseed oil		+	+	+	+	+	+	+	+	+	+	+		+	+	+	+
Mercurochrome		o	-	+	+/o	+		+	o	o	o/-	-	-	-	-	-	-
Methyl alcohol	100	+	+/o	+	+	+	+	+	+	+	o	-	-	+		+	
Methylene chloride	100	-	-	o/-	-	o/-	-	o/-	-	-	-	-	-	o	o	o	o/-
Methyl ethyl ketone	100	-	-	+	-	+		+	o	-	-	-	-	+		+	
Milk		+	+	+	+	+	+	+	+	+	+	+		+	+	+	+
Mineral oils (aromatic free)		+	+	+	+/o	+	+	+	+/o			+		+	+	+	+
Nitric acid	10	+	+	+	+	+	+	+	+	+		+	+	-	-	-	-
Nitric acid	50	+	+	o	o/-	o	o/-	-	-	+/o	-	-	-	-	-	-	-
Nitrobenzene		-	-	+	+/o	+		+	+/o	-	-	-	-	o	o/-	o	o/-
Oxalic acid		+	+	+	+	+	+	+	+	+	+	+		o	o/-	o	o/-
Ozone, gas	kl. 0,5 ppm	+	+	+/o	-	+/o	-	-	-	+	+	+		-	-	-	-
Paraffine oil	100	+	o	+	+	+	+	+	+	+	+	+		+	+	+	+
Perchloroethylene		-	-	o	-	o	-	o	-	-	-	o	o/-	o	-	o	-
Petroleum ether (surgical spirit)	100	+	+	+	o	+	o	+	o	-	-	+		+		+	
Petroleum	100	+	+							o	o/-	o	o/-	+		+	
Phenol, aqu	ca. 9	o	-	+	+	+	+	+	+	o	o/-	-	-	-	-	-	-
Phosphoric acid	50	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-
Potassium hydroxide liquor	50	+	+	+	+	+	+	+	+	+	+/o	+		o	o/-	o	
Propyl alcohol		+	o	+	+	+	+	+	+	+	-						
Pyridine		-	-	+	+/o	+		+	+	-	-			+	o	+	o
Silicone oil		+	+	+	+	+	+	+	+	+		+		+	+	+	+
Sodium carbonate, aqu		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium chloride, aqu		+	+	+	+	+	+	+	+	+	+	+		+	+	+	+
Sodium hydrodgen sulphite		+	+	+	+	+	+	+	+	+		+		+		+	
Sodium hydroxide liquor	15	+	+	+	+	+	+	+	+	+	+	+		+		+	
Sodium hydroxide liquor	60	+	+	+	+	+	+	+	+	+		-	-	o	o/-	o	o/-
Sodium nitrate, aqu		+	+	+	+	+	+	+	+	+	+			+		+	
Sodium thiosulfate		+	+	+	+	+	+	+	+	+	+	+		+		+	
Sulphuric acid	96	+	+/o	o	-	o	-	o/-	-	-	-	-	-	-	-	-	-
Tetrahydrofurane	100	-	-	o/-	-			o/-	o/-	-	-	-	-	+		+	
Toluene	100	-	-	o/-	-			+	-	-	-	-	-	+	+	+	+
Transformer oil		+		+	+/o	+	+	+	+/o	+	o/-	+		+	+	+	+
Trichloroethylene	100	-	-	+/o	-			o	-	-	-	-	-	+	-	+	-
Vinegar standard	5-10	+	+	+	+	+	+	+	+	+	+	+	+	+		+	
Water		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Xylene		-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+

* The figures indicated here are approximate values. They may be affected by the temperature, operating time, concentration and stress level of the component involved, by mechanical loads, etc., and the user is not released therefore from the obligation of performing checks and trials of his own. The values indicated here have been compiled on the basis of current experiences and findings. Any legally binding guarantee of certain properties, or any suitability for a specific application cannot be inferred from the present data.

PA 12 TR		POM		PET		PBT		PC		PVDF		E-CTFE		PSU		PPSU		PEI		PPS		PEEK	
RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60	RT	60
		o	-	-	-	-	-	-	-	+	o	+	+	+	+							+	+
o/-	-	+	o	o	-			-	-	+/o	-	+	+	-	-	-	-	-	-	+	+	+	+
+		+	o	+		+		+	+	+	+	+	+	+				+	+	+		+	+
o/-	-	+		+				+		+	+	+	+	o								+	
+	+	o		+		+		o	o	+	+	+	+					+				+	+
+		+	+	+	-	+	-	-	-	+	o	+	o	-	-	o	o	-	-	+		+	+
-	-	-	-	o		o		-	-	+	o/-	+	+									+	+
o/-	o/-	o/-	-					+		+	+	+	+									+	o
+		+	+	+	+	+		-	-	+	+	+	+	o				+	-	+	+	+	+
+		+	o	+	+	o		-	-	+	-	+	+	+	+	+	+/o			+	+	+	
+		+	+	+	+	+		+	+	+	+	+	+	+	+			+	+	+	+	+	+
+		+	+	+	o			-	-	+													
+		+	o	+	o	+		-	-	+	+			o	-					+	o	+	
-	-					-	-	o	o/-	+	+	+	+									+	
o	o/-	o	o	-	-	+	-	-	-	+	+	+	+	-	-			+		+/o	o	+	
-	-	-	-	-	-	-	-	-	-	+	+			-	-			+		+/o	o	+	
+		o	-	+	o	+	o	+	+	+	+	+	+	+		+		+	+			+	+
-						-	-	-	-	+	+												
+		+				+		-	-	+	o	+	o									+	o/-
o	o/-	+				+		-	-	+	+	+	+	+		+						+	
+	+	+	+	+	+	+	+	o	o/-	+	+	+	+	+	+			+	+	+	+	+	+
+		+	+	+		+		-	-	+	+			+						+	+	+	
o	o/-	o	o	o	o/-	+	-	+/o	-	o	-	+	+					+		+		+	
+		o	o	+/o	-			-	-	+	o			-	-			+		+		+	
-	-	+	o	+	+	+		+/o	o	+	+			+	+	+	+	+		+	+	+	+
-	-			o/-	-			-	-	+	+	+	+					+				+	
+	+	+	+	+	+	+		+		+	+	+	+	+				+	+			+	+
o	o/-	+	+			+		+		+	+	+	+			+		+				+	+
o	o/-	o	-	+	o	+	o	+		+	+	+	+	-	-			+		+	+	+	+
		+		+	o	-	-	+		+	+	+	+	+				+		+	+	+	+
+	+	+	+	+	+	+	+	o	o/-	+	+	+	+	+	+	+	+	+	+	+	+	+	
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+ resistant o partly resistant – non-resistant

NOTES ON GEHR-DELIVERY PROGRAM

Stock item
(Product available from stock shipped from USA)

Custom extrusion on request
(Product can be produced on customer's request and based on minimum order quantity)

Stock FIL-A-GEHR™

Stock item Germany
(Product available from stock shipped from Mannheim/Germany)

All weights specified are based on average production weights. As a rule these are the invoiced weights, only High Performance Materials and welding rods will partially be invoiced by actual weight.

Following DIN norms are being used for semi-finished materials:

» Round Rods, Sheets, Hollow Bars: DIN EN 15860
» Welding Rods: according to DVS 2211

Tolerances which are not mentioned can be offered on request.

The current version of our General Terms and Conditions can be found on our website www.gehrplastics.com

We reserve the rights to make modifications and errors. Values are dependent on the diameters and can deviate.

GEHR makes no representations or warranties regarding the technical statements in this brochure. Desired capability characteristics are only binding if there is an explicit agreement when the contract is concluded.

CONVERSION TABLE

inch	inch	mm
¼	0.250	6,350
5/16	0.312	7,938
⅜	0.375	9,525
7/16	0.437	11,113
½	0.500	12,700
9/16	0.562	14,288
⅝	0.625	15,875
¾	0.750	19,050
⅞	0.875	22,225
1	1.000	25,400
1 1/16	1.062	26,988
1⅛	1.125	28,575
1¼	1.250	31,750
1⅜	1.375	34,925
1½	1.500	38,100
1⅝	1.625	41,275
1¾	1.750	44,450
1⅞	1.875	47,625
2	2.000	50,800
2⅛	2.125	53,975
2¼	2.250	57,150
2⅜	2.375	60,325
2½	2.500	63,500
2¾	2.750	69,850
3	3.000	76,200
3¼	3.250	82,550
3½	3.500	88,900
3¾	3.750	95,250
4	4.000	101,600
4⅛	4.125	107,950
4½	4.500	114,300
5	5.000	127,000
5⅛	5.125	130,175
5¼	5.250	133,350
5½	5.500	139,700
6	6.000	152,400
6½	6.500	165,100
7	7.000	177,800
8	8.000	203,200
9	9.000	228,600
10	10.000	254,000
11	11.000	279,400
12	12.000	304,800
14	14.000	355,600
16	16.000	406,400
20	20.000	508,000

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