Materials Technical Reference Handbook

Fluoropolymers. Engineering polymers. Elastomers. Heat-shrink materials.

Yozonetech material data sheets and comparison tables for preliminary engineering selection. Final supply requirements are defined by the actual material grade, product drawing and agreed acceptance criteria.

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Contents

Material data sheets, comparison guides and heat-shrink references

PTFE - Technical Data Sheet 3

FEP - Technical Data Sheet 4

PFA - Technical Data Sheet 5

ETFE - Technical Data Sheet 6

ECTFE - Technical Data Sheet 7

PVDF - Technical Data Sheet 8

PCTFE - Technical Data Sheet 9

PEEK - Technical Data Sheet 10

PPS - Technical Data Sheet 11

PA6 - Technical Data Sheet 12

PA12 - Technical Data Sheet 13

HDPE - Technical Data Sheet 14

PP - Technical Data Sheet 15

TPU - Technical Data Sheet 16

PVC - Technical Data Sheet 17

Silicone - Technical Data Sheet 18

EPDM - Technical Data Sheet 19

FKM - Technical Data Sheet 20

Crosslinked Polyolefin - Technical Data Sheet 21

Fluoropolymer Properties Comparison 22

Engineering Polymer Properties Comparison 24

Elastomer Properties Comparison 25

PEEK Heat Shrink Tubing - Technical Data Sheet 26

PTFE - Technical Data Sheet

Polytetrafluoroethylene

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

General material reference ranges; grade and specimen conditions vary.

Property / condition	Unit	Typical reference	Method / basis
Relative density	-	2.13-2.22	ASTM D792
Elongation at break	%	200-450	ASTM D638
Tensile strength	MPa	14-48	ASTM D638
Compressive strength*	MPa	24	ASTM D695
Tensile modulus	MPa	393	ASTM D638
Flexural modulus	MPa	490-586	ASTM D790
Hardness	Shore D	50-60	Reference
Friction against steel*	-	0.02	Condition not stated
Melting range / point	°C	320-327	Reference
Indicative service upper*	°C	260	Grade dependent
Dielectric constant, 1 kHz	-	2.1	ASTM D150
Dielectric constant, 100 kHz	-	2.1	ASTM D150
Volume resistivity	ohm·cm	$>10^{18}$	ASTM D257
Surface resistivity	ohm	$>10^{17}$	ASTM D257
Water absorption, 24 h	%	<0.01	ASTM D570

Application context

Insulation tubing, chemical-service tubing, seals and machined stock shapes.

*Compression strain, friction test conditions and service-life qualification are not established by this reference table. Use the exact grade specification for design. Electrical material values do not establish a finished-tube voltage rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

FEP - Technical Data Sheet

Fluorinated Ethylene Propylene

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

General material reference ranges; grade and specimen conditions vary.

Property / condition	Unit	Typical reference	Method / basis
Relative density	-	2.12-2.17	ASTM D792
Elongation at break	%	250-330	ASTM D638
Tensile strength	MPa	19-35	ASTM D638
Compressive strength*	MPa	15	ASTM D695
Tensile modulus	MPa	345	ASTM D638
Flexural modulus	MPa	538-634	ASTM D790
Hardness	Shore D	55	Reference
Friction against steel*	-	0.05	Condition not stated
Melting range / point	°C	250-270	Reference
Indicative service upper*	°C	200	Grade dependent
Dielectric constant, 1 kHz	-	2.1	ASTM D150
Dielectric constant, 100 kHz	-	2.1	ASTM D150
Volume resistivity	ohm·cm	$>10^{18}$	ASTM D257
Surface resistivity	ohm	$>10^{17}$	ASTM D257
Water absorption, 24 h	%	<0.01	ASTM D570

Application context

Transparent fluid tubing, heat-shrink sleeves and chemical-service components.

*Compression strain, friction test conditions and service-life qualification are not established by this reference table. Use the exact grade specification for design. Electrical material values do not establish a finished-tube voltage rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PFA - Technical Data Sheet

Perfluoroalkoxy Polymer

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

General material reference ranges; grade and specimen conditions vary.

Property / condition	Unit	Typical reference	Method / basis
Relative density	-	2.12-2.17	ASTM D792
Elongation at break	%	280-400	ASTM D638
Tensile strength	MPa	28-31	ASTM D638
Compressive strength*	MPa	17	ASTM D695
Tensile modulus	MPa	500-600	ASTM D638
Flexural modulus	MPa	548-682	ASTM D790
Hardness	Shore D	55-60	Reference
Friction against steel*	-	0.2	Condition not stated
Melting range / point	°C	302-310	Reference
Indicative service upper*	°C	260	Grade dependent
Dielectric constant, 1 kHz	-	2.1	ASTM D150
Dielectric constant, 100 kHz	-	2.1	ASTM D150
Volume resistivity	ohm·cm	$>10^{18}$	ASTM D257
Surface resistivity	ohm	$>10^{17}$	ASTM D257
Water absorption, 24 h	%	<0.03	ASTM D570

Application context

High-purity fluid tubing, fittings, valves and melt-processed components.

*Compression strain, friction test conditions and service-life qualification are not established by this reference table. Use the exact grade specification for design. Electrical material values do not establish a finished-tube voltage rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

ETFE - Technical Data Sheet

Ethylene Tetrafluoroethylene

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

General material reference ranges; grade and specimen conditions vary.

Property / condition	Unit	Typical reference	Method / basis
Relative density	-	1.70-1.86	ASTM D792
Elongation at break	%	420-460	ASTM D638
Tensile strength	MPa	42-47	ASTM D638
Compressive strength*	MPa	8.8-12	ASTM D695
Tensile modulus	MPa	586-655	ASTM D638
Flexural modulus	MPa	883-1179	ASTM D790
Hardness	Shore D	75	Reference
Friction against steel*	-	0.06	Condition not stated
Melting range / point	°C	218-270	Reference
Indicative service upper*	°C	150	Grade dependent
Dielectric constant, 1 kHz	-	2.6-2.8	ASTM D150
Dielectric constant, 100 kHz	-	2.6-2.8	ASTM D150
Volume resistivity	ohm·cm	$>10^{16}$	ASTM D257
Surface resistivity	ohm	$>10^{15}$	ASTM D257
Water absorption, 24 h	%	<0.03	ASTM D570

Application context

Tough protective insulation, jacketing and chemical-service constructions.

*Compression strain, friction test conditions and service-life qualification are not established by this reference table. Use the exact grade specification for design. Electrical material values do not establish a finished-tube voltage rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

ECTFE - Technical Data Sheet

Ethylene Chlorotrifluoroethylene

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

General material reference ranges; grade and specimen conditions vary.

Property / condition	Unit	Typical reference	Method / basis
Relative density	-	1.68	ASTM D792
Elongation at break	%	200-300	ASTM D638
Tensile strength	MPa	41-54	ASTM D638
Compressive strength*	MPa	8.8-12	ASTM D695
Tensile modulus	MPa	1655	ASTM D638
Flexural modulus	MPa	1655	ASTM D790
Hardness	Shore D	75-90	Reference
Friction against steel*	-	0.19	Condition not stated
Melting range / point	°C	240	Reference
Indicative service upper*	°C	150-170	Grade dependent
Dielectric constant, 1 kHz	-	2.5	ASTM D150
Dielectric constant, 100 kHz	-	2.59	ASTM D150
Volume resistivity	ohm·cm	10^{16}	ASTM D257
Surface resistivity	ohm	10^{14}-10^{15}	ASTM D257
Water absorption, 24 h	%	<0.1	ASTM D570

Application context

Barrier linings, corrosion-protection layers and selected insulation components.

*Compression strain, friction test conditions and service-life qualification are not established by this reference table. Use the exact grade specification for design. Electrical material values do not establish a finished-tube voltage rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PVDF - Technical Data Sheet

Polyvinylidene Fluoride

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

General material reference ranges; grade and specimen conditions vary.

Property / condition	Unit	Typical reference	Method / basis
Relative density	-	1.75-1.78	ASTM D792
Elongation at break	%	300-450	ASTM D638
Tensile strength	MPa	31-43	ASTM D638
Compressive strength*	MPa	80	ASTM D695
Tensile modulus	MPa	1103	ASTM D638
Flexural modulus	MPa	621-1158	ASTM D790
Hardness	Shore D	75-85	Reference
Friction against steel*	-	0.4	Condition not stated
Melting range / point	°C	160-180	Reference
Indicative service upper*	°C	129	Grade dependent
Dielectric constant, 1 kHz	-	7.72	ASTM D150
Dielectric constant, 100 kHz	-	6.43	ASTM D150
Volume resistivity	ohm·cm	2×10^{14}	ASTM D257
Surface resistivity	ohm	5×10^{14}	ASTM D257
Water absorption, 24 h	%	<0.04	ASTM D570

Application context

Semi-rigid insulation sleeves, tubing and chemical-service components.

*Compression strain, friction test conditions and service-life qualification are not established by this reference table. Use the exact grade specification for design. Electrical material values do not establish a finished-tube voltage rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PCTFE - Technical Data Sheet

Polychlorotrifluoroethylene

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

General material reference ranges; grade and specimen conditions vary.

Property / condition	Unit	Typical reference	Method / basis
Relative density	-	2.10-2.18	ASTM D792
Elongation at break	%	150	ASTM D638
Tensile strength	MPa	30-60	ASTM D638
Compressive strength*	MPa	38	ASTM D695
Tensile modulus	MPa	1050-2100	ASTM D638
Flexural modulus	MPa	1241	ASTM D790
Hardness	Shore D	90	Reference
Friction against steel*	-	0.08	Condition not stated
Melting range / point	°C	210-216	Reference
Indicative service upper*	°C	132	Grade dependent
Dielectric constant, 1 kHz	-	2.3-2.7	ASTM D150
Dielectric constant, 100 kHz	-	2.3-2.5	ASTM D150
Volume resistivity	ohm·cm	10^{18}	ASTM D257
Surface resistivity	ohm	10^{15}	ASTM D257
Water absorption, 24 h	%	<0.01	ASTM D570

Application context

Barrier components, valve parts and precision machined stock shapes.

*Compression strain, friction test conditions and service-life qualification are not established by this reference table. Use the exact grade specification for design. Electrical material values do not establish a finished-tube voltage rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PEEK - Technical Data Sheet

Polyetheretherketone

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative unfilled machined stock-shape profile; not heat-shrink tubing test data.

Property / condition	Unit	Typical reference	Method / basis
Density	g/cm^3	1.31	Reference
Tensile strength, 50 mm/min	MPa	116	ISO 527-2
Tensile modulus, 1 mm/min	MPa	4,200	ISO 527-2
Elongation at break, 50 mm/min	%	15	ISO 527-2
Flexural strength, 64 mm span	MPa	175	ISO 178
Hardness	Shore D	89	ISO 868
Melting point	°C	341	ISO 11357
Glass transition	°C	150	ISO 11357
Indicative long-term upper	°C	260	Reference
Water absorption, 24 / 96 h	%	0.02 / 0.03	ISO 62

Application context

Precision components, electrical insulation and high-temperature stock shapes.

Stock-shape performance must not be transferred directly to thin-wall tubing, recovered heat-shrink sleeves or PEEK / aramid braid. Orientation and recovery history can change properties.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PPS - Technical Data Sheet

Polyphenylene Sulfide

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative unfilled machined stock-shape profile; not PPS fiber or braid data.

Property / condition	Unit	Typical reference	Method / basis
Density	g/cm^3	1.36	Reference
Tensile strength, 50 mm/min	MPa	103	ISO 527-2
Tensile modulus, 1 mm/min	MPa	4,100	ISO 527-2
Elongation at break, 50 mm/min	%	6.5	ISO 527-2
Flexural strength, 64 mm span	MPa	166	ISO 178
Hardness	Shore D	87	ISO 868
Melting point	°C	281	ISO 11357
Glass transition	°C	97	ISO 11357
Indicative long-term upper	°C	230	Reference
Thermal conductivity	W/(m·K)	0.25	ISO 22007-4

Application context

Dimensionally stable components, electrical parts and chemical-service stock shapes.

This reference describes unfilled bulk material. Glass-filled grades and PPS / aramid textile constructions require their own technical specifications.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PA6 - Technical Data Sheet

Polyamide 6

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative unfilled stock shape, freshly machined; moisture conditioning affects results.

Property / condition	Unit	Typical reference	Method / basis
Density	g/cm^3	1.14	Reference
Tensile strength, 50 mm/min	MPa	79	ISO 527-2
Tensile modulus, 1 mm/min	MPa	3,300	ISO 527-2
Elongation at break, 50 mm/min	%	130	ISO 527-2
Flexural strength, 64 mm span	MPa	100	ISO 178
Hardness	Shore D	79	ISO 868
Melting point	°C	221	ISO 11357
Glass transition	°C	45	ISO 11357
Indicative long-term upper	°C	100	Reference
Water absorption, 24 / 96 h	%	0.3 / 0.6	ISO 62

Application context

Nylon components, wear parts and material comparison for tubing selection.

Moisture changes dimensions, stiffness and strength. These stock-shape properties are not pressure ratings for nylon tubing or reinforced hose.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PA12 - Technical Data Sheet

Polyamide 12

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative unfilled stock shape, freshly machined.

Property / condition	Unit	Typical reference	Method / basis
Density	g/cm^3	1.02	Reference
Tensile strength, 50 mm/min	MPa	53	ISO 527-2
Tensile modulus, 1 mm/min	MPa	1,800	ISO 527-2
Elongation at break, 50 mm/min	%	200	ISO 527-2
Flexural strength, 64 mm span	MPa	68	ISO 178
Hardness	Shore D	76	ISO 868
Melting point	°C	180	ISO 11357
Glass transition	°C	37	ISO 11357
Indicative long-term upper	°C	110	Reference

Application context

Low-moisture-uptake nylon components and material selection for fluid / pneumatic tubing.

Flexible extrusion grades may differ substantially from the unfilled stock-shape benchmark. Specify the actual grade, dimensions and service conditions.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

HDPE - Technical Data Sheet

High-Density Polyethylene

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative unfilled PE-HD stock-shape profile; not LDPE or crosslinked polyolefin.

Property / condition	Unit	Typical reference	Method / basis
Density	g/cm^3	0.96	Reference
Tensile stress at yield	MPa	23	ISO 527-1
Tensile modulus	MPa	1,100	ISO 527-1
Elongation at yield	%	9	ISO 527-1
Hardness	Shore D	64	ISO 868
Indicative service range	°C	-50 to +80	Reference
Thermal expansion	10^{-5} /K	18	ISO 11359-1/2

Application context

Lightweight chemical-service components and material comparison for fluid systems.

Yield elongation is not elongation at break. Do not apply this HDPE profile to flexible LDPE tubing or irradiation-crosslinked heat-shrink products.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PP - Technical Data Sheet

Polypropylene

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative unfilled polypropylene stock-shape profile.

Property / condition	Unit	Typical reference	Method / basis
Density	g/cm^3	0.90	Reference
Tensile stress at yield	MPa	32	ISO 527-1
Tensile modulus	MPa	1,400	ISO 527-1
Elongation at yield	%	8	ISO 527-1
Hardness	Shore D	70	ISO 868
Indicative service range	°C	0 to +100	Reference
Thermal expansion	10^{-5} /K	16	ISO 11359-1/2

Application context

Chemical-service stock shapes, components and material selection for fluid transfer.

Copolymer grades, fillers, low-temperature impact requirements and processing can change the profile. A service-temperature reference is not a pressure rating.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

TPU - Technical Data Sheet

Thermoplastic Polyurethane

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative polyether TPU profile; injection-molded test plaques aged 20 h at 100°C.

Property / condition	Unit	Typical reference	Method / basis
Density	g/cm^3	1.12	ISO 1183-1-A
Hardness, 3 s	Shore A	87	ISO 48-4
Hardness, 3 s	Shore D	36	ISO 48-4
Tensile strength	MPa	45	DIN 53504-S2
Elongation at break	%	600	DIN 53504-S2
Tear strength	kN/m	65	ISO 34-1Bb
Abrasion loss	mm^3	30	ISO 4649-A

Application context

Abrasion-resistant flexible constructions and material selection for hose and protective components.

Benchmark conditioning: 23±2°C, 50±6% relative humidity; specimens cut from 2 or 6 mm plaques. Polyester TPU, filled TPU and finished reinforced hose require separate values.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PVC - Technical Data Sheet

Flexible Polyvinyl Chloride

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative clear flexible PVC tubing construction; formulation-specific selection profile.

Property / condition	Unit	Typical reference	Method / basis
Reference tubing hardness	Shore A	75	Reference
Indicative upper temperature	°C	65	Reference
Plasticizer package	-	Grade dependent	Reference
Density / tensile / elongation	-	Specify compound	Reference
Low-temperature limit	°C	Specify grade	Reference
Working pressure	-	Size and reinforcement dependent	Reference
Food-contact status	-	Grade-specific documentation required	Reference

Application context

General-purpose clear tubing, low-pressure transfer and reinforced hose constructions.

Rigid PVC data must not be used for flexible PVC hose. Plasticizer type, reinforcement and application temperature must be agreed; no food-contact compliance is implied by material identity.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

Silicone - Technical Data Sheet

Silicone Rubber (VMQ)

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative 50 Shore A tube-compound profile from the supplied technical data.

Property / condition	Unit	Typical reference	Method / basis
Reference hardness	Shore A	50±2	GB/T 531.1
Density	g/cm^3	1.14	GB/T 533
Tensile strength	MPa	9.8	GB/T 528
Elongation at break	%	750	GB/T 528
Tear strength	N/mm	31	GB/T 529
Rebound	%	60	GB/T 1681
Family selection range*	°C	-50 to +175	Reference

Application context

Flexible tubing, insulation and elastomeric components; finished construction governs service.

*The temperature range is a general VMQ selection reference, not a rating for this exact compound. Platinum cure, food contact and finished-tube pressure require specific confirmation.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

EPDM - Technical Data Sheet

Ethylene Propylene Diene Rubber

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative supplied compound-test profile; not an all-grade specification.

Property / condition	Unit	Typical reference	Method / basis
Reference hardness	Shore A	71	Method not stated
Density	g/cm^3	1.288	Method not stated
Tensile strength	MPa	15.05	Method not stated
Elongation at break	%	218.46	Method not stated
Cure characteristic T10	min:s	0:49	180°C × 4 min
Cure characteristic T90	min:s	2:29	180°C × 4 min
Peroxide-cured family range*	°C	-45 to +150	Reference
Sulfur-cured family range*	°C	-45 to +130	Reference

Application context

Weather-resistant seals, O-rings and selected flexible insulation constructions.

*Family temperature ranges do not identify the cure system or establish a rating for the reference compound. Confirm fluid compatibility; do not assume compatibility with mineral oils or fuels.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

FKM - Technical Data Sheet

Fluoroelastomer Rubber

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

Representative supplied 70 Shore A compound profile, with heat and fluid exposure results.

Property / condition	Unit	Typical reference	Method / basis
Hardness	Shore A	70	GB/T 531-2008
Tensile strength	MPa	12.68	GB/T 528-2009
Elongation at break	%	214.92	GB/T 528-2009
Hardness change, 200°C × 72 h	points	+1	GB/T 3512-2014
Tensile change, 200°C × 72 h	%	+15.41	GB/T 3512-2014
Elongation change, 200°C × 72 h	%	-25.01	GB/T 3512-2014
Compression test, 200°C × 72 h	%	29.97	GB/T 7759-2015
Oil #1 volume change, 200°C × 72 h	%	+1.19	GB/T 1690-2010
Oil #3 volume change, 200°C × 72 h	%	+3.27	GB/T 1690-2010
Brittleness temperature	°C	-20	GB/T 1682-2014
Family selection range*	°C	-20 to +200	Reference

Application context

Oil-resistant seals and O-rings; specific formulation and fluid determine suitability.

*The range is a general FKM family reference. Compression specimen details are not stated; do not interpret the recorded percentage as a finished O-ring design limit. Batch acceptance requires an agreed specification.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

Crosslinked Polyolefin - Technical Data Sheet

Crosslinked Polyolefin Heat Shrink

MATERIAL REFERENCE | REV. 01 | 22 NOVEMBER 2026

Reference profile

K135 construction reference from the supplied product technical catalogue.

Property / condition	Unit	Typical reference	Method / basis
Construction	-	Irradiation-crosslinked polyolefin	Reference
Model reference	-	K135	Reference
Shrink ratio	-	2:1 / 3:1	Reference
Operating range	°C	-55 to +135	Reference
Shrink start	°C	70	Reference
Minimum full recovery	°C	110	Reference
Recovered wall / bore	-	Model size table	Reference
Colour and formulation	-	Order specific	Reference

Application context

Electrical insulation, joint protection, strain relief and cable identification.

These conditions describe the named construction, not every polyolefin grade. Adhesive-lined, medium-wall and heavy-wall products retain their own recovery temperatures and dimensional schedules.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

Fluoropolymer Properties Comparison

Typical material references. Conditions and grade limitations remain as stated in the individual material sheets.

Property / condition	Unit	PTFE	FEP	PFA	ETFE	ECTFE	PVDF	PCTFE
Relative density	-	2.13-2.22	2.12-2.17	2.12-2.17	1.70-1.86	1.68	1.75-1.78	2.10-2.18
Elongation at break	%	200-450	250-330	280-400	420-460	200-300	300-450	150
Tensile strength	MPa	14-48	19-35	28-31	42-47	41-54	31-43	30-60
Compressive strength*	MPa	24	15	17	8.8-12	8.8-12	80	38
Tensile modulus	MPa	393	345	500-600	586-655	1655	1103	1050-2100
Flexural modulus	MPa	490-586	538-634	548-682	883-1179	1655	621-1158	1241
Hardness	Shore D	50-60	55	55-60	75	75-90	75-85	90
Friction against steel*	-	0.02	0.05	0.2	0.06	0.19	0.4	0.08

Engineering notes

Values describe material families, not finished-part pressure or voltage ratings. Service-temperature entries are indicative upper references. Test strain, film thickness and conditioning can change measured values; they must be matched before direct comparison. No certification or material grade equivalence is claimed.

Fluoropolymer Properties Comparison

Typical material references. Conditions and grade limitations remain as stated in the individual material sheets.

Property / condition	Unit	PTFE	FEP	PFA	ETFE	ECTFE	PVDF	PCTFE
Melting range / point	°C	320-327	250-270	302-310	218-270	240	160-180	210-216
Indicative service upper*	°C	260	200	260	150	150-170	129	132
Dielectric constant, 1 kHz	-	2.1	2.1	2.1	2.6-2.8	2.5	7.72	2.3-2.7
Dielectric constant, 100 kHz	-	2.1	2.1	2.1	2.6-2.8	2.59	6.43	2.3-2.5
Volume resistivity	ohm·cm	$>10^{18}$	$>10^{18}$	$>10^{18}$	$>10^{16}$	10^{16}	2×10^{14}	10^{18}
Surface resistivity	ohm	$>10^{17}$	$>10^{17}$	$>10^{17}$	$>10^{15}$	10^{14}-10^{15}	5×10^{14}	10^{15}
Water absorption, 24 h	%	<0.01	<0.01	<0.03	<0.03	<0.1	<0.04	<0.01

Engineering notes

Values describe material families, not finished-part pressure or voltage ratings. Service-temperature entries are indicative upper references. Test strain, film thickness and conditioning can change measured values; they must be matched before direct comparison. No certification or material grade equivalence is claimed.

Engineering Polymer Properties Comparison

Material / profile	Density g/cm^3	Tensile reference MPa	Tensile modulus MPa	Hardness	Thermal reference °C
PEEK / unfilled stock	1.31	116 (strength)	4,200	89 D	260 upper
PPS / unfilled stock	1.36	103 (strength)	4,100	87 D	230 upper
PA6 / unfilled stock	1.14	79 (strength)	3,300	79 D	100 upper
PA12 / unfilled stock	1.02	53 (strength)	1,800	76 D	110 upper
HDPE / stock	0.96	23 (yield)	1,100	64 D	-50 to +80
PP / stock	0.90	32 (yield)	1,400	70 D	0 to +100
TPU / molded plaques	1.12	45 (strength)	Not specified	87 A / 36 D	Grade dependent

Read the reference profile before comparing numbers

Strength at yield is not strength at break. Stock-shape data does not define thin-wall tubing, recovered heat shrink, textile braid or reinforced hose properties. A Shore A number must not be compared directly with a Shore D number.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

Elastomer Properties Comparison

Reference profile	Silicone / VMQ	EPDM	FKM
Hardness / Shore A	50±2	71	70
Density / g/cm^3	1.14	1.288	Not reported
Tensile strength / MPa	9.8	15.05	12.68
Elongation at break / %	750	218.46	214.92
General family temperature / °C	-50 to +175	-45 to +150 peroxide; -45 to +130 sulfur	-20 to +200
Product context	Flexible insulation and tubing	Weather-resistant seals and selected sleeves	Oil-resistant seals and selected sleeves

Scope of the comparison

The first four rows are separate reference-compound profiles, not universal material limits. Family temperature ranges do not establish the cure system or rating of those exact profiles. Hardness, swelling, compression behavior and aging must be verified for the actual fluid and seal design.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PEEK Heat Shrink Tubing

TECHNICAL DATA SHEET | REFERENCE CONSTRUCTION

Heat-recoverable PEEK sleeve reference for electrical insulation and abrasion protection. The dimensional schedule and recovery conditions below are engineering benchmarks; verify the proposed supply by drawing and sample.

Characteristic	Unit	Reference value
Nominal recovery ratio	-	1.4:1
Indicative continuous upper	°C	260
Recovery, translucent construction	°C	300-340
Recovery, opaque construction	°C	360-385
Recovered wall: min / nominal / max	mm	0.127 / 0.178 / 0.229
Common cut-length reference	mm	1,219.2 (4 ft)

Application and qualification

Use the expanded minimum ID and recovered maximum ID together. Qualify the heating process on the actual substrate and confirm the final wall, axial change and required insulation performance. This sleeve reference does not assign a fluid-pressure rating or certification.

Do not substitute unfilled stock-shape PEEK properties for recovered sleeve properties. The separate PEEK material sheet describes a bulk-material reference profile.

Typical material-selection reference only; not a test certificate or guaranteed delivery specification. Properties vary with grade, processing, geometry and conditioning. Confirm the actual product drawing, working conditions and required documentation before ordering.

PEEK Heat Shrink - Size Reference

AWG reference	Expanded ID min. / mm	Recovered ID max. / mm
17	.965	.686
16	1.143	.813
15	1.397	.991
14	2.159	1.524
13	2.337	1.651
12	2.565	1.829
11	2.845	2.032
10	3.175	2.261
9	3.480	2.489
8	4.064	2.896
7	4.420	3.150
6	5.080	3.632
5	5.613	4.013
4	6.401	4.572
3	7.036	5.029
2	8.026	5.740
1	8.865	6.325
0	9.957	7.112

Wall reference for this schedule: 0.127 mm minimum / 0.178 mm nominal / 0.229 mm maximum. AWG is a schedule reference, not the bore in millimetres. Final supply sizes, tolerances and process conditions require confirmation.