

SUPPLY SERVICES

performance engineering products

Ensinger 

TECANYL 731 grey - Stock Shapes (rods, plates, tubes)

Chemical Designation

PPE (Polyphenylene ether)

Colour

grey opaque

Density

1.1 g/cm³

Main features

- high strength
- electrically insulating
- high toughness
- good weldable and bondable
- sensitive to stress cracking

Target Industries

- mechanical engineering
- electronics
- energy industry
- food technology
- automotive industry

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	50mm/min	57	MPa	DIN EN ISO 527-2	(1) For tensile test: specimen type 1b
Modulus of elasticity (tensile test)	1mm/min	2400	MPa	DIN EN ISO 527-2	1) (2) For flexural test: support span 64mm, norm specimen.
Tensile strength at yield	50mm/min	57	MPa	DIN EN ISO 527-2	(3) Specimen 10x10x10mm
Elongation at yield	50mm/min	15	%	DIN EN ISO 527-2	(4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression.
Elongation at break (tensile test)	50mm/min	22	%	DIN EN ISO 527-2	(5) For Charpy test: support span 64mm, norm specimen.
Flexural strength	2mm/min, 10 N	85	MPa	DIN EN ISO 178	2) (6) Specimen in 4mm thickness
Modulus of elasticity (flexural test)	2mm/min, 10 N	2500	MPa	DIN EN ISO 178	
Compression strength	1% / 2% / 5% 5mm/min, 10 N	18/33/74	MPa	EN ISO 604	3)
Compression modulus	5mm/min, 10 N	2100	MPa	EN ISO 604	4)
Impact strength (Charpy)	max. 7.5J	69	kJ/m ²	DIN EN ISO 179-1eU	5)
Ball indentation hardness		146	MPa	ISO 2039-1	6)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		145	°C	DIN EN ISO 11357	1) (1) Found in public sources.
Melting temperature		n.a.	°C	DIN EN ISO 11357	2) (2) n.a. = not applicable
Service temperature	short term	110	°C		3) (3) Found in public sources.
Service temperature	long term	85	°C		Individual testing regarding application conditions is mandatory.
Thermal expansion (CLTE)	23-60°C, long.	8	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	23-100°C, long.	8	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Specific heat		1.3	J/(g*K)	ISO 22007-4:2008	
Thermal conductivity		0.21	W/(K*m)	ISO 22007-4:2008	
Electrical properties	parameter	value	unit	norm	comment
surface resistivity		10 ¹⁴	Ω	DIN IEC 60093	
volume resistivity		10 ¹⁴	Ω*cm	DIN IEC 60093	
Other properties	parameter	value	unit	norm	comment
Water absorption	24h / 96h (23°C)	0.02 / 0.04	%	DIN EN ISO 62	1) (1) Ø ca. 50mm, h=13mm
Resistance to hot water/ bases		(+)	-	-	2) (2) (+) limited resistance
Resistance to weathering		-	-	-	3) (3) - poor resistance
Flammability (UL94)	corresponding to	HB	-	DIN IEC 60695-11-10;	4) (4) Corresponding means no listing at UL (yellow card). The information might be taken from resin, stock shape or estimation. Individual testing regarding application conditions is mandatory.

Ensinger 

TECANYL GF30 natural - Stock Shapes (rods, plates, tubes)

Chemical Designation

PPE (Polyphenylene ether)

Colour

beige opaque

Density

1.3 g/cm³

Fillers

glass fibres

Main features

- very high stiffness
- electrically insulating
- good weldable and bondable
- sensitive to stress cracking
- high strength
- high dimensional stability

Target Industries

- electronics
- energy industry
- mechanical engineering
- automotive industry

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	50mm/min	73	MPa	DIN EN ISO 527-2	(1) For tensile test: specimen type 1b
Modulus of elasticity (tensile test)	1mm/min	4100	MPa	DIN EN ISO 527-2	(1) (2) For flexural test: support span 64mm, norm specimen.
Tensile strength at yield	50mm/min	73	MPa	DIN EN ISO 527-2	(3) Specimen 10x10x10mm
Elongation at yield	50mm/min	5	%	DIN EN ISO 527-2	(4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression.
Elongation at break (tensile test)	50mm/min	5	%	DIN EN ISO 527-2	(5) For Charpy test: support span 64mm, norm specimen.
Flexural strength	2mm/min, 10 N	116	MPa	DIN EN ISO 178	(2) (6) Specimen in 4mm thickness
Modulus of elasticity (flexural test)	2mm/min, 10 N	3900	MPa	DIN EN ISO 178	
Compression strength	1% / 2% / 5% 5mm/min, 10 N	23/41/91	MPa	EN ISO 604	(3)
Compression modulus	5mm/min, 10 N	3300	MPa	EN ISO 604	(4)
Impact strength (Charpy)	max. 7.5J	37	kJ/m ²	DIN EN ISO 179-1eU	(5)
Ball indentation hardness		205	MPa	ISO 2039-1	(6)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		150	°C	DIN EN ISO 11357	(1) (1) Found in public sources.
Melting temperature		n.a.	°C	DIN EN ISO 11357	(2) (2) n.a. = not applicable
Service temperature	short term	110	°C		(3) (3) Found in public sources. Individual testing regarding application conditions is mandatory.
Service temperature	long term	85	°C		
Thermal expansion (CLTE)	23-60°C, long.	4	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	23-100°C, long.	4	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Specific heat		1.2	J/(g*K)	ISO 22007-4:2008	
Thermal conductivity		0.28	W/(K*m)	ISO 22007-4:2008	
Electrical properties	parameter	value	unit	norm	comment
surface resistivity		10 ¹⁴	Ω	DIN IEC 60093	
volume resistivity		10 ¹⁴	Ω*cm	DIN IEC 60093	
Other properties	parameter	value	unit	norm	comment
Water absorption	24h / 96h (23°C)	0.01 / 0.02	%	DIN EN ISO 62	(1) (1) Ø ca. 50mm, h=13mm
Resistance to hot water/ bases		(+)	-		(2) (2) (+) limited resistance
Resistance to weathering		-	-		(3) (3) - poor resistance
Flammability (UL94)	corresponding to	HB		DIN IEC 60695-11-10;	(4) (4) Corresponding means no listing at UL (yellow card). The information might be taken from resin, stock shape or estimation. Individual testing regarding application conditions is mandatory.

TECANYL VH2 grey - Stock Shapes (rods, plates, tubes)

Chemical Designation

PPE (Polyphenylene ether)

Colour

grey opaque

Density

1.1 g/cm³

Fillers

flame retardant (halogen free)

Main features

- flame retardant as per FAR 25.853
- excellent dimensional stability
- very good chemical resistance
- flame retardant according to UL94 V-0
- low smoke emissions
- low moisture absorption
- good electrically insulating

Target Industries

- aircraft and aerospace interiors
- aircraft and aerospace technology
- Railway Interiors
- transportation

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	50 mm/min	57	MPa	DIN EN ISO 527-2	(1) For tensile test: specimen type 1b
Modulus of elasticity (tensile test)	1mm/min	2300	MPa	DIN EN ISO 527-2	1) (2) For flexural test: support span 64mm, norm specimen.
Tensile strength at yield	50mm/min	57	MPa	DIN EN ISO 527-2	(3) Specimen 10x10x10mm
Elongation at yield	50mm/min	14	%	DIN EN ISO 527-2	(4) Specimen 10x10x60mm, modulus range between 0.5 and 1% compression.
Elongation at break (tensile test)	50mm/min	22	%	DIN EN ISO 527-2	(5) For Charpy test: support span 64mm, norm specimen.
Flexural strength	2mm/min, 10 N	95	MPa	DIN EN ISO 178	2) (6) Specimen in 4mm thickness
Modulus of elasticity (flexural test)	2mm/min, 10 N	2070	MPa	DIN EN ISO 178	
Compression strength	1% / 2% / 5%	19/34/78	MPa	EN ISO 604	3)
Compression modulus	5mm/min	1300	MPa	EN ISO 604	4)
Impact strength (Charpy)	max. 7.5J	96	kJ/m ²	DIN EN ISO 179-1eU	5)
Notched impact strength (Charpy)	max. 7.5J	11	kJ/m ²	DIN EN ISO 179-1eA	
Ball indentation hardness		141	MPa	ISO 2039-1	6)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		151	°C	DIN EN ISO 11357	(1) Found in public sources. Individual testing regarding application conditions is mandatory.
Service temperature	short term	110	°C	-	1)
Service temperature	long term	85	°C	-	
Thermal expansion (CLTE)	23-60°C, longitudinal	8,1	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	23-100°C, longitudinal	8,1	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Other properties	parameter	value	unit	norm	comment
Water absorption	24h / 96h (23°C)	0.09/0.15	%	DIN EN ISO 62	(1) ASTM Test Method 60895-2
Flammability	Glow Wire Flammability Index 960°C passes @	1.0	mm	-	1) (2) passed, FAR 25.853
Flammability	ASTM E 662 (Air/Rail) Ds @ 1.5 min	11-13	-	-	2) (3) passed, FAA Smoke Density Test (resin data)
Flammability	FAR 25.853 Appx F, Prt 1, (a), 1, (Air)	+	-	FAR 25.853	(4) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp, 1.5 mm	775	°C	-	3) (5) Units: 1.5 mm
Flammability (UL94)		V0	-	-	4) (6) Flame Spread Index
Flammability	ASTM E 162 (rail)	-15	-	-	5) (7) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp, 3.0 mm	800	°C	-	6) (8) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp, 1.0 mm	775	°C	-	7) (9) passed, FAR 25.853
Flammability	ASTM E 662 (Air/Rail) Ds @ 4.0 min	20-40	-	-	8) (10) passed, 3 mm specimen
Flammability	60 sec. Vertical Bunsen Burner test FAR 25.853 Appx F, Prt 1, (a), 1, (Air)	+	-	FAR 25.853	9) (11) passed, Toxicity - Draeger Tube (resin data)
Flammability	FAR 25.853 Appx F, Prt 1, (a), 1, (Air)	+	-	-	10) (12) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp, 2.0 mm	775	°C	-	

TECANYL VH2 black - Stock Shapes (rods, plates, tubes)

Chemical Designation

PPE (Polyphenylene ether)

Colour

black opaque

Density

1.1 g/cm³

Fillers

flame retardant (halogen free)

Main features

- flame retardant as per FAR 25.853
- excellent dimensional stability
- very good chemical resistance
- flame retardant according to UL94 V-0
- low smoke emissions
- low moisture absorption
- good electrically insulating

Target Industries

- aircraft and aerospace interiors
- aircraft and aerospace technology
- Railway Interiors
- transportation

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	50 mm/min	57	MPa	DIN EN ISO 527-2	(1) For tensile test: specimen type 1b
Modulus of elasticity (tensile test)	1mm/min	2300	MPa	DIN EN ISO 527-2	(2) For flexural test: support span 64mm, norm specimen
Tensile strength at yield	50mm/min	57	MPa	DIN EN ISO 527-2	(3) Specimen 10x10x10mm
Elongation at yield	50mm/min	11	%	DIN EN ISO 527-2	(4) Specimen 10x10x60mm, modulus range between 0.5 and 1% compression.
Elongation at break (tensile test)	50mm/min	20	%	DIN EN ISO 527-2	(5) For Charpy test: support span 64mm, norm specimen.
Flexural strength	2mm/min, 10 N	96	MPa	DIN EN ISO 178	(6) Specimen in 4mm thickness
Modulus of elasticity (flexural test)	2mm/min, 10 N	2100	MPa	DIN EN ISO 178	
Compression strength	1% / 2% / 5%	19/34/77	MPa	EN ISO 604	(3)
Compression modulus	5mm/min	1300	MPa	EN ISO 604	(4)
Impact strength (Charpy)	max. 7,5J	91	kJ/m ²	DIN EN ISO 179-1eU	(5)
Notched impact strength (Charpy)	max. 7,5J	16	%	DIN EN ISO 179-1eA	
Ball indentation hardness		143	MPa	ISO 2039-1	(6)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		152	°C	DIN EN ISO 11357	(1) Found in public sources. Individual testing regarding application conditions is mandatory.
Service temperature	short term	110	°C	-	(1)
Service temperature	long term	85	°C	-	
Thermal expansion (CLTE)	23-60°C, longitudinal	8,1	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	23-100°C, longitudinal	8,1	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	
Other properties	parameter	value	unit	norm	comment
Water absorption	24h / 96h (23°C)	0.08/0.15	%	DIN EN ISO 62	(1) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp. 3.0 mm	800	°C	-	(2) passed, Toxicity- Draeger Tube (resin data)
Flammability	FAR 25.853 Appx F, Prt 1, (a), 1, (Air)	+	-	-	(3) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Index 960°C passes @	1.0	mm	-	(4) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp. 1.5 mm	775	°C	-	(5) passed, FAR 25.853
Flammability	ASTM E 662 (Air/Rail) Ds @ 1.5 min	11-13	-	-	(6) passed, FAA Smoke Density Test (resin data)
Flammability	FAR 25.853 Appx F, Prt 1, (a), 1, (Air)	+	-	FAR 25.853	(7) Units: 1.5 mm
Flammability (UL94)		V0	-	-	(8) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp. 2.0 mm	775	°C	-	(9) Flame Spread Index
Flammability	ASTM E 162 (rail)	~15	-	-	(10) passed, 3 mm specimen
Flammability	60 sec. Vertical Bunsen Burner test FAR 25.853 Appx F, Prt 1, (a), 1, (Air)	+	-	FAR 25.853	(11) ASTM Test Method 60895-2
Flammability	Glow Wire Ignitability Temp. 1.0 mm	775	°C	-	(12) passed, FAR 25.853
Flammability	ASTM E 662 (Air/Rail) Ds @ 4.0 min	20-40	-	-	

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