SUPPLY SERVICES

performance engineering products

TECATRON natural - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
beige opaque

Density
1.36 g/cm^3

The values in this data sheet are tested on a dimension outside of the standard reference dimension (rod Ø 40-60 mm).

Main features
- good heat deflection temperature
- good chemical resistance
- resistance against high energy radiation
- high strength
- high dimensional stability
- high stiffness
- high creep resistance

Target Industries
- aircraft and aerospace technology
- electronics
- mechanical engineering
- oil and gas industry
- vacuum technology
- chemical technology

Mechanical properties	*parameter*	*value*	*unit*	*norm*		*comment*
Modulus of elasticity (tensile test)	1mm/min	4100	MPa	DIN EN ISO 527-2	1)	(1) For tensile test: specimen type 1b (2) For flexural test: support span 64mm, norm specimen. (3) Specimen 10x10x10mm (4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression. (5) For Charpy test: support span 64mm, norm specimen. (6) Specimen in 4mm thickness
Tensile strength	50mm/min	102	MPa	DIN EN ISO 527-2		
Tensile strength at yield	50mm/min	100	MPa	DIN EN ISO 527-2		
Elongation at yield	50mm/min	4	%	DIN EN ISO 527-2		
Elongation at break	50mm/min	4	%	DIN EN ISO 527-2		
Flexural strength	2mm/min, 10 N	151	MPa	DIN EN ISO 178	2)	
Modulus of elasticity (flexural test)	2mm/min, 10 N	4000	MPa	DIN EN ISO 178		
Compression strength	1% / 2% / 5% 5mm/min, 10 N	20/38/96	MPa	EN ISO 604	3)	
Compression modulus	5mm/min, 10 N	3300	MPa	EN ISO 604	4)	
Impact strength (Charpy)	max. 7,5J	29	kJ/m^2	DIN EN ISO 179-1eU	5)	
Ball indentation hardness		248	MPa	ISO 2039-1	6)	

Thermal properties	*parameter*	*value*	*unit*	*norm*		*comment*
Glass transition temperature		97	°C	DIN EN ISO 11357	1)	(1) Found in public sources. (2) Found in public sources. Individual testing regarding application conditions is mandatory.
Melting temperature		281	°C	DIN EN ISO 11357		
Service temperature	short term	260	°C		2)	
Service temperature	long term	230	°C			
Thermal expansion (CLTE)	23-60°C, long.	6	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	23-100°C, long.	7	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	100-150°C, long.	12	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Specific heat		1.0	J/(g*K)	ISO 22007-4:2008		
Thermal conductivity		0.25	W/(K*m)	ISO 22007-4:2008		

Electrical properties	*parameter*	*value*	*unit*	*norm*	*comment*
Specific surface resistance		10^{14}	Ω	DIN IEC 60093	
Specific volume resistance		10^{14}	Ω*cm	DIN IEC 60093	

Other properties	*parameter*	*value*	*unit*	*norm*		*comment*
Water absorption	24h / 96h (23°C)	<0.01 / 0.01	%	DIN EN ISO 62	1)	(1) Ø ca. 50mm, h=13mm (2) + good resistance (3) - poor resistance (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.
Resistance to hot water/ bases		+		-	2)	
Resistance to weathering		-		-	3)	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4)	

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TECATRON GF40 natural - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
beige opaque

Density
1.63 g/cm^3

Fillers
glass fibres

Main features
- good heat deflection temperature
- hydrolysis and superheated steam resistant
- high stiffness
- good chemical resistance
- high creep resistance
- high dimensional stability
- inherent flame retardant

Target Industries
- aircraft and aerospace technology
- energy industry
- oil and gas industry
- chemical technology
- mechanical engineering

Mechanical properties	*parameter*	*value*	*unit*	*norm*		*comment*
Modulus of elasticity (tensile test)	1mm/min	6500	MPa	DIN EN ISO 527-2	1)	(1) For tensile test: specimen type 1b (2) For flexural test: support span 64mm, norm specimen. (3) Specimen 10x10x10mm (4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression. (5) For Charpy test: support span 64mm, norm specimen. (6) Specimen in 4mm thickness
Tensile strength	50mm/min	83	MPa	DIN EN ISO 527-2		
Tensile strength at yield	50mm/min	83	MPa	DIN EN ISO 527-2		
Elongation at yield	50mm/min	3	%	DIN EN ISO 527-2		
Elongation at break	50mm/min	3	%	DIN EN ISO 527-2		
Flexural strength	2mm/min, 10 N	145	MPa	DIN EN ISO 178	2)	
Modulus of elasticity (flexural test)	2mm/min, 10 N	6600	MPa	DIN EN ISO 178		
Compression strength	1% / 2% / 5% 5mm/min, 10 N	21/41/105	MPa	EN ISO 604	3)	
Compression modulus	5mm/min, 10 N	4600	MPa	EN ISO 604	4)	
Impact strength (Charpy)	max. 7,5J	24	kJ/m^2	DIN EN ISO 179-1eU	5)	
Ball indentation hardness		333	MPa	ISO 2039-1	6)	

Thermal properties	*parameter*	*value*	*unit*	*norm*		*comment*
Glass transition temperature		93	°C	DIN EN ISO 11357	1)	(1) Found in public sources. (2) Found in public sources. Individual testing regarding application conditions is mandatory.
Melting temperature		280	°C	DIN EN ISO 11357		
Service temperature	short term	260	°C		2)	
Service temperature	long term	230	°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.	5	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	100-150°C, long.	10	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Specific heat		1.0	J/(g*K)	ISO 22007-4:2008		
Thermal conductivity		0.35	W/(K*m)	ISO 22007-4:2008		

Electrical properties	*parameter*	*value*	*unit*	*norm*	*comment*
Specific surface resistance		10^{14}	Ω	DIN IEC 60093	
Specific volume resistance		10^{14}	Ω*cm	DIN IEC 60093	

Other properties	*parameter*	*value*	*unit*	*norm*		*comment*
Water absorption	24h / 96h (23°C)	<0.01 / 0.01	%	DIN EN ISO 62	1)	(1) Ø ca. 50mm, h=13mm (2) + good resistance (3) - poor resistance (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.
Resistance to hot water/ bases		+		-	2)	
Resistance to weathering		-		-	3)	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4)	

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TECATRON GF40 black - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
black opaque

Density
1.63 g/cm^3

Fillers
glass fibres

Main features
- good heat deflection temperature
- high dimensional stability
- very good chemical resistance
- inherent flame retardant
- hydrolysis and superheated steam resistant
- high stiffness
- high creep resistance
- resistance against high energy radiation

Target Industries
- mechanical engineering
- aircraft and aerospace technology
- chemical technology
- energy industry
- oil and gas industry

Mechanical properties	parameter	value	unit	norm		comment
Modulus of elasticity (tensile test)	1mm/min	6500	MPa	DIN EN ISO 527-2	1)	(1) For tensile test: specimen type 1b (2) For flexural test: support span 64mm, norm specimen. (3) Specimen 10x10x10mm (4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression. (5) For Charpy test: support span 64mm, norm specimen. (6) Specimen in 4mm thickness
Tensile strength	50mm/min	83	MPa	DIN EN ISO 527-2		
Tensile strength at yield	50mm/min	83	MPa	DIN EN ISO 527-2		
Elongation at yield	50mm/min	2	%	DIN EN ISO 527-2		
Elongation at break	50mm/min	2	%	DIN EN ISO 527-2		
Flexural strength	2mm/min, 10 N	145	MPa	DIN EN ISO 178	2)	
Modulus of elasticity (flexural test)	2mm/min, 10 N	6600	MPa	DIN EN ISO 178		
Compression strength	1% / 2% / 5% 5mm/min, 10 N	21/41/105	MPa	EN ISO 604	3)	
Compression modulus	5mm/min, 10 N	4600	MPa	EN ISO 604	4)	
Impact strength (Charpy)	max. 7,5J	24	kJ/m^2	DIN EN ISO 179-1eU	5)	
Ball indentation hardness		343	MPa	ISO 2039-1	6)	

Thermal properties	parameter	value	unit	norm		comment
Glass transition temperature		93	°C	DIN EN ISO 11357	1)	(1) Found in public sources. (2) Found in public sources. Individual testing regarding application conditions is mandatory.
Melting temperature		280	°C	DIN EN ISO 11357		
Service temperature	short term	260	°C		2)	
Service temperature	long term	230	°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.	5	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	100-150°C, long.	10	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Specific heat		0.9	J/(g*K)	ISO 22007-4:2008		
Thermal conductivity		0.33	W/(K*m)	ISO 22007-4:2008		

Electrical properties	parameter	value	unit	norm		comment
Specific surface resistance	Silver electrode, 23°C, 12% r.h.	10^{14}	Ω	DIN IEC 60093	1)	(1) Specimen in 20mm thickness (2) Due to the black colourant and moisture uptake of the material the electrical insulation properties cannot be 100% guaranteed, despite single measurements suggesting otherwise. (3) Specimen in 1mm thickness
Specific volume resistance	Silver electrode, 23°C, 12% r.h.	10^{14}	Ω*cm	DIN IEC 60093	2)	
Dielectric strength	23°C, 50% r.h.	32	kV/mm	ISO 60243-1	3)	
Resistance to tracking (CTI)	Platin electrode, 23°C, 50% r.h., solvent A	125	V	DIN EN 60112		

Other properties	parameter	value	unit	norm		comment
Water absorption	24h / 96h (23°C)	<0.01 / 0.01	%	DIN EN ISO 62	1)	(1) Ø ca. 50mm, h=13mm (2) + good resistance (3) (+) limited resistance (4) Corresponding means no listing at UL (yellow card). The information might be taken from resin, stock shape or estimation. Individual testing regarding application
Resistance to hot water/ bases		+		-	2)	
Resistance to weathering		(+)		-	3)	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4)	

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TECATRON PVX black - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
black opaque

Density
1.5 g/cm^3

Fillers
carbon fibres, PTFE, graphite

Main features
- very good chemical resistance
- good heat deflection temperature
- very good slide and wear properties
- inherent flame retardant
- high dimensional stability
- high stiffness
- high creep resistance

Target Industries
- mechanical engineering
- oil and gas industry
- vacuum technology
- automotive industry
- aircraft and aerospace technology

Mechanical properties	*parameter*	*value*	*unit*	*norm*		*comment*
Modulus of elasticity (tensile test)	1mm/min	4600	MPa	DIN EN ISO 527-2	1)	(1) For tensile test: specimen type 1b (2) For flexural test: support span 64mm, norm specimen. (3) Specimen 10x10x10mm (4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression. (5) For Charpy test: support span 64mm, norm specimen. (6) Specimen in 4mm thickness
Tensile strength	50mm/min	53	MPa	DIN EN ISO 527-2		
Tensile strength at yield	50mm/min	53	MPa	DIN EN ISO 527-2		
Elongation at yield	50mm/min	2	%	DIN EN ISO 527-2		
Elongation at break	50mm/min	2	%	DIN EN ISO 527-2		
Flexural strength	2mm/min, 10 N	91	MPa	DIN EN ISO 178	2)	
Modulus of elasticity (flexural test)	2mm/min, 10 N	4800	MPa	DIN EN ISO 178		
Compression strength	1% / 2% / 5% 5mm/min, 10 N	19/36/89	MPa	EN ISO 604	3)	
Compression modulus	5mm/min, 10 N	3300	MPa	EN ISO 604	4)	
Impact strength (Charpy)	max. 7,5J	14	kJ/m^2	DIN EN ISO 179-1eU	5)	
Ball indentation hardness		238	MPa	ISO 2039-1	6)	

Thermal properties	*parameter*	*value*	*unit*	*norm*		*comment*
Glass transition temperature		94	°C	DIN EN ISO 11357	1)	(1) Found in public sources. (2) Found in public sources. Individual testing regarding application conditions is mandatory.
Melting temperature		281	°C	DIN EN ISO 11357		
Service temperature	short term	260	°C		2)	
Service temperature	long term	230	°C			
Thermal expansion (CLTE)	23-60°C, long.	5	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	23-100°C, long.	6	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	100-150°C, long.	13	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Specific heat		0.9	J/(g*K)	ISO 22007-4:2008		
Thermal conductivity		0.58	W/(K*m)	ISO 22007-4:2008		

Electrical properties	*parameter*	*value*	*unit*	*norm*	*comment*
Specific surface resistance		10^4 - 10^{10}	Ω	DIN EN 61340-2-3	
Specific volume resistance		10^7 - 10^{12}	Ω*cm	DIN EN 61340-2-3	

Other properties	*parameter*	*value*	*unit*	*norm*		*comment*
Water absorption	24h / 96h (23°C)	<0.01 / <0.01	%	DIN EN ISO 62	1)	(1) Ø ca. 50mm, h=13mm (2) + good resistance (3) (+) limited resistance (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.
Resistance to hot water/ bases		+		-	2)	
Resistance to weathering		(+)		-	3)	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4)	

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TECATRON CM CF15 GR10 TF10 black (XP-83) - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
black opaque

Density
1.43 g/cm^3

Fillers
carbon fibres, graphite, PTFE

production process: compression moulding

Main features
- high dimensional stability
- good chemical resistance
- high creep resistance
- good heat deflection temperature
- resistance against high energy radiation
- high stiffness
- high strength

Target Industries
- oil and gas industry

Mechanical properties	*parameter*	*value*	*unit*	*norm*	*comment*
Tensile strength		35	MPa	ASTM D 638	
Elongation at break		1.5	%	ASTM D 638	
Flexural strength		53	MPa	ASTM D 790	
Shore hardness	Shore D	88	MPa	ASTM D 2240	

TECATRON CM GF40 natural (XP-64) - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
beige opaque

Density
1.7 g/cm^3

Fillers
glass fibres

production process: compression moulding

Main features
- high dimensional stability
- good chemical resistance
- high creep resistance
- good heat deflection temperature
- resistance against high energy radiation
- high stiffness
- high strength

Target Industries
- oil and gas industry

Mechanical properties	*parameter*	*value*	*unit*	*norm*	*comment*
Modulus of elasticity (tensile test)		6200	MPa	ASTM D 638	
Tensile strength		42	MPa	ASTM D 638	
Elongation at break		1.1	%	ASTM D 638	
Flexural strength		75	MPa	ASTM D 790	
Modulus of elasticity (flexural test)		8200	MPa	ASTM D 790	
Compression strength		172	MPa	ASTM D 695	
Compression modulus		3900	MPa	ASTM D 695	
Shore hardness	Shore D	88		ASTM D 2240	
Thermal properties	*parameter*	*value*	*unit*	*norm*	*comment*
Heat distortion temperature		112	°C	ASTM D 648	

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TECATRON SE natural - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
beige opaque

Density
1.36 g/cm^3

The values in this data sheet are tested on a dimension outside of the standard reference dimension (rod Ø 40-60 mm).

Main features
- → good heat deflection temperature
- → good chemical resistance
- → resistance against high energy radiation
- → high strength
- → high dimensional stability
- → high stiffness
- → high creep resistance

Target Industries
- → semiconductor technology

Mechanical properties	parameter	value	unit	norm		comment
Modulus of elasticity (tensile test)	1mm/min	4100	MPa	DIN EN ISO 527-2	1)	(1) For tensile test: specimen type 1b (2) For flexural test: support span 64mm, norm specimen. (3) Specimen 10x10x10mm (4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression. (5) For Charpy test: support span 64mm, norm specimen.
Tensile strength	50mm/min	102	MPa	DIN EN ISO 527-2		
Tensile strength at yield	50mm/min	100	MPa	DIN EN ISO 527-2		
Elongation at yield	50mm/min	4	%	DIN EN ISO 527-2		
Elongation at break	50mm/min	4	%	DIN EN ISO 527-2		
Flexural strength	2mm/min, 10 N	151	MPa	DIN EN ISO 178	2)	
Modulus of elasticity (flexural test)	2mm/min, 10 N	4000	MPa	DIN EN ISO 178		
Compression strength	1% / 2% 5mm/min, 10 N	20 / 38	MPa	EN ISO 604	3)	
Compression modulus	5mm/min, 10 N	3300	MPa	EN ISO 604	4)	
Impact strength (Charpy)	max. 7,5J	29	kJ/m^2	DIN EN ISO 179-1eU	5)	
Ball indentation hardness		248	MPa	ISO 2039-1		

Thermal properties	parameter	value	unit	norm		comment
Glass transition temperature		97	°C	DIN EN ISO 11357	1)	(1) Found in public sources. (2) Found in public sources. Individual testing regarding application conditions is mandatory.
Melting temperature		281	°C	DIN EN ISO 11357		
Service temperature	short term	260	°C		2)	
Service temperature	long term	230	°C	-		
Thermal expansion (CLTE)	23-60°C, long.	6	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	23-100°C, long.	7	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	100-150°C, long.	12	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Specific heat		1.0	J/(g*K)	ISO 22007-4:2008		
Thermal conductivity		0.25	W/(K*m)	ISO 22007-4:2008		

Electrical properties	parameter	value	unit	norm		comment
Specific surface resistance		10^{14}	Ω	DIN IEC 60093		
Specific volume resistance		10^{14}	Ω*cm	DIN IEC 60093		

Other properties	parameter	value	unit	norm		comment
Water absorption	24h / 96h (23°C)	<0.01 / 0.01	%	DIN EN ISO 62	1)	(1) Ø ca. 50mm, h=13mm (2) + good resistance (3) - poor resistance (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.
Resistance to hot water/ bases		+		-	2)	
Resistance to weathering		-		-	3)	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4)	

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TECATRON SX natural - Stock Shapes

Chemical Designation
PPS (Polyphenylensulfide)

Colour
beige opaque

Density
1.36 g/cm^3

The values in this data sheet are tested on a dimension outside of the standard reference dimension (rod Ø 40-60 mm).

Main features
- good heat deflection temperature
- good chemical resistance
- resistance against high energy radiation
- high strength
- high dimensional stability
- high stiffness
- high creep resistance

Target Industries
- semiconductor technology

Mechanical properties	parameter	value	unit	norm		comment
Modulus of elasticity (tensile test)	1mm/min	4000	MPa	DIN EN ISO 527-2	1)	(1) For tensile test: specimen type 1b (2) For flexural test: support span 64mm, norm specimen. (3) Specimen 10x10x10mm (4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression. (5) For Charpy test: support span 64mm, norm specimen.
Tensile strength	50mm/min	102	MPa	DIN EN ISO 527-2		
Tensile strength at yield	50mm/min	100	MPa	DIN EN ISO 527-2		
Elongation at break	50mm/min	11	%	DIN EN ISO 527-2		
Flexural strength	2mm/min, 10 N	151	MPa	DIN EN ISO 178	2)	
Modulus of elasticity (flexural test)	2mm/min, 10 N	4000	MPa	DIN EN ISO 178		
Compression strength	1% / 2% 5mm/min, 10 N	20 / 38	MPa	EN ISO 604	3)	
Compression modulus	5mm/min, 10 N	3300	MPa	EN ISO 604	4)	
Impact strength (Charpy)	max. 7.5J	56	kJ/m^2	DIN EN ISO 179-1eU	5)	
Ball indentation hardness		230	MPa	ISO 2039-1		

Thermal properties	parameter	value	unit	norm		comment
Glass transition temperature		97	°C	DIN EN ISO 11357	1)	(1) Found in public sources. (2) Found in public sources. Individual testing regarding application conditions is mandatory.
Melting temperature		281	°C	DIN EN ISO 11357		
Service temperature	short term	260	°C		2)	
Service temperature	long term	230	°C	-		
Thermal expansion (CLTE)	23-60°C, long.	6	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	23-100°C, long.	7	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	100-150°C, long.	12	10^{-5} K^{-1}	DIN EN ISO 11359-1;2		
Specific heat		1.0	J/(g*K)	ISO 22007-4:2008		
Thermal conductivity		0.25	W/(K*m)	ISO 22007-4:2008		

Electrical properties	parameter	value	unit	norm	comment
Specific surface resistance		10^{14}	Ω	DIN IEC 60093	
Specific volume resistance		10^{14}	Ω*cm	DIN IEC 60093	

Other properties	parameter	value	unit	norm		comment
Water absorption	24h / 96h (23°C)	<0.01 / 0.01	%	DIN EN ISO 62	1)	(1) Ø ca. 50mm, h=13mm (2) + good resistance (3) - poor resistance (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.
Resistance to hot water/ bases		+		-	2)	
Resistance to weathering		-		-	3)	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4)	

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