

'TORAY'

Innovation by Chemistry

Products Catalogue

*TPS
Plastic
Materials*

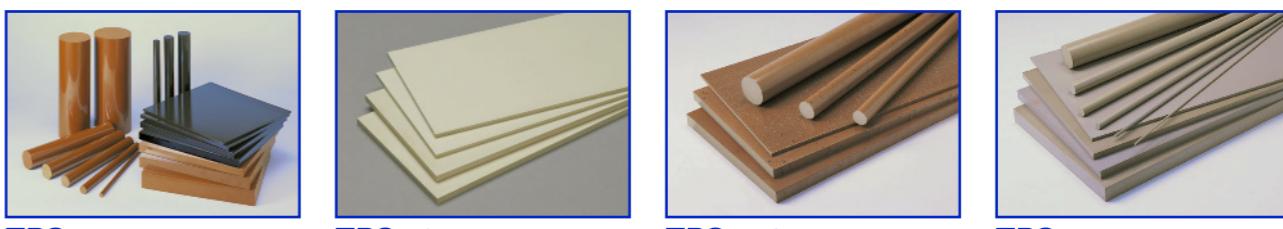
TORAY GROUP

Toray Plastics Precision Co.,Ltd.

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Thermal property of various plastics



TPS-TI 5000

TPS-TOPFINE™ R1000

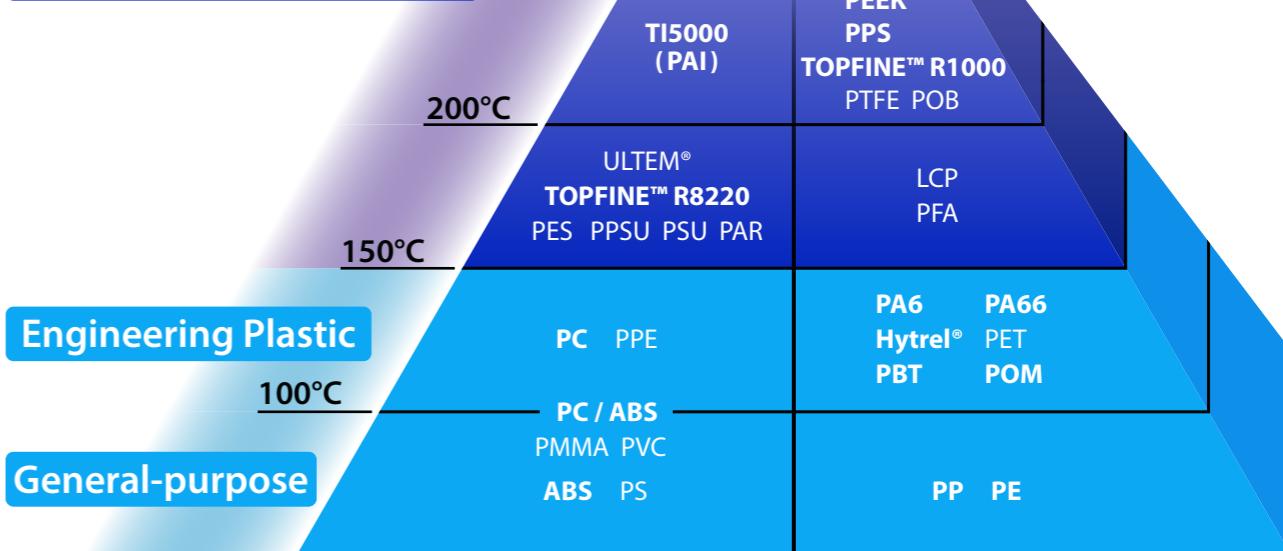
TPS-PPS

TPS-PEEK

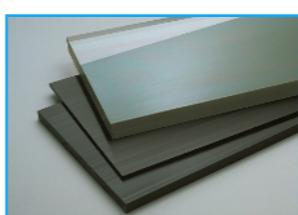


TPS-TOPFINE™ R8220

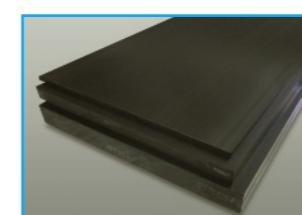
Super Engineering Plastic



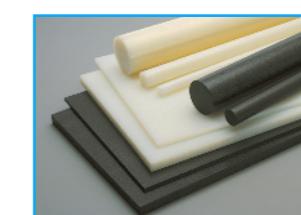
Amorphous resins



TPS-PC



TPS-PC/ABS



TPS-N6·N66



TPS-Hytrel®



TPS-ABS



TPS-PBT



TPS-POM



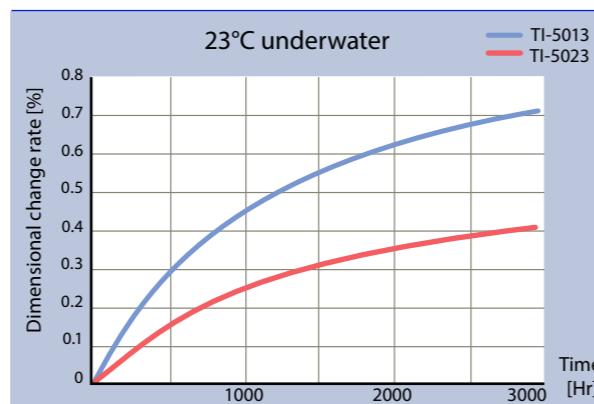
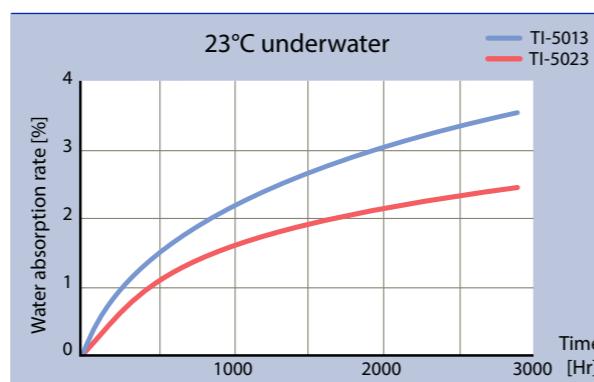
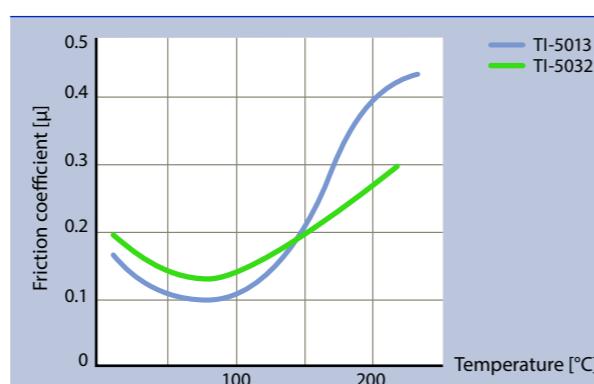
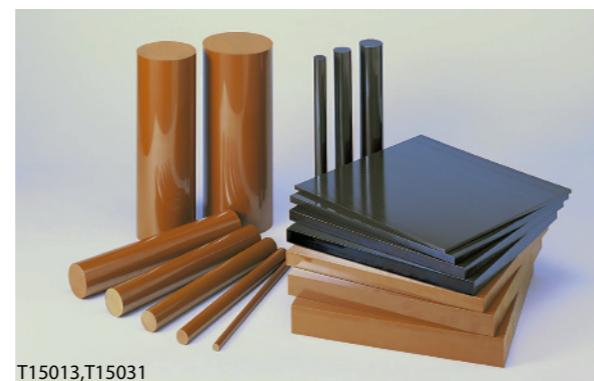
TPS-PP

TPS-TI 5000 Series [PAI: Polyamide-Imide]

■ Product lineup*

- TI-5013 : Unfilled type
- TI-5031 : Sliding abrasion resistance type
- TI-5032 : High sliding abrasion resistance type
- TI-5023 : GF reinforced type

* For details, see "Dimension List" (P30).

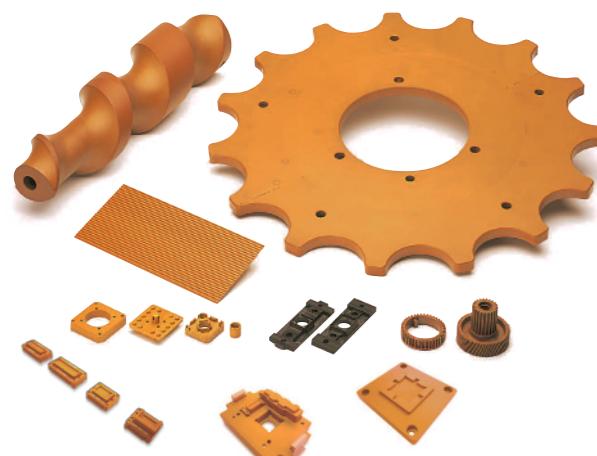


■ Features

- PAI is an amorphous resin, combining the excellent thermal resistance and mechanical strength of imide bonding with the easy workability and high toughness of amide bonding.
- The highest mechanical strength among the unfilled (unreinforced) plastics.
- High glass transition temperature at 280°C means that the mechanical strength of the material at 250°C is equal to the strength of POM at room temperature.
- Excellent abrasion resistance also at temperatures up to 200°C. Self-lubricating properties allow use for sliding parts even at temperatures above 200°C without the need for lubrication.
- Excellent resistance to most of the organic and inorganic chemicals.
- Complying with the Food Sanitation Law. (Health and Welfare Ministry Announcements No. 370 and No. 20)
- Pre-drying is required to be used under high temperature of more than 200°C. Bloating may occur when a PAI that has absorbed moisture is heated rapidly.

■ Use application

PAI is widely used for structural parts of OA equipment, electrical and electronic components, industrial machinery (semiconductor and LCD manufacturing equipment, plating equipment), and automotive parts.



TPS-PEEK: [Polyether Ether Ketone]

■ Product lineup*

- PEEK(NC) : Unfilled type

* For details, see "Dimension List" (P31).

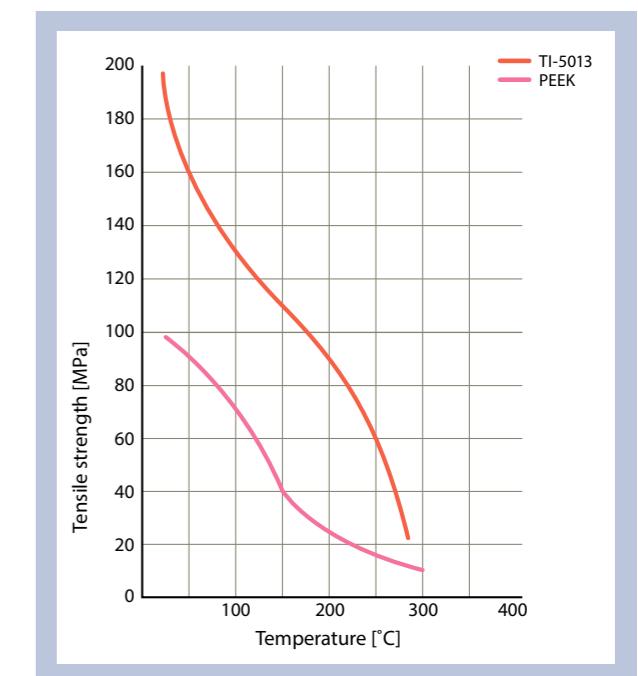
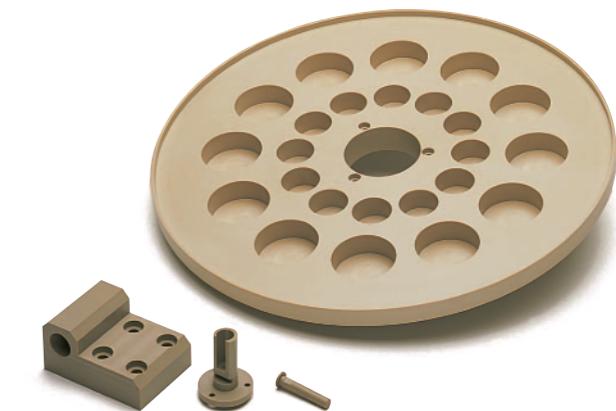


■ Features

- The best resistance properties against hot water among plastics allow continuous use in steam of 200 - 260°C. For shorter periods, TPS-PEEK can withstand temperatures up to 300°C.
- Outstanding chemical resistance, in particular to most acid and alkaline substances at high temperatures. However, high concentrated sulfuric acid will permeate the material.
- Continuous use temperature is high at 260°C, but relatively low glass transition temperature of 143°C means that care must be taken regarding use under high-load, high-temperature conditions.
- Highly flame resistance and less emission of smoke, toxic and corrosive gas when burning. So, TPS-PEEK is very suitable for the production equipment of semiconductor wafer.

■ Use application

Semiconductor and LCD manufacturing equipment parts, testing equipment parts, and medical equipment parts.

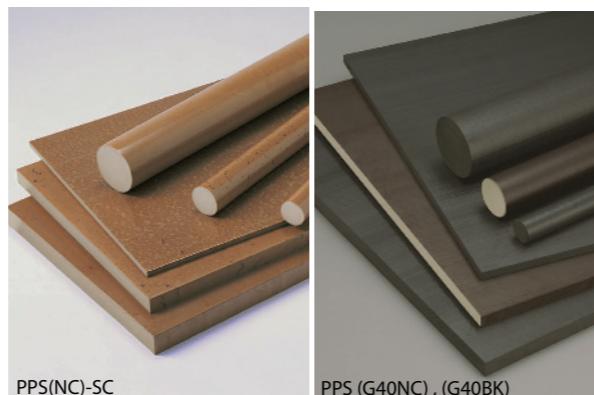


TPS-PPS [Polyphenylene Sulfide]

■ Product lineup*

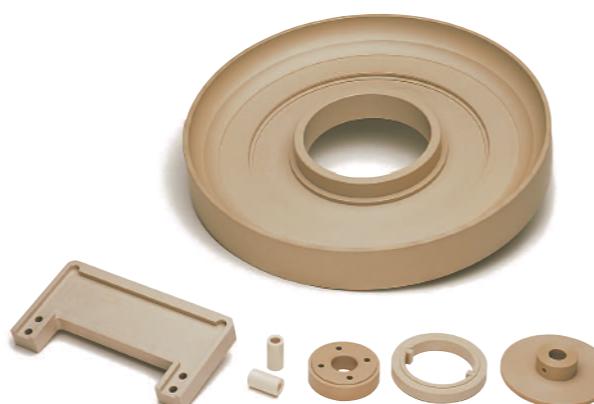
PPS(NC)-SC : Unfilled type
PPS(G40NC),(G40BK) : GF reinforced type

* For details, see "Dimension List" (P32).



■ Features

- PPS is a crystalline resin with very high thermal resistance.
- Low linear expansion coefficient and low water absorption result in high dimensional stability.
- Excellent resistance against chemicals.
- Continuous use temperature is high at 220°C, but relatively low glass temperature of 90°C means that care must be taken regarding use under high-load, high-temperature conditions.
- Good machinability like other super engineering plastics such as PAI, PEEK and PTFE for cutting. Unlike conventional PPS which can break easily while being worked, TPS-PPS (NC)-SC is produced using a original annealing method that reflects our long experience and advanced know-how in the field. This reduces internal stresses (residual distortion) during extrusion molding to an absolute minimum. When cut with well maintained carbide tools, a very clean finish can be obtained.
- Good suitability for welding like PTFE and PEEK, but compared to PVC and similar materials, the welding process requires a high level of skill and experience.

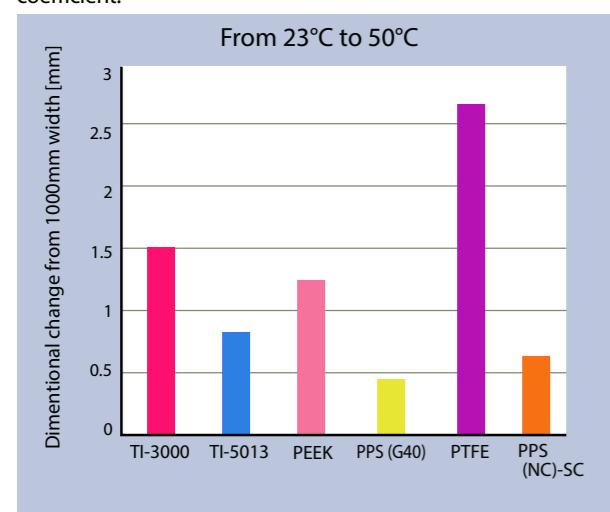


■ Use application

Electrical and electronic components, electrical household appliance parts, automotive parts, mechanical parts for chemical pumps, and semiconductor and LCD manufacturing equipment parts.

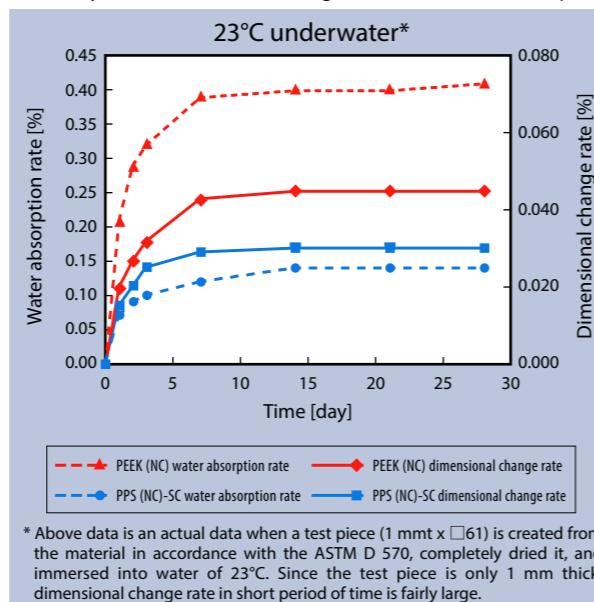
■ Excellent dimensional stability

TPS-PPS (NC)-SC has excellent dimensional stability. The graph below plots the dimensional change when the usage environment temperature changes from room temperature (23°C) to 50°C. The values are calculated using the linear expansion coefficient.



■ Excellent water absorption characteristics

TPS-PPS (NC)-SC is a super engineering plastic material with extremely small dimensional change due to low water absorption.



TPS-TOPFINE™ R series

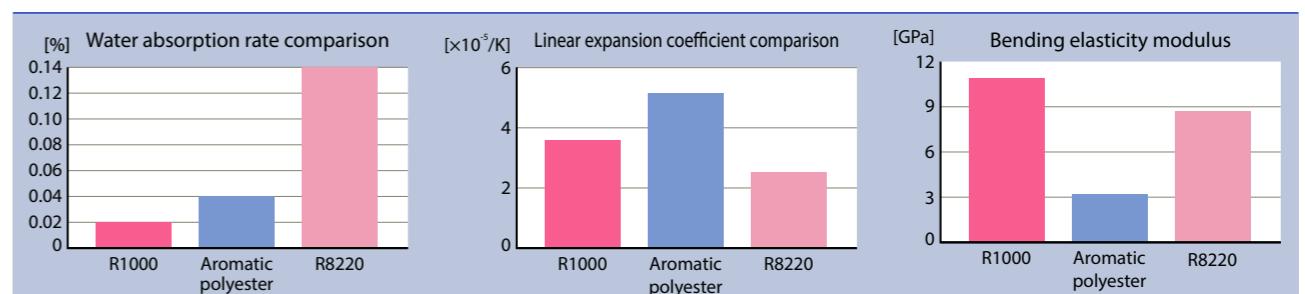
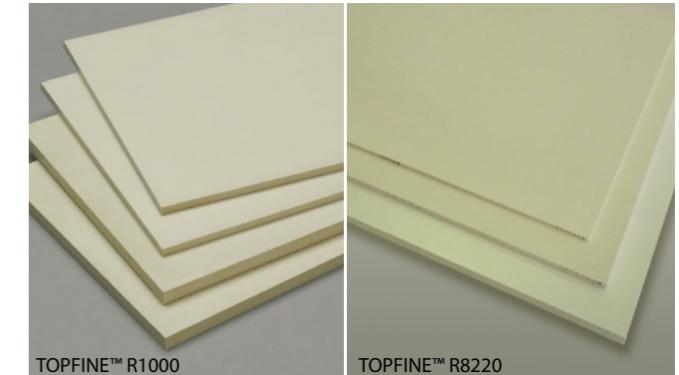
■ Product lineup*

TOPFINE™R1000 : Composite Engineering Plastic based on PPS and special inorganic particles
TOPFINE™R8220 : Composite Engineering Plastic based on PEI and special inorganic particles

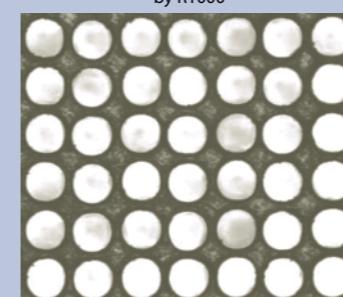
* For details, see "Dimension List" (P33).

■ Features

- Low water absorption rate and low linear expansion coefficient result in high dimensional stability.
- Highly suitable for precision microhole drilling with minimal flash which doesn't occur probe pin errors, instead of Aromatic polyester.
- Outstanding stiffness is suitable for thin processed products. Due to this stiffness and good workability, conventional ceramics, bakelite and glass-reinforced epoxy which are stiff and notoriously difficult to machine are replaced by TOPFINE™.
- Thermal resistance sufficient for testing tools.

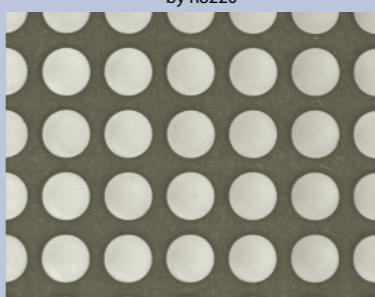


Enlarged view of 50-micron holes by R1000

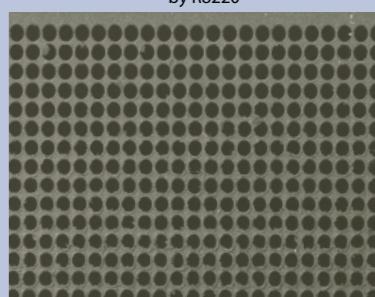


Note : Processing result is depending on processing conditions, shape, etc., so please perform sufficient evaluations beforehand.

Enlarged view of 150-micron holes by R8220

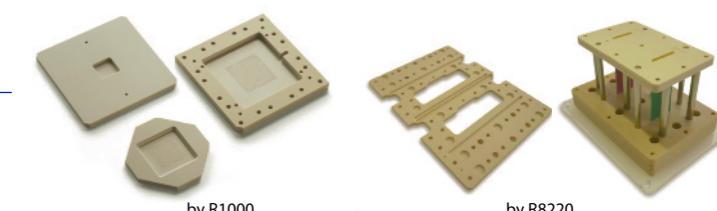


Enlarged view of 30-micron holes by R8220



■ Use application

Inspection device for semiconductor.



■ Precautions for machining

- Because TOPFINE™ has high stiffness, drill selection, blade sustainability and other factors are critical.
- Due to its composition, the material has less elongation and can get chipped easily. This should be taken into consideration during the parts design process.
- Since the glass transition temperature is lower than the aromatic polyester, usage under high loads and high temperatures must be performed after rigorous tests.

TPS-N6·N66 [6 Nylon, 66 Nylon]

■ Product lineup*

- N6(NC) : Unfilled type
- N6(G30BK) : Black colored GF reinforced type
- N6(CF20) : Black colored CF 20% reinforced type
- N6(CF30) : Black colored CF 30% reinforced type
- N6(M) : Molybdenum reinforced type
- N66(NC) : Unfilled type
- N66(G30BK) : Black colored GF reinforced type

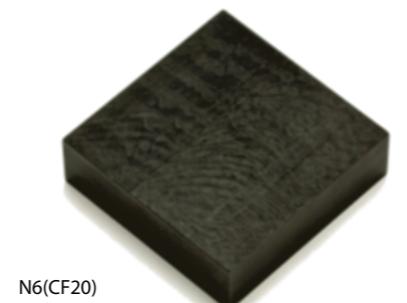
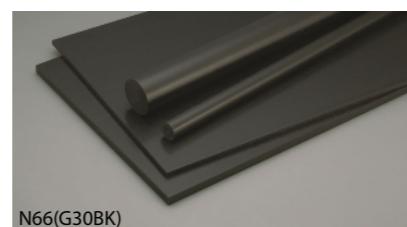
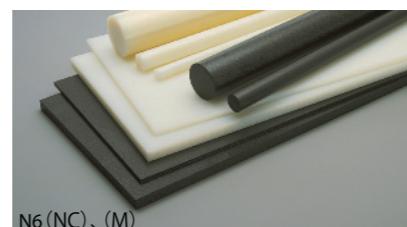
* For details, see "Dimension List" (P34–35 and P37).

■ Features

- Excellent chemical resistance to alkali and solvents except acid.
- Water absorption results in suppleness which increases impact strength.
- Excellent abrasion and oil resistance.
- Low dimensional stability, due to high water absorption rate.
- N6(CF20) is more lightweight and even stronger material than N6(G30BK). Further more, conductive material with carbon fiber reinforced.

■ Use application

- Automotive parts
- Electrical and electronic components
- Parts for general machinery



TPS-POM [Polyacetal]

■ Product lineup*

- POM(NC) : Unfilled type
- POM(BK) : Black colored type
- POM(BLUE) : Blue colored type
- POM(RED) : Red colored type
- POM(YELLOW) : Yellow colored type
- POM(GRAY) : Gray colored type
- POM(BLUE) FD : Blue colored POM material compliant with EU No.10/2011(PIM : Plastic Implementing Measure)
- POM(NC) Super : Unfilled low distortion type
- POM(BK) Super : Black colored low distortion type
- POM(G25NC) : GF reinforced type

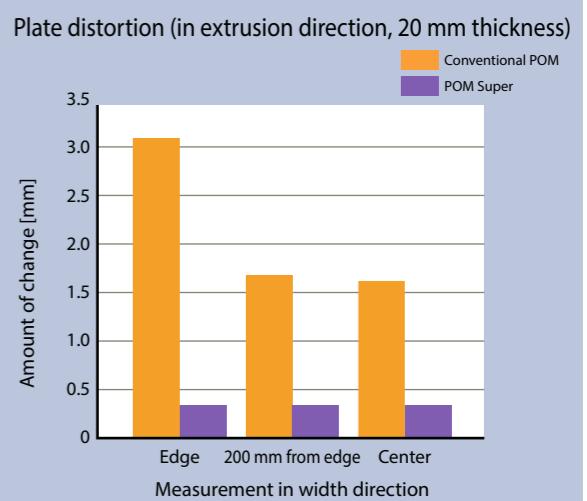
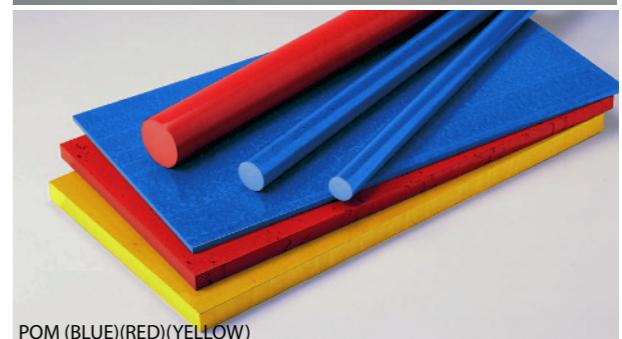
* For details, see "Dimension List" (P38–41 and P43–44).

■ Features

- Well balanced material properties, machinability and chemical resistance. But, permeated by strong acids.
- Low weather resistance. Due to the high content of oxygen molecular.
- TPS-POM has wide range of thickness, diameters and colors. Colored POM is suitable for color-coding to prevent mistakes in production line.
- POM FD has the same characteristics as the conventional POM, meeting PIM which is in effect since 1st Jan 2016.
- Deformation of POM super is about 1/4 of conventional POM. And its heat-dependent dimensional change in thickness and length is almost zero at temperatures up to 140°C. Less dimensional change and shape deformation during machining allows production time shorter.

■ Use application

- Parts for semiconductor manufacturing equipment
- Parts for electronic devices
- Parts for food handling machinery
- Parts for general machinery
- Carriage
- POM FD is suitable for parts of food handling machinery
- POM Super is suitable for products with strict dimensional accuracy, large workpieces and automated process, precision machining.



TPS-PBT [Polybutylene Terephthalate]

■ Product lineup*

PBT(NC) : Unfilled type
PBT(G30NC) : GF reinforced type.

* For details, see "Dimension List" (P45).

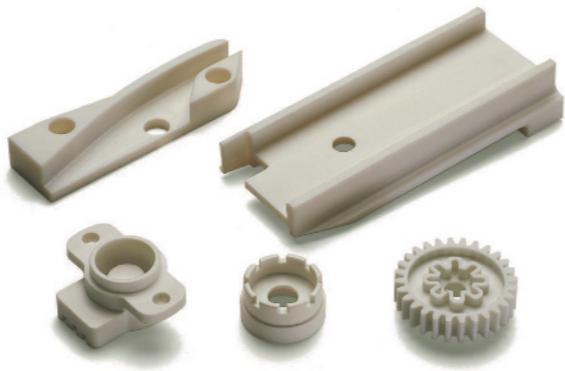


■ Features

- Generally speaking, continuous use possible at temperatures of 120 - 140°C. But, hydrolysis at high temperature is common occurrence for this material.
- Good electrical properties.
- Low water absorption results in high dimensional stability.

■ Use application

- Electrical and electronic components
- Automotive parts

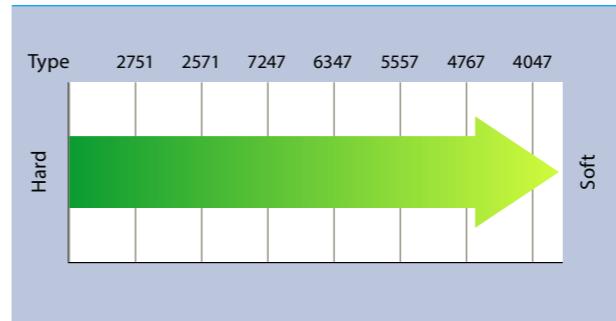


TPS-Hytrel® [High Performance Engineering Elastomer]

■ Product lineup*

Hytrel® : Block copolymer based on PET and elastomer.

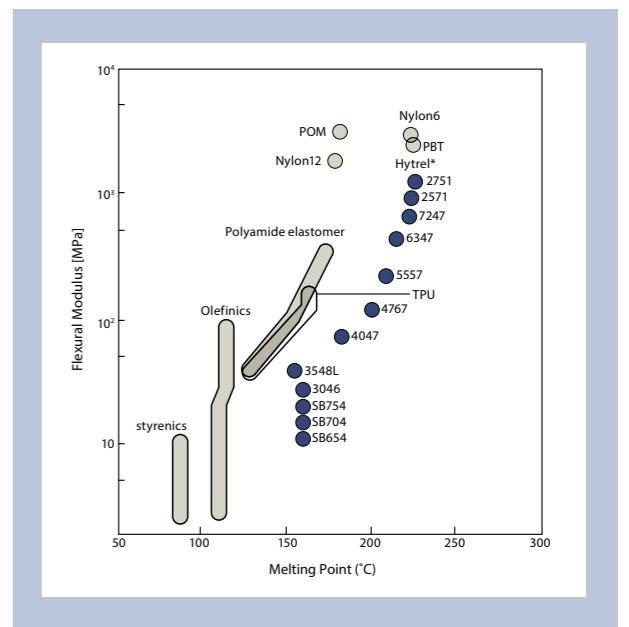
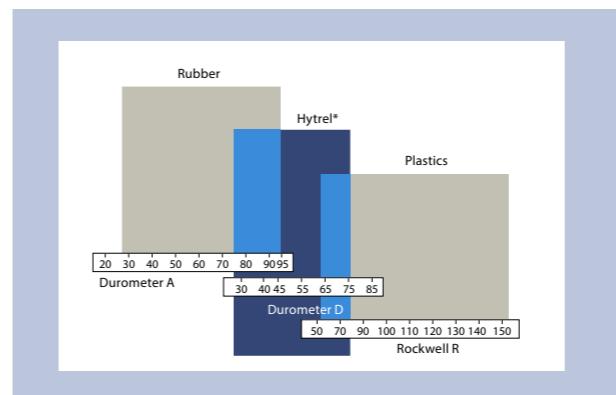
* For details, see "Dimension List" (P45).



■ Features

- This thermoplastic elastomer can be used in wide range of temperature.
- Noise is suppressed with excellent rubber elasticity compared with hard resin.
- Impact strength, low-temperature characteristics, rebound resilience, and bending fatigue resistance.

■ Comparison with other materials



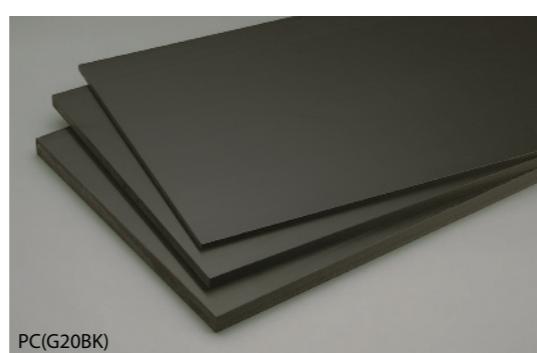
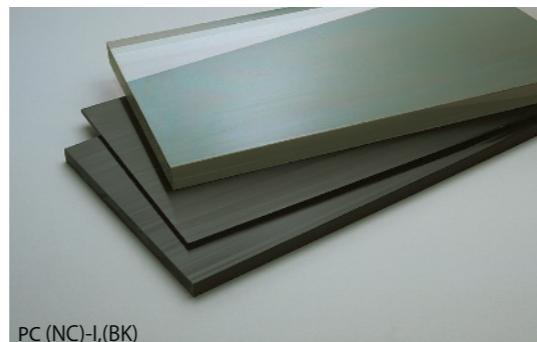
※ Hytrel® is a registered trademark of Du PONT-TORAY Co.,Ltd.

TPS-PC [Polycarbonate]

■ Product lineup*

- PC (NC)-I : Unfilled transparent type
- PC (BK) : Black colored type
- PC (G20BK) : Black colored and GF reinforced type

* For details, see "Dimension List" (P46).



■ Features

- Excellent dimensional stability, attributed from amorphous plastics with less crystal shrinkage.
- Chemical resistance is comparatively low, resulting in stress cracks.
- Excellent impact strength and creep resistance in a wide range of temperature, due to high glass transition temperature (130-150°C).
- Good weather resistance.

■ Use application

- Optical parts
- Electrical and electronic components
- Parts for medical equipment
- Parts for food handling machinery
- Modeling (especially for "pachinko" decoration parts)



TPS-PC / ABS-F

■ Product lineup*

- PC/ABS (BK)-F : Black colored PC/ABS Alloy

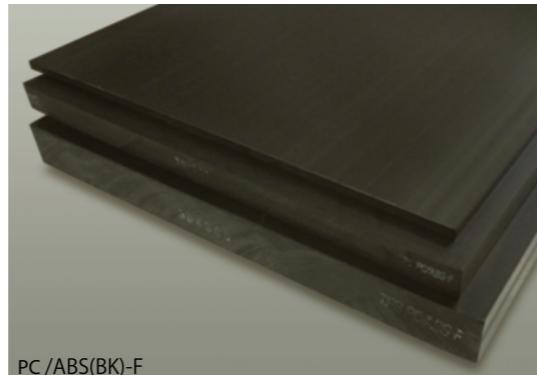
* For details, see "Dimension List" (P46).

■ Features

- Post processing is available, such as bonding, painting, and plating.
- UL flame resistance "V-0" (non-halogen).
- Better impact strength than other general plastics unfilled.
- Good weather resistance.

■ Use application

- Modeling
- Automobile interior parts, OA equipment, household appliances
- Carriage

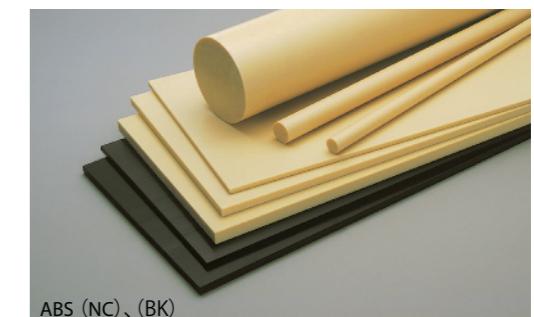


TPS-ABS [Acrylonitrile Butadiene Styrene]

■ Product lineup*

- ABS(NC) : Unfilled type
- ABS(BK) : Black colored type
- ABS(NC) Super : Unfilled low distortion type
- ABS(BK) Super : Black colored low distortion type

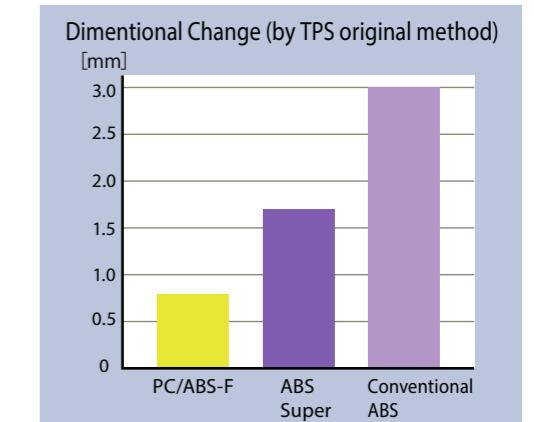
* For details, see "Dimension List" (P47-48).



ABS (NC), (BK)

■ Features

- This copolymer of acrylonitrile, butadiene, and styrene give performance of stiffness, hardness, impact strength.
- Soluble in solvent, good resistance against alkali and acid.
- Post processing is available, such as bonding, painting and plating.
- Good creep resistance.
- ABS Super is Suitable for complex shaped modeling with high precision. And its deformation is about 1/2 of conventional ABS. Less dimensional change and shape deformation during machining allows production time shorter.



■ Use application

- Automotive parts
- Electrical machinery parts
- Modeling

TPS-PP [Polypropylene]

■ Product lineup*

- PP(NC) : Unfilled type

* For details, see "Dimension List" (P48).

■ Features

- Outstanding dielectric constant and chemical resistance.
- Lightest material among general-purpose plastic.
- Stronger, stiffer and harder in surface than PE.

■ Use application

- Used in a wide variety of industrial applications



Antistatic (AE) Series

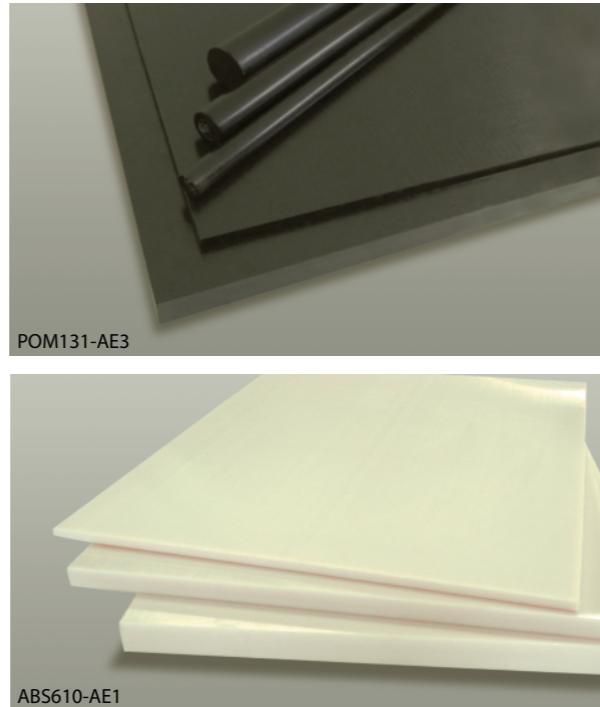
■ Product lineup*

AE3 : Conductive type with carbon black or CF
AE1 : Antistatic type without conductive fillers

* For details, see "Dimension List" (P48~50)

■ Features

- "AE1" Antistatic type is a material which don't generate static electricity and disperse static electricity smoothly, thanks to advanced polymer alloy technology without conductive fillers such as carbon black.
- "AE1" Antistatic type can be used in application where carbon is a concern, because it contains no carbon.
- "AE3" conductive type is a high performance product with favorable electrical properties for controlling static charge, dust accumulation and electrical noise generation by sliding and wearing.
- "AE3" conductive type with carbon black has less dimensional change over the years, compared to materials reinforced CF.



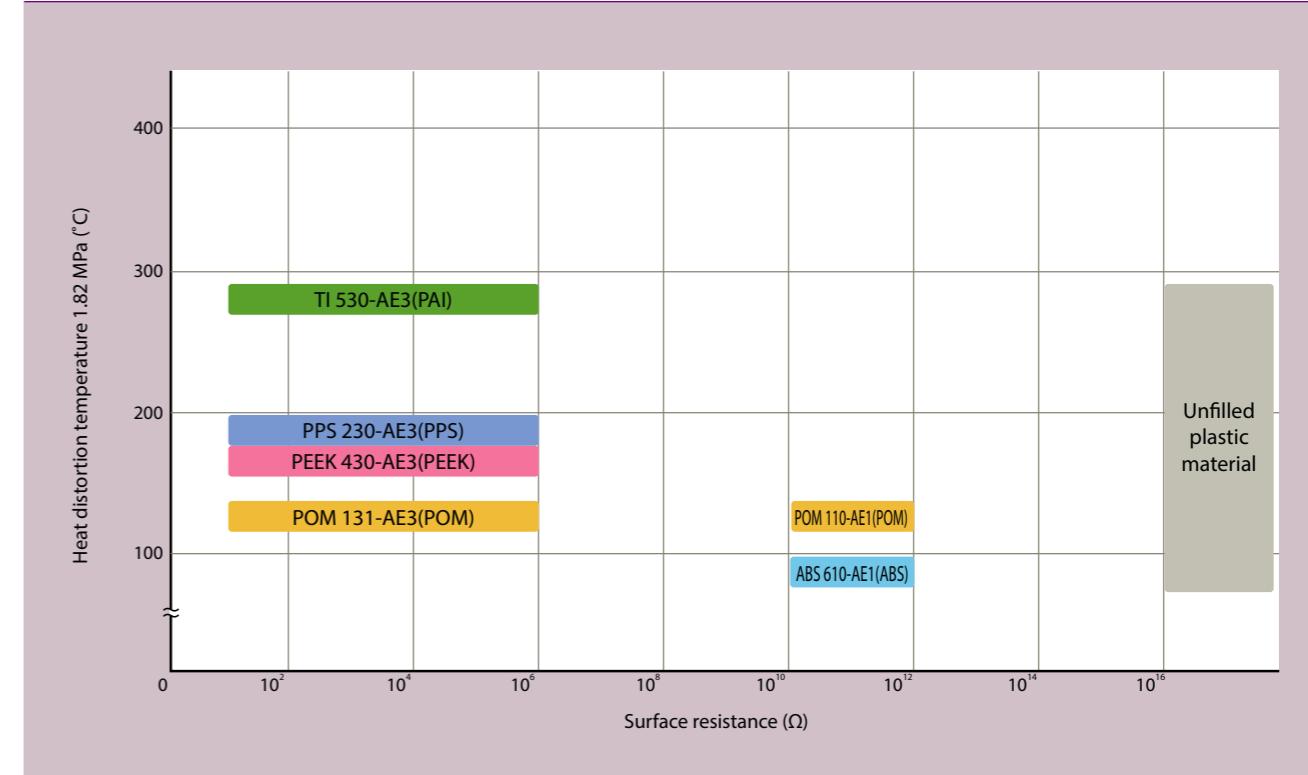
■ Use application

- IC parts, Carriage
- Transportation equipment roller
- Semiconductor and LCD manufacturing equipment
- OA equipment drive parts
- Parts inside the clean room

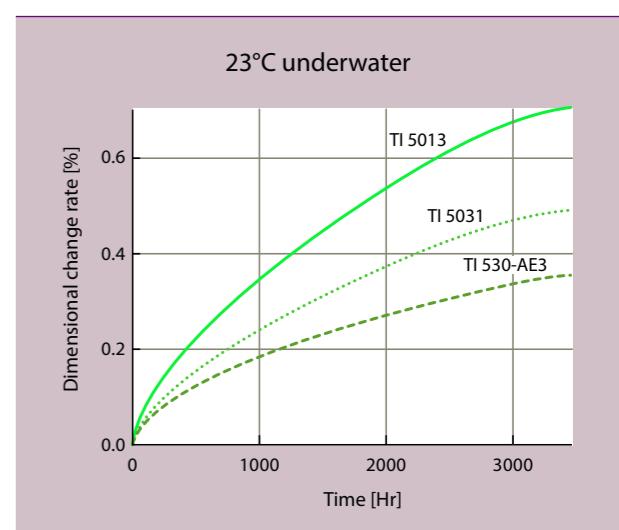
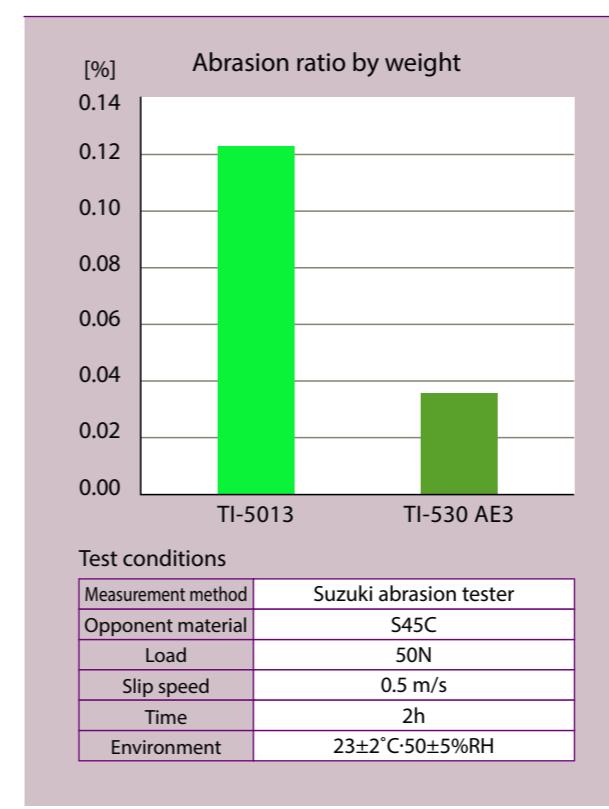


The surface resistance values given here are based on ASTM-D257 measurement of the resin raw material. Before actual use, practical testing for antistatic performance should be carried out.

■ Performance chart of AE series by base resin



■ Performance chart of TI-530AE3



Sheet (SHT) Series

■ Product lineup*

We call the products which are less than 5mm thick TPS-sheet (SHT) series. These are suitable for punched parts. The package units are rolls or a bundle of pieces, depending on the thickness.

SHT-PEEK4000 : Unfilled type

SHT-PEEK4110 : Abrasion resistance type

SHT-PPS2001 : Unfilled type

SHT-N6 (NC) : Unfilled type

SHT-N6 (BK) : Black colored type

SHT-N6 (CF20) : Black colored CF reinforced type

SHT-N6 (M)-1 : Molybdenum reinforced type

SHT-N66 (NC) : Unfilled type

SHT-POM (NC) : Unfilled type

SHT-POM (BK) : Black colored type

SHT-ABS (NC) : Unfilled type

SHT-ABS (BK) : Black colored type

SHT-ABS (WH) : White colored type

SHT-PP (NC) : Unfilled type

SHT-PP (BK) : Black colored type

SHT-PE (NC) : Unfilled type

* For details, see
"Dimension List"
(P31, P32, P36, P37,
P42 and P48).

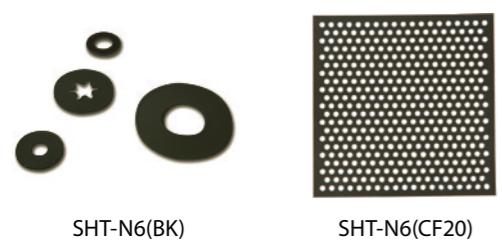


■ Features

- SHT-PEEK and SHT-N6(CF20) have excellent abrasion resistance, rigidity and stiffness at high temperature.
- SHT-PPS has excellent dimensional stability, good chemical resistance, abrasion resistance. But, inferiority of sliding ability.
- SHT-N6, N6(CF20), N66 and POM have excellent slitting and punching ability.
- SHT-N6(CF20) is more lightweight and stronger material than SHT-PEEK. Further more, conductive material with carbon fiber reinforced.
- SHT-N6 and N66 have low dimensional stability, due to absorbing moisture from the air.
- Low water absorption rate of SHT-N6 and N66 could lead to breakage, when punching in dry season.
- SHT-ABS is suitable for vacuum molding as well.
- SHT-PP and PE are suitable for low pressure sliding parts at low temperature. Due to low friction coefficient and good abrasion resistance.

■ Use application

- Washer, spacer, gasket for ball bearing retainer.
- Speaker diaphragm (SHT-PEEK 4000)
- Insulator for battery (SHT-PPS)
- Dielectric material of the film capacitor and variable capacitor. (SHT-PPS2001)
- Liner and guide (SHT-POM)
- Punching sheet for speaker cover (SHT-N6(CF20))



■ Performance chart of SHT Series

Characteristics/Item		N6	N6M-1	N66	POM	PEEK 4000	PEEK 4110
Thermal resistance		△	△	○	△	○	○
Dimentional change by water absorption	X	X	△	○	○	○	○
Abrasion resistance	Low load*	○	○	○	○	○	○
	High load*	△	△-○	△	△	○	○
Sliding ability	Low load*	○	○	○	○	○	○
	High load*	△	△-○	△	△	○	○

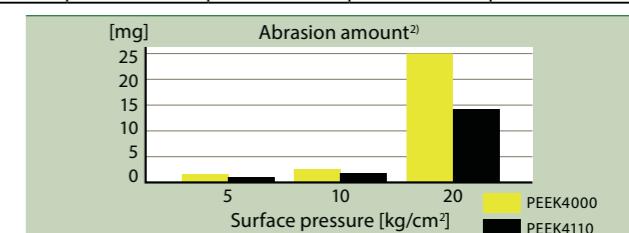
○: Excellent
○: Good
△: Fair
X: Inferior

* Low load means that the surface pressure (P) is 5 kg/cm² and the velocity (V) is 12 m/min.
* High load means that the surface pressure (P) is 10 kg/cm² and the velocity (V) is 25 m/min.

■ Characteristics comparison of SHT Series (as extrusion molding products)

Characteristics/Item	N6	N6M-1	N66	POM	PEEK 4000	PEEK 4110
Specific gravity	1.14	1.14	1.14	1.41	1.32	1.32
Water absorption rate ¹⁾ [%]	3.6	3.6	2.7	0.2	0.2	0.2
Elastic modulus(Young's modulus) ¹⁾ [MPa]	363	402	588	1372	1764	1950
Yield point strength ¹⁾ [MPa]	35	38	41	65	95	92
Tensile strength at break ¹⁾ [MPa]	86	72	61	55	98	74
Elongation at break ¹⁾ [%]	700	480	480	90	180	30
Kinetic friction coefficient ²⁾ average(min-max)	0.59 (0.30-0.90)	0.50 (0.28-0.80)	0.52 (0.30-0.90)	0.40 (0.25-0.45)	0.42 (0.25-0.50)	0.35 (0.20-0.40)
Maximum PV value ²⁾ [kg/cm ² ·m/min]	200	220	430	180	350	450
Abrasion amount average ²⁾ [mg]	8.9	7.0	6.5	4.0	1.8	1.2

Note : 1) 23°C, RH 65% equilibrium condition
2) Test method
Test equipment : Suzuki abrasion tester
Opponent material : S45C
Surface pressure (P) : 10 kg/cm²
Velocity (V) : 25 m/min
Contact area : 1.0 cm²
Lubricant : None
Condition : 23°C under normal circumstances



■ Flammability of SHT Series

Some SHT series have acquired and registered UL flame resistance as extrusion molding products.

Item	Thickness (mm)	UL
N6M-1	0.2-1.0	HB
PPS2001	0.1-0.11	VTM-O
	2.0-2.2	V0
PEEK4000	0.1	HB
	0.4	HB
PEEK4110	0.5-0.55	V1
	0.2	HB
	0.5	HB

Characteristics Comparison of resin(ASTM ver.)

Characteristics	Item	Unit	Test method ASTM	TPS-TI 5000 Series						TPS-PEEK		TPS-PPS			TPS-TOPFINE™		For your reference			
				5013	5031	5032	5023	530-AE3		NC	430-AE3	NC-SC	G40 NC-BK	230-AE3	*R1000	*R8220	NC	G30NC	NC	-
Mechanical properties	Tensile strength	MPa	D638	186	157	147	180	100		98	98	79	167	98	41	60	104.9	169.7	88.0	70
	Tensile elongation	%	D638	15	8	6	7	4		>60	4.0	23.0	2	5	0.3	1.1	60.0	3.0	40-80	60-120
	Bending strength	MPa	D790	235	196	196	323	137		170	160	128	235	150	82	162	163.8	230.5	135	91
	Elastic modulus(bending)	GPa	D790	4.9	6.4	7.2	11.3	10.8		4.2	4.2	3.3	11.8	6.2	11.0	8.7	3.43	9.02	2.55	2.4
	Poisson's ratio	-	-	0.43	-	-	-	-		0.4	-	0.37	0.4	-	-	-	-	-	-	-
	Compressive strength	MPa	D695	216	167	118	-	-		118	-	-	-	-	-	-	-	-	-	-
	Izod impact (notched)	J/m	D256	127	60	59	80	37		67	39	15	157	45	1.1	-	49	108	90	690
	Rockwell hardness	-	D785	M119	M109	M100	M119	M95		M99	M100	M95	M80	M98	R119	R123	M109	M114	M85	-
Physical properties	Specific gravity (23°C)	-	D792	1.40	1.45	1.50	1.56	1.55		1.32	1.33	1.35	1.59	1.40	1.83	1.67	1.27	1.53	1.37	-
	Water absorption rate (23°C, 24 hrs)	%	D570	0.33	0.28	0.18	0.24	-		0.5	-	0.02	0.02	0.02	0.02	0.14	0.25	0.16	0.7	0.37
	Linear expansion coefficient (MD-TD)	$\times 10^{-5}/^{\circ}\text{C}$	JIS K7197	3.1	2.5	2.5	3.1	1.3		4.7-10.8	3.5	2.4-2.9	1.7-6.8	-	3.5	2.6	5.6	2.0	5.6	-
	Thermal conductivity coefficient	W /mK	E 1530	0.29	0.6	-	0.20	-		0.26	-	0.20	-	-	-	-	-	-	-	-
	Flammability	-	D570 (Compatible with UL)	V-0 (0.64 mm)	V-0 (0.64 mm)	V-0 (0.64 mm)	V-0 (0.64mm)	V-0 (0.75mm)		V-0 (1.5mm)	V-0 equivalent	V-0 equivalent	V-2 (0.8mm)	V-0 equivalent	V-0 equivalent	-	V-0 (0.38mm)	V-0 (0.25mm)	V-0 (1.5mm)	-
Thermal properties	Heat distortion temperature (1.82 MPa)	°C	D648	278	279	280	278	280		152	164	112	260	173	210	212	200	210	207	207
	Continuous use temperature	°C	-	250	250	250	250	250		260	260	220	220	220	-	-	-	-	180	-
	Glass transition temperature	°C	-	280	280	280	280	280		143	143	88	-	88	-	-	-	-	225	-
	Melting point	°C	-	-	-	-	-	-		343	343	278	-	278	278	-	-	-	-	-
Electrical properties	Dielectric strength	MV/m	D149	23.0	-	-	23.0	-		-	-	15.0	18.0	-	15.6	23.2	28.0	25.0	-	-
	Surface resistance	Ω	D257	10^{18}	10^{17}	10^{11}	10^{18}	10^{1-10^6}		10^{16}	10^{1-10^6}	10^{16}	10^{16}	10^{1-10^6}	10^{14}	10^{14}	10^{16}	10^{16}	-	-
	Specific volume resistance	$\Omega \cdot \text{cm}$	D257	10^{15}	10^{13}	10^{12}	10^{13}	10^{1-10^6}		10^{16}	10^{1-10^6}	10^{18}	10^{16}	-	10^{15}	10^{15}	10^{19}	-	10^{16}	-
	Dielectric constant 10 ⁶ Hz	-	D150	4.0	5.4	6.60	4.00	-		-	-	3.6	4.1	-	4.79	4.92	-	-	3.5	-
	Dielectric loss factor 10 ⁶ Hz	-	D150	0.03	0.04	0.0600	0.0300	-		-	-	0.0011	0.003	-	0.0040	0.0305	-	-	0.011	-
Acquisition of Food Sanitation Law				○	-	○	-	-		○	-	○	-	-	-	-	-	-	-	

* Values in the above table for TOPFINE™ R1000 and R8220 are representative values by the ISO compatible test method.

※Above characteristics table is representative value, and it does not guarantee the value of the product.

※The part marked with (-) and no value in the table indicates that there are currently no valid data for the item.

※TOPFINE™ is a registered trademark of Toray Plastics Precision Co., Ltd.

※ULTEM® is a registered trademark of SABIC.

Characteristics Comparison of resin(ASTM ver.)

Characteristics	Item	Unit	Test method ASTM	TPS-POM					TPS-N6		TPS-N66		TPS-PBT		TPS-PC		TPS-PC/ABS	TPS-ABS		TPS-PP
				NC-BK	G25	110-AE1	131-AE3		*NC	*G30	*NC	*G30	NC	G30	NC-I-BK	G20	BK	NC-BK *ISO Compatible test	610-AE1 *ISO Compatible test	NC
Mechanical properties	Tensile strength	MPa	D638	60	127	55	59		75	185	86	190	50	130	61	76	59	40	53	31
	Tensile elongation	%	D638	75.0	3.0	50.0	4.5		200<	5.0	90.0	4.5	200<	3.1	140.0	4.0	180.0	15	13	500<
	Bending strength	MPa	D790	90	193	86	98		100	260	118	275	95	210	90	127	88	63	75	—
	Elastic modulus(bending)	GPa	D790	2.58	7.55	2.55	2.94		2.50	8.80	2.83	9.00	2.55	8.30	2.23	5.03	2.35	2.0	2.2	1.22
	Poisson's ratio	—	—	0.35	0.38	—	—		0.38	0.35	—	—	0.35	—	0.38	0.36	—	—	—	0.4
	Compressive strength	MPa	D695	—	—	—	—		—	—	—	—	—	—	76	—	—	—	—	—
	Izod impact (notched)	J/m	D256	74.0	78.0	8.0	34.0		70.0	125.0	64.0	110.0	39.0	100.0	880.0	49	539.0	25.0	13.0	64.0
	Rockwell hardness	—	D785	R118	R111	R108	R119		R112	R120	R117	R121	R118	R116	R124	R119	R105	R109	R95	
Physical properties	Specific gravity (23°C)	—	D792	1.41	1.59	1.41	1.42		1.13	1.36	1.14	1.37	1.31	1.53	1.20	1.33	1.18	1.04	1.05	0.91
	Water absorption rate (23°C, 24 hrs)	%	D570	—	—	—	—		1.8	1.1	1.2	0.6	—	—	0.2	0.11	0.2	—	—	—
	Linear expansion coefficient (MD-TD)	× 10 ⁻⁵ /°C	D696	—	3 ~ 9	—	11		8	2-3	8.1	2-3	—	—	7	3.4-5.0	6-8	—	—	11
	Thermal conductivity coefficient	W/mk	E1530	—	—	—	—		—	0.38	0.25	0.4	—	—	—	—	—	—	—	—
	Flammability	—	D570 (Compatible with UL)	HB (0.75mm)	HB (0.81mm)	—	HB equivalent		HB (0.75mm)	HB equivalent	HB equivalent (0.71mm)	HB equivalent	HB equivalent	V-2 (0.40mm)	HB equivalent	V-0 (1.50mm)	HB equivalent	HB (1.50mm)	—	
Thermal properties	Heat distortion temperature (1.82 MPa)	°C	D648	110	163	112	120		65	215	90	255	71	210	133	138	90	81	82	90 (0.45MPa)
	Continuous use temperature	°C	—	100	105	—	—		70	100	—	110	—	—	115	—	—	—	—	—
	Glass transition temperature	°C	—	-60	—	—	—		—	—	78	—	35	—	—	—	—	—	—	—
	Melting point	°C	—	163	165	—	—		225	225	255	265	223	—	—	—	—	—	—	—
Electrical properties	Dielectric strength	MV/m	D149	19.0	24.0	—	—		20.0	20.0	—	20.0	—	—	30.0	—	—	—	—	—
	Surface resistance	Ω	D257	10^16	10^16	10^10-10^12	10^1-10^6		—	—	—	—	—	—	—	—	—	—	—	10 ¹⁰ -10 ¹²
	Specific volume resistance	Ω·cm	D257	—	10^14	10^10-10^12	10^1-10^6		10^12-10^13	10^13	10^14	10^13	—	—	10^16	—	—	—	—	10 ¹⁰ -10 ¹²
	Dielectric constant 10 ⁶ Hz	—	D150	—	—	—	—		3.4	4.0	3.60	3.9	—	—	2.9	—	—	—	—	—
	Dielectric loss factor 10 ⁶ Hz	—	D150	—	—	—	—		0.03	0.03	0.03	0.02	—	—	0.009	—	—	—	—	—
Acquisition of Food Sanitation Law				○	—	—	○		○	—	○	—	—	—	○	—	—	○	○	○

* Values in the above table for Nylon are dry values.

* Values in the above table for TPS-ABS are representative values by the ISO compatible test method.

※ Above characteristics table is representative value, and it does not guarantee the value of the product.

※ The part marked with (-) and no value in the table indicates that there are currently no valid data for the item.

Characteristics Comparison of resin(ISO ver.)

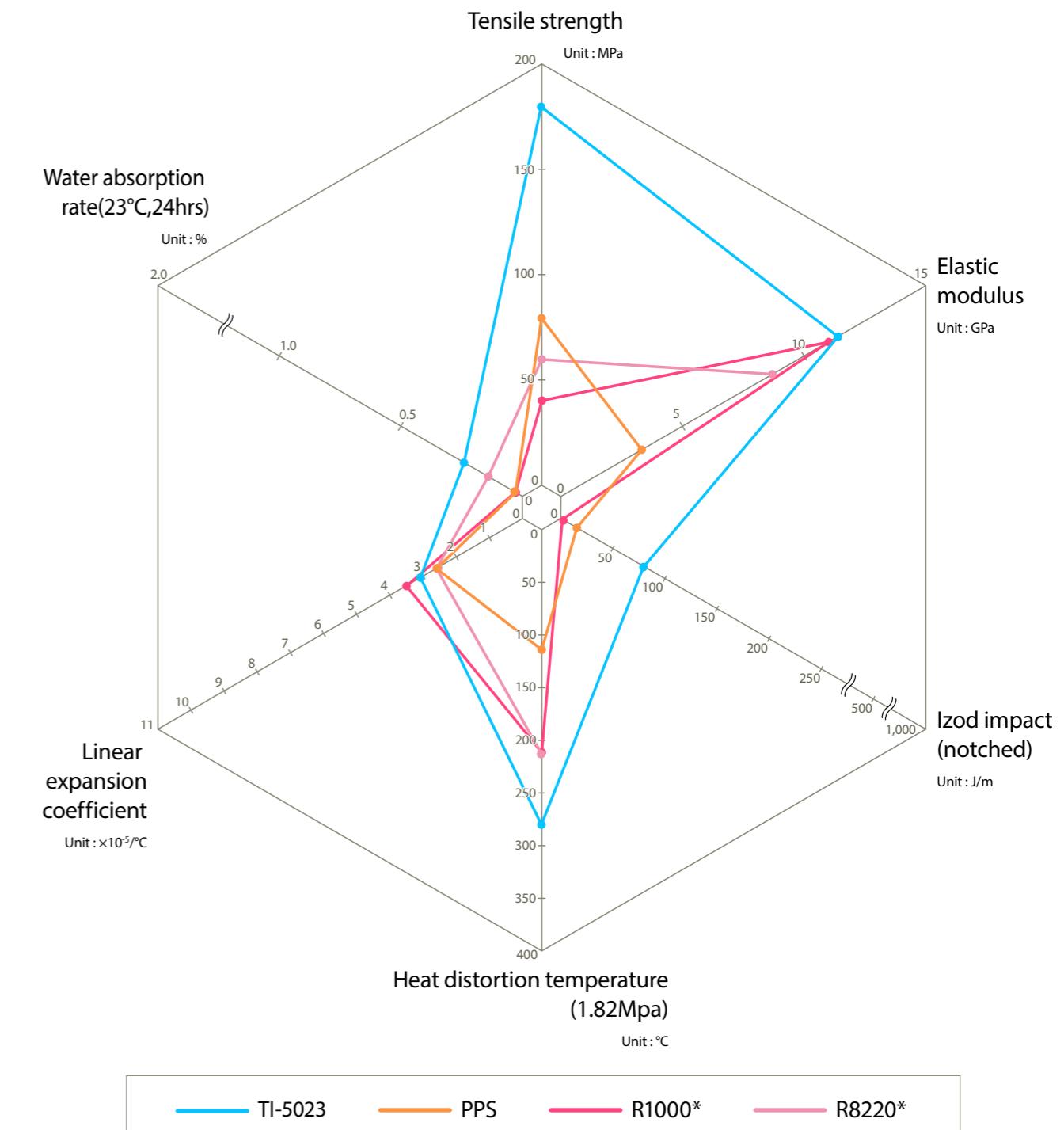
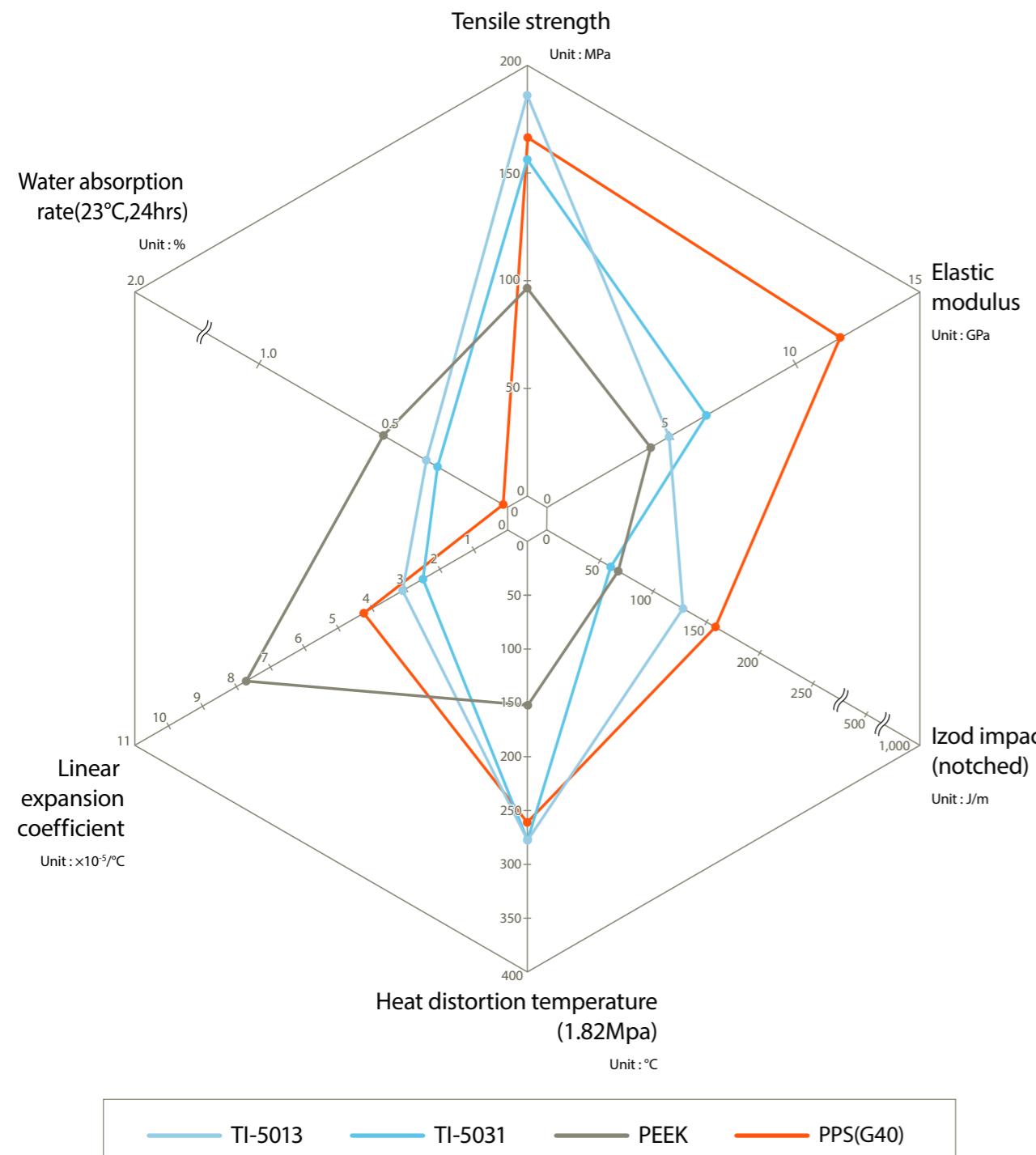
Characteristics	Item	Unit	Test method ISO	TPS - POM			*TPS - N6				*TPS - N66		TPS - PBT		TPS - PC			TPS-PC/ABS	TPS-ABS		TPS-PP
				NC·BK	G25	131-AE3	*NC	*G30		CF20	*NC	*G30	NC	G30	NC-I	BK	G20	BK	NC·BK	610-AE1	NC
Mechanical properties	Tensile strength	MPa	527-1, 2	57	136	59	75	185		195	85	160	53	135	75	65	74	60	40	53	29
	Tensile elongation	%	527-1, 2	40	3	16	50<	4		3.9	50<	3	108	3	50<	50<	3	>50	15	13	>200
	Bending strength	MPa	178	76	200	87	100	285		295	110	-	-	-	91	100	131	90	63	75	-
	Elastic modulus (bending)	GPa	178	2.2	7.9	2.4	2.5	9.4		13.5	2.7	-	2.4	-	2.3	2.3	5.3	2.7	2.0	2.2	-
	Poisson's ratio	-	-	0.35	0.38	-	0.38	0.35		-	0.30	-	0.35	-	-	-	0.36	-	-	-	0.40
	Charpy impact strength (notched)	KJ/m ²	179/1eA	8.5	8.0	5.4	5.5	15.0		10.3	4.5	-	3.9	-	≥65	≥5	5.0	15.0	25.0	13.0	5.0
	Rockwell hardness	-	-	M78	M79	-	-	-		-	-	R121	-	-	-	-	R124	R122	R105	R109	R85
Physical properties	Density (23°C)	g/cm ³	1183	1.41	1.59	1.42	1.13	1.36		1.22	1.14	1.35	1.31	1.53	1.20	1.20	1.34	1.19	1.04	1.05	0.91
	Water absorption rate (23°C, 24 hrs)	%	-	0.22	0.29	-	1.80	-		1.8	-	0.60	-	0.15	0.20	0.20	0.11	0.20	-	-	<0.03
	Linear expansion coefficient (MD-TD)	×10 ⁻⁵ /°C	11359-2	10.0	3.0-9.0	-	-	2.5		3.0	8.0	2.0-3.0	-	2.0-3.0	6.5	6.5	3.4-5.0	-	-	-	11.0
	Flammability (UL)	-	UL94	HB (0.75mm)	HB (0.81mm)	HB equivalent	HB (0.75mm)	HB equivalent		HB equivalent	HB (0.71mm)	HB equivalent	HB equivalent	HB equivalent	V-2 (0.40mm)	V-2 (0.40mm)	-	V-0 (1.50mm)	HB equivalent	HB (1.50mm)	-
Thermal properties	Heat distortion temperature (1.80 MPa)	°C	75-1, 2	110	162	-	-	205		210	70	250	59	210	130	130	133	90	81	82	80 (0.45MPa)
	Continuous use temperature	°C	-	100	105	-	70	100		-	-	110	-	110	115	115	-	-	-	-	-
	Glass transition temperature	°C	-	-60	-	-	-	40-60		-	40-60	50	35	60	130-150	130-150	130-155	-	-	-	-
	Melting point	°C	-	163	165	-	225	215-225		225	255-265	255	223	225	-	-	-	-	-	-	-
Electrical properties	Dielectric strength (3 mm)	kV/mm	IEC60243-1	19.0	24.0	-	-	-		-	20.0	-	-	50.0	30.0	30.0	-	-	-	-	-
	Surface resistance	Ω	IEC60093	10 ¹⁶	10 ¹⁶	10 ^{1-10⁶}	-	-		10 ¹	-	-	-	10 ¹⁵	10 ¹⁵	10 ¹⁵	-	10 ¹⁵	-	10 ^{10-10¹²}	-
	Specific volume resistance	Ω·cm	IEC60093	-	10 ¹⁴	10 ^{1-10⁶}	-	10 ¹⁵		10 ^{0-10¹}	10 ¹⁵	-	-	-	10 ¹³	10 ¹³	-	10 ¹⁵	-	10 ^{10-10¹²}	-
	Dielectric constant 10 ⁶ Hz	-	IEC60250	-	-	-	-	-		-	-	-	-	3.80	3.10	3.10	-	-	-	-	-
	Dielectric loss factor 10 ⁶ Hz	-	IEC60250	-	-	-	-	-		-	-	-	-	0.0090	0.0090	0.0090	-	-	-	-	-
Acquisition of Food Sanitation Law				○	-	○	○	-		-	○	-	-	-	○	○	-	-	○	○	○

* Values in the above table for Nylon are dry values.

※ Above characteristics table is representative value, and it does not guarantee the value of the product.

※ The part marked with (-) and no value in the table indicates that there are currently no valid data for the item.

Characteristics Comparison of resin(ASTM ver.)

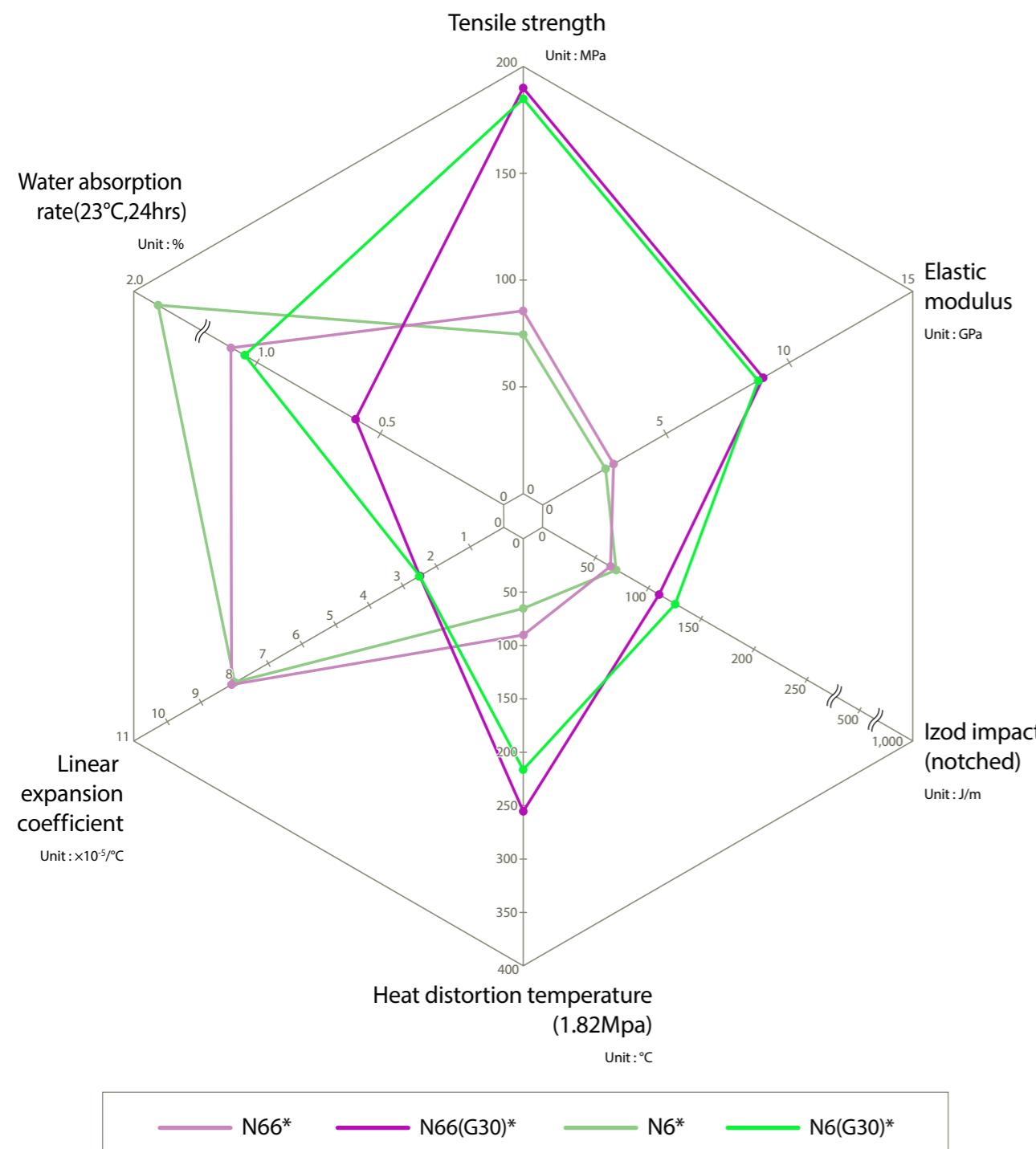


* This chart is made by representative values, and it does not guarantee the value of the product.

* The values of R1000 and R8220 are measured by ISO compatible test.

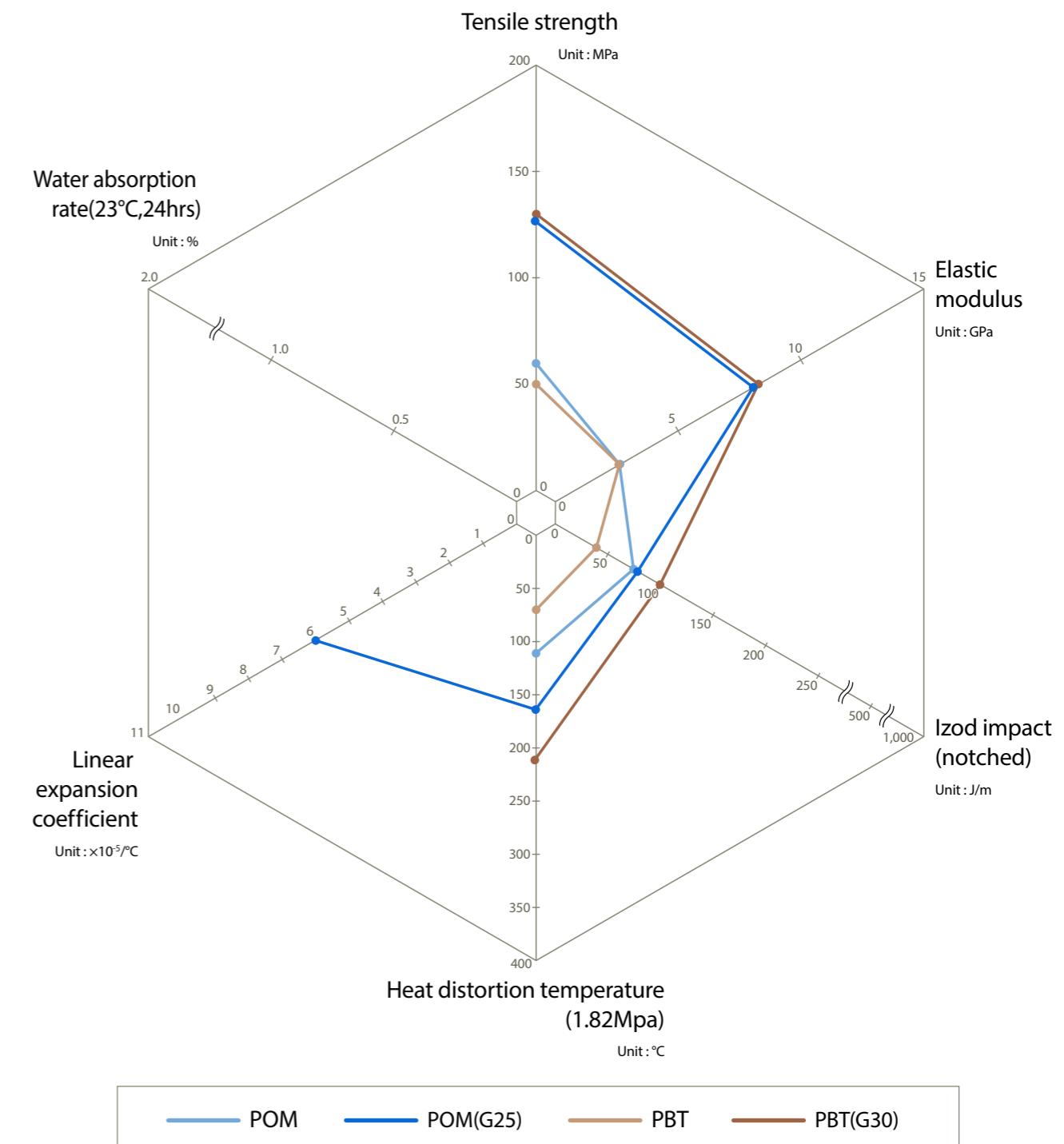
* This chart is made by representative values, and it does not guarantee the value of the product.

Characteristics Comparison of resin(ASTM ver.)



* The values of Nylon are all in dried condition.

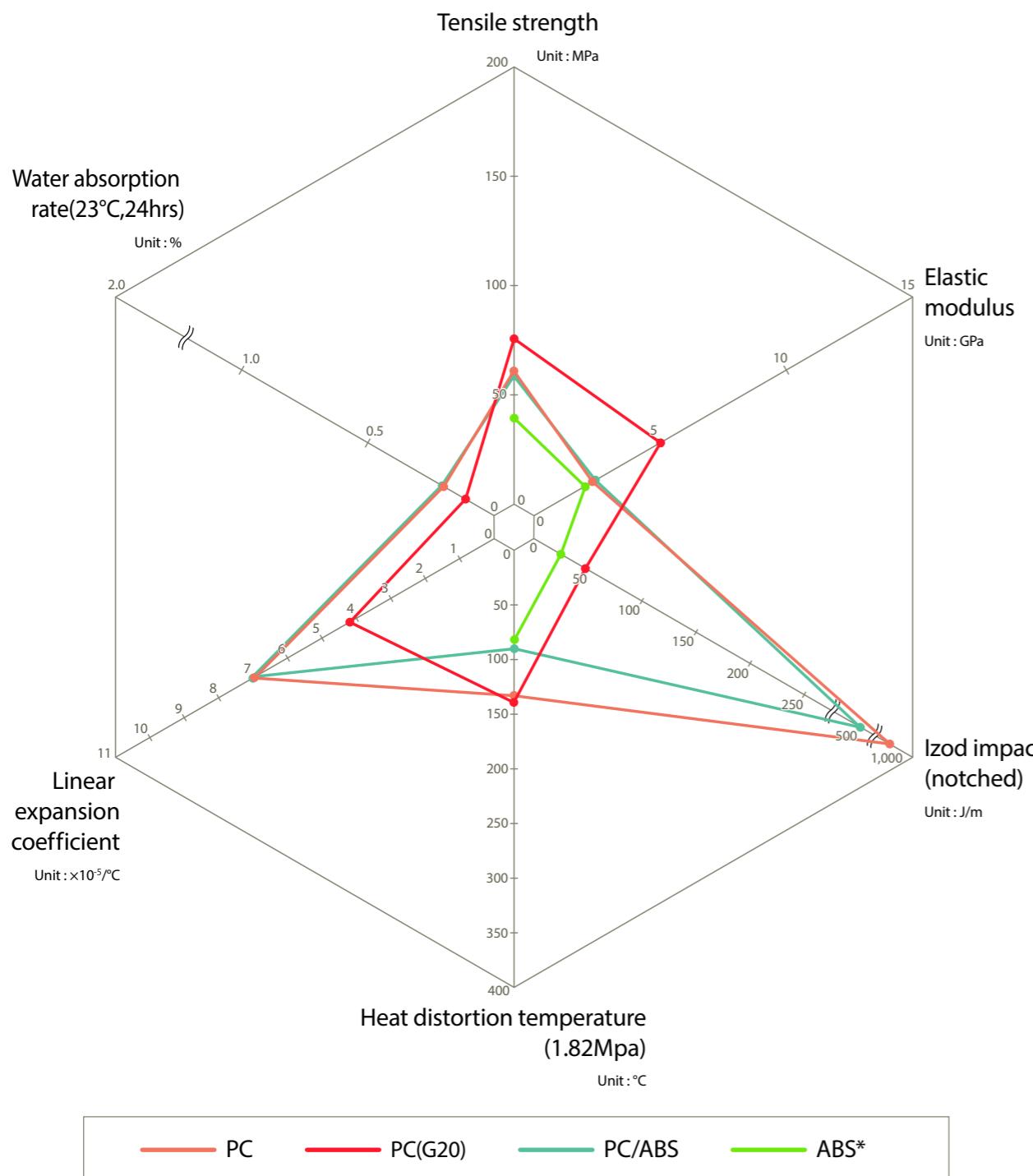
※ This chart is made by representative values, and it does not guarantee the value of the product.



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Characteristics Comparison of resin(ASTM ver.)

Elution Data



1. TPS Super Engineering Plastics Purity

Element	TI 5013			PEEK (NC)			PPS (NC)-SC		
	After 24 hours	After 48 hours	After 168 hours	After 24 hours	After 48 hours	After 168 hours	After 24 hours	After 48 hours	After 168 hours
Na	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>
K	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>
Mg	0.01>	0.01>	0.01>	0.01	0.01>	0.01>	0.01>	0.01>	0.01>
Ca	0.26	0.02	0.01>	0.14	0.02	0.01>	0.12	0.01	0.01>
Fe	0.06	0.02	0.01>	0.01>	0.01>	0.01>	0.03	0.02	0.01>
Cr	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>	0.01>
Ni	0.02	0.01>	0.01>	0.01	0.01>	0.01>	0.01	0.01>	0.01>
Cu	0.07	0.05	0.01>	0.01	0.01>	0.01>	0.04	0.01	0.01>
Si	0.13	0.05	0.02	0.08	0.03	0.01	0.11	0.04	0.02
TOC*	1.6	0.4	0.5	1.7	0.4	0.3	2.1	0.5	0.4

* TOC: Total Organic Carbon

Analysis method

● Test solution preparation

100 g of sample was washed in superpure water and placed in a Teflon container. 100 mL of superpure water was added, and elution was carried out in an 80°C thermostatic chamber. The test fluid was removed after 24 hours and taken as the first test sample (after 24 hours). This was repeated after every 24 hours, up to the seven day sample (after 168 hours).

● Analysis methods

TOC: Organic carbon analysis device
Na, K: Atomic absorption method
Others: ICP emission spectrometry

● Analysis equipment

Organic carbon analysis equipment: Total Organic Carbon Analyzer Shimadzu TOC-5000A
Atomic absorption analysis equipment: Seiko Electric Industry (now Seiko Instruments Inc.) SAS7500
ICP emission spectrometry equipment: Horiba JY238ULTRANCE

※ This chart is made by representative values, and it does not guarantee the value of the product.

Dimension list

PPS (ROD)

Standard
※ Manufactured to order

	PPS (NC)-SC	PPS (G40NC)	PPS (G40BK)
Specific gravity	1.35	1.58	1.58
Dia. mm	Length 1000	Length 1000	Length 1000
10	<input type="radio"/> 0.11	—	—
13	<input type="radio"/> 0.18	—	—
20	<input type="radio"/> 0.42	※ 0.50	<input type="radio"/> 0.50
25	<input type="radio"/> 0.66	※ 0.78	<input type="radio"/> 0.78
30	<input type="radio"/> 0.95	※ 1.12	<input type="radio"/> 1.12
40	<input type="radio"/> 1.70	※ 1.99	<input type="radio"/> 1.99
50	<input type="radio"/> 2.65	※ 3.10	<input type="radio"/> 3.10
60	<input type="radio"/> 3.82	※ 4.47	<input type="radio"/> 4.47
80	<input type="radio"/> 6.79	※ 7.94	<input type="radio"/> 7.94
100	<input type="radio"/> 10.60	※ 12.41	<input type="radio"/> 12.41
120	<input type="radio"/> 15.27	※ 17.86	<input type="radio"/> 17.86
150	<input type="radio"/> 23.86	※ 27.90	<input type="radio"/> 27.90

Unit: Weight (kg)

PPS2001 (SHT)

Standard
※ Manufactured to order

Thickness mm	Width mm	Length m	PPS 2001	Package unit
			Specific gravity 1.35	
0.2	500	200m	※ 27.00	1 roll
0.3	500	100m	<input type="radio"/> 20.30	1 roll
0.5	500	500mm	<input type="radio"/> 0.17	20 pieces
0.8	500	500mm	※ 0.27	20 pieces
1.0	500	500mm	<input type="radio"/> 0.34	10 pieces
2.0	500	500mm	<input type="radio"/> 0.68	10 pieces

Unit: Weight (kg)

TOPFINE™ (PLT)

Standard
※ Manufactured to order

	TOPFINE™ R1000	TOPFINE™ R8220
Specific gravity	1.83	1.67
Thickness mm	Width 100 × Length 200	Width 300 × Length 300
3	<input type="radio"/> 0.11	<input type="radio"/> 0.45
5	<input type="radio"/> 0.18	<input type="radio"/> 0.75
7.5	—	<input type="radio"/> 1.13
10	—	<input type="radio"/> 1.50
12.5	—	<input type="radio"/> 1.88
15	—	※ 2.25

Unit: Weight (kg)

PPS (PLT)

Standard
※ Manufactured to order

	PPS (NC)-SC	PPS (G40NC)	PPS (G40BK)
Specific gravity	1.35	1.58	1.58
Thickness mm	Width 500 × Length 1000	Width 500 × Length 1000	Width 500 × Length 1000
6	<input type="radio"/> 4.05	※ 4.74	<input type="radio"/> 4.74
10	<input type="radio"/> 6.75	※ 7.90	<input type="radio"/> 7.90
15	<input type="radio"/> 10.13	※ 11.85	<input type="radio"/> 11.85
20	<input type="radio"/> 13.50	※ 15.80	<input type="radio"/> 15.80
25	<input type="radio"/> 16.88	※ 19.75	<input type="radio"/> 19.75
30	<input type="radio"/> 20.25	※ 23.70	<input type="radio"/> 23.70
40	<input type="radio"/> 27.00	※ 31.60	<input type="radio"/> 31.60
50	<input type="radio"/> 33.75	※ 39.50	<input type="radio"/> 39.50
60	<input type="radio"/> 40.50	※ 47.40	<input type="radio"/> 47.40
80	<input type="radio"/> 54.00	※ 63.20	<input type="radio"/> 63.20
100	<input type="radio"/> 67.50	※ 79.00	<input type="radio"/> 79.00

Unit: Weight (kg)

Dimension list

N6-N66 (ROD)

Standard
 Manufactured to order

	N6 (NC)	N6 (M)	N66 (NC)
Specific gravity	1.14	1.14	1.14
Dia. mm	Length 1000	Length 1000	Length 1000
10	※ 0.09	※ 0.09	※ 0.09
15	※ 0.20	※ 0.20	※ 0.20
20	○ 0.36	※ 0.36	○ 0.36
30	○ 0.81	※ 0.81	○ 0.81
40	○ 1.43	※ 1.43	○ 1.43
50	○ 2.24	※ 2.24	○ 2.24
60	○ 3.22	※ 3.22	○ 3.22
70	※ 4.39	※ 4.39	※ 4.39
80	○ 5.73	※ 5.73	○ 5.73
90	※ 7.25	※ 7.25	※ 7.25
100	○ 8.95	※ 8.95	○ 8.95
120	○ 12.89	—	○ 12.89
160	○ 22.92	—	—
200	○ 35.81	—	—

	N6 (G30BK)	N66 (G30BK)
Specific gravity	1.36	1.36
Dia. mm	Length 1000	Length 1000
20	○ 0.43	○ 0.43
30	○ 0.96	○ 0.96
40	○ 1.71	○ 1.71
50	○ 2.67	○ 2.67
60	○ 3.85	○ 3.85
70	○ 5.23	○ 5.23
80	○ 6.84	○ 6.84
100	○ 10.68	○ 10.68

Unit: Weight (kg)

N6-N66 (PLT)

Standard
 Manufactured to order

	N6 (NC)	N6 (M)	N66 (NC)	N6 (G30BK)	N66 (G30BK)
Specific gravity	1.14	1.14	1.14	1.36	1.36
Thickness mm	Width 500 × Length 1000				
5	○ 2.85	※ 2.85	○ 2.85	—	—
6	※ 3.42	※ 3.42	※ 3.42	—	—
8	※ 4.56	※ 4.56	※ 4.56	—	—
10	○ 5.70	※ 5.70	○ 5.70	○ 6.80	○ 6.80
15	○ 8.55	—	○ 8.55	○ 10.20	○ 10.20
20	○ 11.40	※ 11.40	○ 11.40	○ 13.60	○ 13.60
25	※ 14.25	※ 14.25	※ 14.25	—	—
30	○ 17.10	※ 17.10	○ 17.10	○ 20.40	○ 20.40
40	○ 22.80	※ 22.80	※ 22.80	○ 27.20	○ 27.20
50	○ 28.50	—	—	○ 34.00	○ 34.00
60	※ 34.20	—	—	—	○ 40.80
70	※ 39.90	—	—	—	—
80	※ 45.60	—	—	—	○ 54.40
90	※ 51.30	—	—	—	—
100	※ 57.00	—	—	—	○ 68.00

Unit: Weight (kg)

Dimension list

N6 (SHT)

Standard
※ Manufactured to order

Thickness mm	Width mm	Length m	N6 (NC)	N6 (M)-1	Package unit
			Specific gravity 1.14	Specific gravity 1.14	
0.2	500	200	○ 0.11	※ 0.11	1 roll
0.25	500	200	※ 0.14	※ 0.14	
0.3	500	200	○ 0.17	※ 0.17	
0.35	500	100	※ 0.20	※ 0.20	
0.4	500	100	○ 0.23	※ 0.23	
0.5	500	100	○ 0.29	※ 0.29	
0.5	500	1	○ 0.29	※ 0.29	20 pieces
0.6	500	100	※ 0.34	※ 0.34	1 roll
0.8	500	50	○ 0.46	※ 0.46	
0.8	500	1	○ 0.46	※ 0.46	20 pieces
1.0	500	50	○ 0.57	※ 0.57	1 roll
1.0	500	1	○ 0.57	※ 0.57	20 pieces
1.5	500	25	※ 0.86	※ 0.86	1 roll
1.5	500	1	○ 0.86	※ 0.86	
2.0	500	1	○ 1.14	※ 1.14	
2.5	500	1	※ 1.43	※ 1.43	
3.0	500	1	※ 1.71	※ 1.71	
Unit: Weight (kg/m)					

N66 (SHT)

Standard
※ Manufactured to order

Thickness mm	Width mm	Length m	N66 (NC)	Package unit
			Specific gravity 1.14	
0.3	500	200	※ 0.17	1 roll
0.35	500	100	※ 0.20	
0.4	500	100	※ 0.23	
0.5	500	100	○ 0.29	
0.6	500	100	※ 0.34	
0.8	500	50	○ 0.46	
0.8	500	1	※ 0.46	20 pieces
1.0	500	50	○ 0.57	1 roll
1.0	500	1	※ 0.57	20 pieces
1.5	500	1	※ 0.86	10 pieces
2.0	500	1	○ 1.14	
2.5	500	1	※ 1.43	
3.0	500	1	※ 1.71	
Unit: Weight (kg/m)				

TOPFINE™ CF (PLT)

Standard
※ Manufactured to order

	N6 (CF20)	
Specific gravity	1.22	
Thickness mm	Width 300 × Length 500	Width 300 × Length 1000
30	※ 5.49	※ 11.0
60	○ 11.00	※ 22.0

Unit: Weight (kg)

N6 (CF30)

Specific gravity	1.28	
Thickness mm	Width 300 × Length 500	
30	※ 5.76	※ 11.5

Unit: Weight (kg)

TOPFINE™ CF (SHT)

Standard
※ Manufactured to order

Thickness mm	Width mm	Length m	N6 (CF20)	Package unit
			Specific gravity 1.22	
0.3	500	1	※ 0.18	10 pieces
		50	※ 0.18	1 roll
0.5	1000	1	※ 0.61	10 pieces
		50	○ 0.61	1 roll
1.0	1000	1	○ 1.22	10 pieces
		2	※ 1.22	5 pieces
1.5	1000	1	○ 1.83	5 pieces
		2	※ 1.83	3 pieces

Unit: Weight (kg/m)

Dimension list

POM (ROD)

Standard
 Manufactured to order

	POM (NC)	POM (BK)	POM (G25NC)
Specific gravity	1.41	1.41	1.59
Dia. mm	Length 1000	Length 1000	Length 1000
4	—	—	—
5	—	—	—
6	○ 0.04	○ 0.04	—
8	○ 0.07	○ 0.07	—
10	○ 0.11	○ 0.11	—
12.5	○ 0.17	○ 0.17	—
15	○ 0.25	○ 0.25	—
17.5	○ 0.34	○ 0.34	—
20	○ 0.44	○ 0.44	○ 0.50
22.5	○ 0.56	○ 0.56	—
25	○ 0.69	○ 0.69	—
30	○ 1.00	○ 1.00	○ 1.12
35	○ 1.36	○ 1.36	—
40	○ 1.77	○ 1.77	○ 2.00
45	○ 2.24	○ 2.24	—
50	○ 2.77	○ 2.77	○ 3.12
55	○ 3.35	○ 3.35	—
60	○ 3.99	○ 3.99	○ 4.50
65	○ 4.68	○ 4.68	—
70	○ 5.43	○ 5.43	—
75	○ 6.23	○ 6.23	—
80	○ 7.09	○ 7.09	○ 7.99
85	○ 8.00	○ 8.00	—
90	○ 8.97	○ 8.97	—
100	○ 11.07	○ 11.07	○ 12.49
110	○ 13.40	○ 13.40	—
120	○ 15.95	○ 15.95	—
130	○ 18.71	○ 18.71	—
140	○ 21.70	○ 21.70	—
150	○ 24.92	○ 24.92	—
160	○ 28.35	○ 28.35	—
180	○ 35.88	○ 35.88	—
200	○ 44.30	○ 44.30	—

POM (NC)	POM (BK)
1.41	1.41
Length 2000	Length 2000
—	—
—	—
○ 0.08	○ 0.08
○ 0.14	○ 0.14
○ 0.22	○ 0.22
○ 0.35	○ 0.35
○ 0.50	○ 0.50
○ 0.68	○ 0.68
○ 0.89	○ 0.89
○ 1.12	○ 1.12
○ 1.38	○ 1.38
○ 1.99	※ 1.99
※ 2.71	※ 2.71
※ 3.54	※ 3.54
※ 4.48	※ 4.48
※ 5.54	※ 5.54
※ 6.70	※ 6.70
※ 7.97	※ 7.97
※ 9.36	※ 9.36
※ 10.85	※ 10.85
※ 12.46	※ 12.46
※ 14.17	※ 14.17
※ 16.00	※ 16.00
※ 17.94	※ 17.94
※ 22.15	※ 22.15
※ 26.80	※ 26.80
※ 31.89	※ 31.89
※ 37.43	※ 37.43
※ 43.41	※ 43.41
※ 49.83	※ 49.83
※ 56.70	※ 56.70
※ 71.76	※ 71.76
※ 88.59	※ 88.59

Unit: Weight (kg)

POM (PLT)

Standard
 Manufactured to order

	POM (NC)	POM (BK)	POM (NC)	POM (BK)	POM (NC)
Specific gravity	1.41	1.41	1.41	1.41	1.41
Thickness mm	Width 500 × Length 1000	Width 500 × Length 1000	Width 600 × Length 1200	Width 600 × Length 1200	Width 600 × Length 2000
5	○ 3.53	○ 3.53	○ 5.08	○ 5.08	○ 8.46
6	○ 4.23	○ 4.23	○ 6.09	○ 6.09	○ 10.15
8	○ 5.64	○ 5.64	○ 8.12	○ 8.12	※ 13.54
10	○ 7.05	○ 7.05	○ 10.15	○ 10.15	※ 16.92
12	○ 8.46	○ 8.46	○ 12.18	○ 12.18	※ 20.30
15	○ 10.58	○ 10.58	○ 15.23	○ 15.23	※ 25.38
20	○ 14.10	○ 14.10	○ 20.30	○ 20.30	※ 33.84
25	○ 17.63	○ 17.63	○ 25.38	○ 25.38	※ 42.30
30	○ 21.15	○ 21.15	○ 30.46	○ 30.46	※ 50.76
35	○ 24.68	○ 24.68	○ 35.53	○ 35.53	※ 59.22
40	○ 28.20	○ 28.20	○ 40.61	○ 40.61	※ 67.68
45	○ 31.73	※ 31.73	—	—	—
50	○ 35.25	○ 35.25	○ 50.76	○ 50.76	—
60	○ 42.30	○ 42.30	○ 60.91	○ 60.91	—
70	○ 49.35	※ 49.35	—	—	—
80	○ 56.40	○ 56.40	—	—	—
90	○ 63.45	※ 63.45	—	—	—
100	○ 70.50	○ 70.50	—	—	—

Unit: Weight (kg)

	POM (NC)	POM (BK)	POM (NC)	POM (BK)
Specific gravity	1.41	1.41	1.41	1.41
Thickness mm	Width 1000 × Length 1000	Width 1000 × Length 1000	Width 1000 × Length 2000	Width 1000 × Length 2000
8	○ 11.28	—	※ 22.56	—
10	○ 14.10	※ 14.10	○ 28.20	※ 28.20
12	○ 16.92	※ 19.92	○ 33.84	※ 33.84
15	○ 21.15	※ 21.15	○ 42.30	※ 42.30
20	○ 28.20	※ 28.20	○ 56.40	※ 56.40
25	○ 35.25	※ 35.25	○ 70.50	※ 70.50
30	○ 42.30	※ 42.30	○ 84.60	※ 84.60
35	○ 49.35	※ 49.35	—	—
40	○ 56.40	※ 56.40	—	—
50	○ 70.50	※ 70.50	—	—

Unit: Weight (kg)

Dimension list

POM (ROD) Standard
※ Manufactured to order

	POM FD (BLUE)
Specific gravity	1.41
Dia. mm	Length 1000
30	※ 1.00
35	※ 1.36
40	※ 1.77
45	※ 2.24
50	※ 2.77
55	※ 3.35
60	※ 3.99
65	※ 4.68
70	※ 5.43
75	※ 6.23
80	※ 7.09
85	※ 8.00
90	※ 8.97
100	※ 11.07
110	※ 13.40
120	※ 15.95
130	※ 18.71
140	※ 21.70
150	※ 24.92
160	※ 28.35
180	※ 35.88
200	※ 44.30

Unit: Weight (kg)

POM (PLT) Standard
※ Manufactured to order

	POM FD (BLUE)
Specific gravity	1.41
Thickness mm	Width 600 × Length 1200
10	※ 10.15
12	※ 12.18
15	※ 15.23
20	※ 20.30
25	※ 25.38
30	※ 30.46
35	※ 35.53
40	※ 40.61
45	—
50	※ 50.76
60	※ 60.91
70	—
80	—
90	—
100	—

Unit: Weight (kg)

POM (ROD)

Standard
※ Manufactured to order

	POM (BLUE)	POM (RED)	POM (YELLOW)	POM (GREEN)
Specific gravity	1.41	1.41	1.41	1.41
Dia. mm	Length 1000	Length 1000	Length 1000	Length 1000
30	○ 1.00	※ 1.00	※ 1.00	※ 1.00
40	※ 1.77	※ 1.77	※ 1.77	※ 1.77
50	※ 2.77	※ 2.77	※ 2.77	※ 2.77
60	○ 3.99	○ 3.99	○ 3.99	○ 3.99
70	※ 5.43	※ 5.43	※ 5.43	※ 5.43
80	○ 7.09	※ 7.09	※ 7.09	※ 7.09
90	※ 8.97	※ 8.97	※ 8.97	※ 8.97
100	○ 11.07	※ 11.07	※ 11.07	※ 11.07

Unit: Weight (kg)

POM (PLT)

Standard
※ Manufactured to order

	POM (BLUE)	POM (RED)	POM (YELLOW)	POM (GRAY)	POM (GREEN)
Specific gravity	1.41	1.41	1.41	1.41	1.41
Thickness mm	Width 600 × Length 1200				
5	○ 5.08	※ 5.08	※ 5.08	※ 5.08	※ 5.08
6	※ 6.09	※ 6.09	※ 6.09	※ 6.09	※ 6.09
8	※ 8.12	※ 8.12	※ 8.12	※ 8.12	※ 8.12
10	○ 10.15	※ 10.15	※ 10.15	※ 10.15	※ 10.15
12	※ 12.18	※ 12.18	※ 12.18	※ 12.18	※ 12.18
15	※ 15.23	※ 15.23	※ 15.23	※ 15.23	※ 15.23
20	○ 20.30	※ 20.30	※ 20.30	※ 20.30	※ 20.30
25	※ 25.38	※ 25.38	※ 25.38	※ 25.38	※ 25.38
30	○ 30.46	○ 30.46	○ 30.46	○ 30.46	○ 30.46

Unit: Weight (kg)

Dimension list

POM (SHT)

Standard
※ Manufactured to order

Thickness mm	Width mm	Length m	POM (NC)	POM (BK)	Package unit
			Specific gravity 1.41	Specific gravity 1.41	
0.2	500	100	○ 0.14	※ 0.14	1 roll
0.25	500	100	※ 0.18	※ 0.18	
0.3	500	100	○ 0.21	※ 0.21	
0.35	500	100	※ 0.25	※ 0.25	
0.4	500	100	※ 0.28	※ 0.28	
0.5	500	100	○ 0.35	※ 0.35	
0.5	500	1	○ 0.35	※ 0.35	
0.8	500	1	○ 0.56	※ 0.56	
1.0	500	1	○ 0.71	○ 0.71	
1.5	500	1	○ 1.06	※ 1.06	
2.0	500	1	○ 1.41	※ 1.41	10 pieces
2.5	500	1	※ 1.76	※ 1.76	
3.0	500	1	○ 2.12	※ 2.12	
4.0	500	1	○ 2.82	※ 2.82	
					5 pieces

Unit: Weight (kg/m)

POM (ROD)

Standard
※ Manufactured to order

	POM (NC) Super	POM (BK) Super
Specific gravity	1.41	1.41
Dia. mm	Length 1000	
30	○ 1.00	※ 1.00
35	○ 1.36	※ 1.36
40	○ 1.77	※ 1.77
45	○ 2.24	※ 2.24
50	○ 2.77	※ 2.77
55	※ 3.35	※ 3.35
60	○ 3.99	※ 3.99
65	※ 4.68	※ 4.68
70	○ 5.43	※ 5.43
75	※ 6.23	※ 6.23
80	○ 7.09	※ 7.09
85	○ 8.00	※ 8.00
90	○ 8.97	※ 8.97
100	○ 11.07	※ 11.07
110	○ 13.40	※ 13.40
120	○ 15.95	※ 15.95
130	○ 18.71	※ 18.71
140	※ 21.70	※ 21.70
150	○ 24.92	※ 24.92
160	※ 28.35	※ 28.35
180	○ 35.88	※ 35.88
200	○ 44.30	※ 44.30

Unit: Weight (kg)

POM (ROD)

Standard
※ Manufactured to order

	POM (NC) Super	POM (BK) Super
Specific gravity	1.41	1.41
Dia.×Length		
250×1000L	○ 69.18	○ 69.18
250×500L	※ 34.59	※ 34.59

Unit: Weight (kg)

Dimension list

POM (PLT)

Standard
※ Manufactured to order

	POM (NC) Super	POM (BK) Super	POM (NC) Super	POM (BK) Super	POM (NC) Super	POM (BK) Super
Specific gravity	1.41	1.41	1.41	1.41	1.41	1.41
Thickness mm	Width 500 × Length 1000	Width 500 × Length 1000	Width 600 × Length 1200	Width 600 × Length 1200	Width 1000 × Length 1000	Width 1000 × Length 1000
5	○ 3.53	○ 3.53	○ 5.08	○ 5.08	—	—
6	○ 4.23	○ 4.23	○ 6.09	○ 6.09	—	—
8	○ 5.64	○ 5.64	○ 8.12	○ 8.12	※ 11.28	—
10	○ 7.05	○ 7.05	○ 10.15	○ 10.15	○ 14.10	※ 14.10
12	○ 8.46	○ 8.46	○ 12.18	○ 12.18	○ 16.92	※ 16.92
15	○ 10.58	○ 10.58	○ 15.23	○ 15.23	○ 21.15	※ 21.15
20	○ 14.10	○ 14.10	○ 20.30	○ 20.30	○ 28.20	※ 28.20
25	○ 17.63	○ 17.63	○ 25.38	○ 25.38	○ 35.25	※ 35.25
30	○ 21.15	○ 21.15	○ 30.46	○ 30.46	○ 42.30	※ 42.30
35	○ 24.68	○ 24.68	○ 35.53	○ 35.53	※ 49.35	※ 49.35
40	○ 28.20	○ 28.20	○ 40.61	○ 40.61	○ 56.40	※ 56.40
45	※ 31.73	※ 31.73	—	—	—	—
50	○ 35.25	○ 35.25	○ 50.76	○ 50.76	○ 70.50	※ 70.50
60	○ 42.30	○ 42.30	○ 60.91	○ 60.91	—	—
70	○ 49.35	※ 49.35	—	—	—	—
80	○ 56.40	※ 56.40	—	—	—	—
90	○ 63.45	※ 63.45	—	—	—	—
100	○ 70.50	※ 70.50	—	—	—	—

Unit: Weight (kg)

PBT (ROD)

Standard
※ Manufactured to order

	PBT (NC)	PBT (G30NC)
Specific gravity	1.31	1.53
Dia. mm	Length 1000	Length 1000
20	○ 0.41	○ 0.48
30	○ 0.93	○ 1.07
40	○ 1.65	○ 1.91
50	※ 2.57	※ 2.98
60	○ 3.70	○ 4.30
80	○ 6.58	○ 7.64
100	○ 10.29	○ 11.94

Unit: Weight (kg)

PBT (PLT)

Standard
※ Manufactured to order

	PBT (G30NC)
Specific gravity	1.53
Thickness mm	Width 500 × Length 1000
10	○ 7.60
15	○ 11.40
20	○ 15.20
30	○ 22.80
50	○ 38.00

Unit: Weight (kg)

Hytrell® (ROD)

Standard
※ Manufactured to order

	4047	4767	5557	6347	7247	2571	2751
Specific gravity	1.12	1.15	1.19	1.24	1.26	1.27	1.28
Dia. mm	Length 300						
60	※ 0.95	※ 0.97	○ 1.01	○ 1.05	○ 1.07	※ 1.09	※ 1.08
80	※ 1.69	※ 1.73	※ 1.79	○ 1.87	※ 1.90	※ 1.93	※ 1.91

Unit: Weight (kg)

Dimension list

PC (PLT)

Standard
 Manufactured to order

	PC (NC)-I	PC (BK)	PC(G20BK)
Specific gravity	1.2	1.2	1.33
Thickness mm	Width 500 × Length 1000	Width 500 × Length 1000	Width 500 × Length 1000
8	※ 4.80	○ 4.80	—
10	○ 6.00	○ 6.00	※ 6.65
12	※ 7.20	※ 7.20	※ 7.98
15	○ 9.00	○ 9.00	※ 9.98
20	○ 12.00	○ 12.00	※ 13.30
25	○ 15.00	○ 15.00	※ 16.63
30	○ 18.00	○ 18.00	※ 19.95
35	○ 21.00	○ 21.00	※ 23.28
40	○ 24.00	○ 24.00	※ 26.60
50	○ 30.00	○ 30.00	※ 33.25
60	○ 36.00	○ 36.00	—
70	※ 42.00	※ 42.00	—
80	○ 48.00	※ 48.00	—
100	○ 60.00	※ 60.00	—

Unit: Weight (kg)

ABS (ROD)

	ABS (NC)
Specific gravity	1.04
Dia. mm	Length 1000
20	○ 0.33
22.5	※ 0.41
25	○ 0.51
30	○ 0.74
35	※ 1.00
40	○ 1.31
45	※ 1.65
50	○ 2.04
55	※ 2.47
60	○ 2.94
65	※ 3.45
70	○ 4.00
75	※ 4.59
80	○ 5.23
85	※ 5.90
90	○ 6.62
100	○ 8.17
110	※ 9.88
120	○ 11.76
130	※ 13.80
140	○ 16.01
150	※ 18.38
160	○ 20.91
180	※ 26.46
200	○ 32.67

Unit: Weight (kg)

ABS (PLT)

Standard
 Manufactured to order

	ABS (NC)	ABS (BK)
Specific gravity	1.04	1.04
Thickness mm	Width 500 × Length 1000	Width 500 × Length 1000
10	○ 5.20	○ 5.20
12	※ 6.24	※ 6.24
15	○ 7.80	○ 7.80
20	○ 10.40	○ 10.40
25	○ 13.00	○ 13.00
30	○ 15.60	○ 15.60
35	○ 18.20	○ 18.20
40	○ 20.80	○ 20.80
50	○ 26.00	○ 26.00
60	○ 31.20	※ 31.20
70	※ 36.40	※ 36.40
80	○ 41.60	※ 41.60
90	※ 46.80	※ 46.80
100	○ 52.00	※ 52.00

Unit: Weight (kg)

PC/ABS (PLT)

Standard
 Manufactured to order

	PC/ABS-F (BK)
Specific gravity	1.19
Thickness mm	Width 500 × Length 1000
10	○ 5.95
12	※ 7.14
15	○ 8.93
20	○ 11.90
25	○ 14.88
30	○ 17.85
35	○ 20.82
40	○ 23.80
50	○ 29.75
60	○ 35.70
70	※ 41.65
80	○ 47.60
100	※ 59.50

Unit: Weight (kg)

ABS (NC) Super, ABS (BK) Super

	ABS (NC) Super	ABS (BK) Super	ABS (NC) Super	ABS (BK) Super
Specific gravity	1.04	1.04	1.04	1.04
Thickness mm	Width 500 × Length 1000	Width 500 × Length 1000	Width 600 × Length 1200	Width 600 × Length 1200
10	○ 5.20	○ 5.20	○ 7.49	※ 7.49
12	※ 6.24	※ 6.24	※ 8.99	※ 8.99
15	○ 7.80	○ 7.80	○ 11.23	※ 11.23
20	○ 10.40	○ 10.40	○ 14.98	※ 14.98
25	○ 13.00	○ 13.00	○ 18.72	※ 18.72
30	○ 15.60	○ 15.60	○ 22.46	※ 22.46
35	○ 18.20	○ 18.20	○ 26.21	※ 26.21
40	○ 20.80	○ 20.80	○ 29.95	※ 29.95
50	○ 26.00	○ 26.00	○ 37.44	※ 37.44
60	○ 31.20	○ 31.20	○ 44.93	※ 44.93
70	○ 36.40	※ 36.40	—	—
80	○ 41.60	※ 41.60	○ 59.90	※ 59.90
90	※ 46.80	※ 46.80	—	—
100	○ 52.00	※ 52.00	○ 74.88	※ 74.88

Unit: Weight (kg)

Dimension list

PP (ROD) Standard
※ Manufactured to order

	PP (NC)
Specific gravity	0.91
Dia. mm	Length 1000
20	○ 0.29
22.5	※ 0.36
25	○ 0.45
30	○ 0.64
35	○ 0.88
40	○ 1.14
45	○ 1.45
50	○ 1.79
55	○ 2.16
60	○ 2.57
65	※ 3.02
70	○ 3.50
75	※ 4.02
80	○ 4.57
85	※ 5.16
90	○ 5.79
100	○ 7.15
110	※ 8.65
120	○ 10.29
130	※ 12.08
140	○ 14.01
150	※ 16.08
160	○ 18.30
180	※ 23.16
200	○ 28.59

Unit: Weight (kg)

ABS (SHT)

Standard
※ Manufactured to order

Thickness mm	Width × Length mm	ABS (NC)	ABS (BK)	ABS (WH)	ABS 610-AE1	Package unit
		Specific gravity 1.07	Specific gravity 1.07	Specific gravity 1.07	Specific gravity 1.07	
0.1~1.5	—	—	—	—	—	—
1.0	1000×2000	○ 2.14	○ 2.14	○ 2.14	—	10 pieces
1.5	1000×2000	※ 3.21	※ 3.21	※ 3.21	—	
2.0	1000×2000	○ 4.28	○ 4.28	○ 4.28	—	
2.5	1000×2000	※ 5.35	※ 5.35	※ 5.35	—	
3.0	1000×2000	○ 6.42	○ 6.42	○ 6.42	—	
4.0	1000×2000	○ 8.56	※ 8.56	※ 8.56	—	
5.0	1000×2000	○ 10.70	○ 10.70	※ 10.70	—	3 pieces

Unit: Weight (kg)

Note) As for ABS 610-AE1, please ask for the dimension and productive terms.

PP-PE (SHT)

Standard
※ Manufactured to order

Thickness mm	Width × Length mm	PP (NC)	PP (BK)	PE (NC)	Package unit
		Specific gravity 0.91	Specific gravity 0.91	Specific gravity 0.96	
1.0	1000×2000	※ 1.82	※ 1.82	※ 1.92	10 pieces
1.5	1000×2000	※ 2.73	※ 2.73	※ 2.88	
2.0	1000×2000	※ 3.64	○ 3.64	※ 3.84	
2.5	1000×2000	※ 4.55	※ 4.55	※ 4.80	
3.0	1000×2000	○ 5.46	※ 5.46	※ 5.76	
3.5	1000×2000	※ 6.37	※ 6.37	※ 6.72	
4.0	1000×2000	※ 7.28	※ 7.28	※ 7.68	
5.0	1000×2000	○ 9.10	※ 9.10	※ 9.60	3 pieces

Unit: Weight (kg)

AE Series (PLT)

Standard
※ Manufactured to order

	TI530-AE3
Specific gravity	1.55
Thickness mm	Width 96 × Length 96
10	※ 0.14
12.5	※ 0.18
15	—
20	※ 0.29
30	※ 0.43

PEEK 430-AE3

PPS 230-AE3

Specific gravity	1.33		1.40	
	Width 300 × Length 500	Width 300 × Length 1000	Width 500 × Length 500	Width 500 × Length 1000
10	○ 2.00	○ 4.00	○ 3.50	○ 7.00
20	○ 3.99	○ 7.98	○ 7.00	○ 14.00
30	○ 5.99	※ 11.98	○ 10.50	○ 21.00

Unit: Weight (kg)

Dimension list

AE Series (ROD) Standard
 Manufactured to order

POM131-AE3	
Specific gravity	1.43
Dia. mm	Length 1000
20	<input type="radio"/> 0.45
30	<input type="radio"/> 1.01
40	<input type="radio"/> 1.80
50	<input type="radio"/> 2.81

Unit: Weight (kg)

AE Series (PLT) Standard
 Manufactured to order

	POM131-AE3	ABS610-AE1
Specific gravity	1.43	1.05
Thickness mm	Width 600 × Length 1200	Width 600 × Length 1200
8	<input type="radio"/> 8.24	—
10	<input type="radio"/> 10.30	<input type="radio"/> 7.56
12	<input checked="" type="radio"/> 12.36	—
15	<input type="radio"/> 15.44	<input type="radio"/> 11.34
20	<input type="radio"/> 20.59	<input type="radio"/> 15.12
25	<input checked="" type="radio"/> 25.74	<input checked="" type="radio"/> 18.90
30	<input type="radio"/> 30.89	<input type="radio"/> 22.68
35	<input checked="" type="radio"/> 36.04	—
40	<input checked="" type="radio"/> 41.18	<input checked="" type="radio"/> 30.24
50	<input type="radio"/> 51.48	<input type="radio"/> 37.80

Unit: Weight (kg)

Note) As for POM110-AE1, please ask for the dimension and productive terms.

Toray Plastics Precision Co.,Ltd.

Head Office

Nihonbashi Nichigin-Dori Bldg., 3rd FL.,
4-6-7Nihonbashi-Hongokucho, Chuo-ku, Tokyo
Tel: +81-3-3241-6817 (Direct)
Tel: +81-3-3241-3972 (Main) Fax: +81-3-3270-5247

<https://www.toplaseiko.com/>



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JQA-QM9841



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JQA-EM1548: Head Office/Sales offices/Mishima factory/
Koriyama factory/Kawaguchi die factory
JQA-EM0535: Okazaki factory

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