

GLAMIDE™ Agenda

- GF reinforced wear-resistant polyamide resin “TY-262LS” ← **New**
- Non-reinforced and sliding polyamide resin “T-656E” ← **New**
- Non-reinforced and Non-halogen flame retardant polyamide resin “T-808”
- Non-reinforced impact resistant polyamide resin “T-823SA”
- Super heat aging resistance polyamide resin “HR-252GFZ”
- Super heat aging resistance polyamide resin “HR-952GFZ”
- GF reinforced and sliding polyamide resin “T-656EG10”
- GF reinforced polyamide resin for blow molding “TY-131GC”
- GF reinforced and low warpage polyamide resin “JF-152DG”
- High rigidity and low warpage polyamide resin “JF-792DG”
- Carbon fiber high filling polyamide resin “TY-671C”
- Carbon fiber high filling polyamide resin “TY-665C”
- High strength and low warpage polyamide resin “TY-891G60S”
- High rigidity and sliding polyamide Resin “TY-791G60”
- High rigidity and low warpage polyamide resin “TY-791HQ”
- High impact polyamide resin “TY-722GDQ” and “TY-752GDQ”
- Ultra-High rigidity polyamide resin “JF-30G”

GLAMIDE™ GF-reinforced wear-resistant Polyamide resin “TY-262LS”

Features

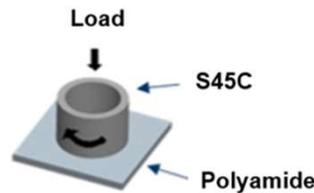
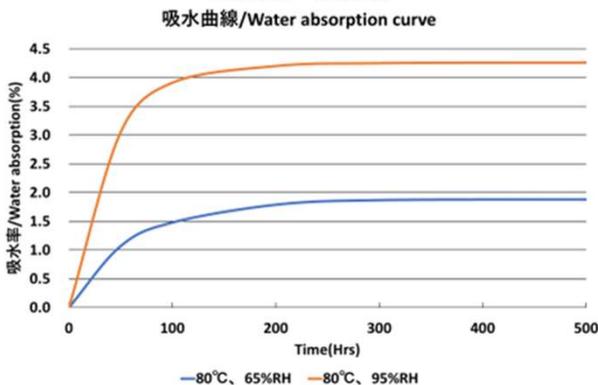
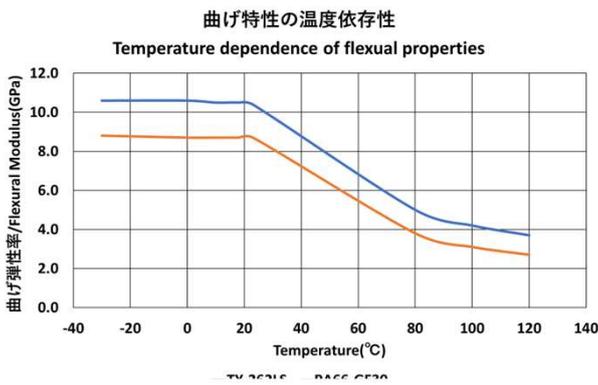
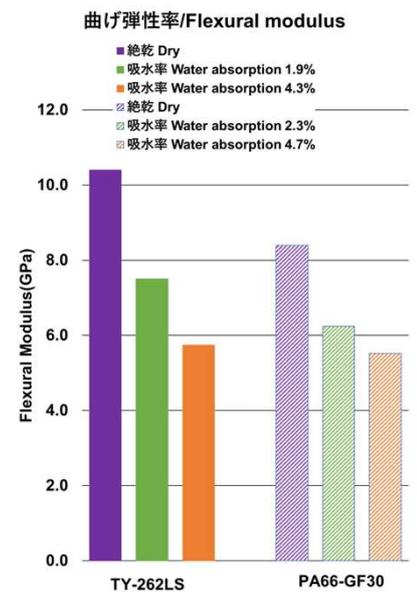
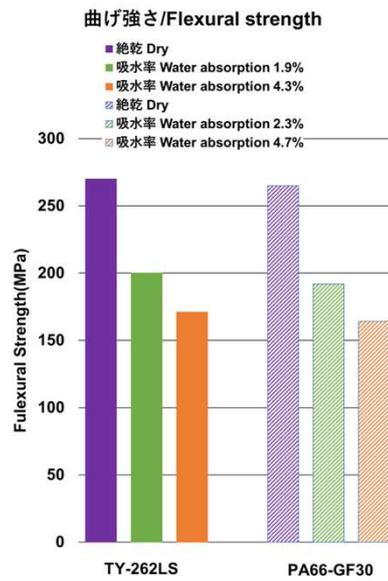
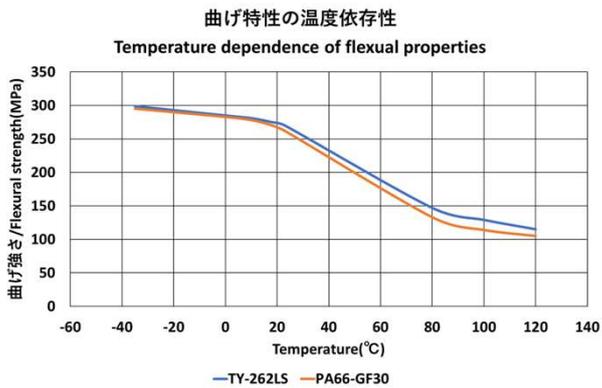
- GF reinforced
- Wear resistance
- High strength
- High impact

Applications

- Bearing
 - Gear
 - Chain guide
 - Automotive parts
 - Industrial parts
- etc.

Spec · Quality

	Unit	GLAMIDE™ TY-262LS	General PA66-GF30	
Features		GF reinforced, Wear resistance	Standard	
ISO Material Indication		>PA66-GF35<	>PA66-GF30<	
Density	g/cm ³	1.39	1.37	
Flexural strength	MPa	270	260	
Flexural modulus	GPa	10.4	8.7	
Charpy notched impact strength	-40℃	kJ/m ²	10	9
	0℃	kJ/m ²	10	9
	23℃	kJ/m ²	11	10



	Surface pressure MPa	Rotational speed cm/sec	Coefficient of friction		Amount of wear mg/hr
			Static	Dynamic	
TY-262LS	0.45	30	0.59	0.40	8
	0.98	30	0.44	0.37	8
	3.00	30	0.23	0.23	17
PA66-GF30	0.45	30	0.27	0.21	4
	0.98	30	0.32	0.37	8
	3.00	30	0.23	0.23	688

*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ Non-reinforced and sliding Polyamide resin “T-656E”

Features

- Non-reinforced
- Abrasion resistance
- Sliding
- Shock resistance

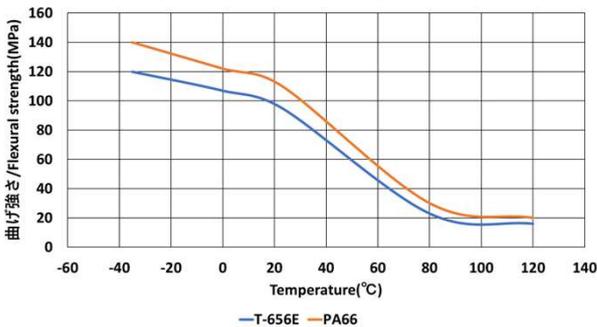
Applications

- Door checker
- Gear
- Automotive parts
- Industrial parts etc.

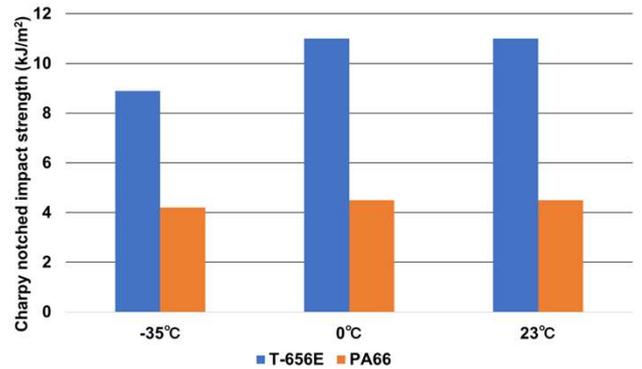
Spec · Quality

	Unit	GLAMIDE™ T-656E	General PA66
Features		Non-reinforced, Sliding	Standard
ISO Material Indication		>PA66<	>PA66<
Density	g/cm ³	1.12	1.14
Flexural strength	MPa	96	110
Flexural modulus	GPa	2.4	2.8
Charpy notched impact strength	-40℃	kJ/m ²	9
	0℃	kJ/m ²	11
	23℃	kJ/m ²	11

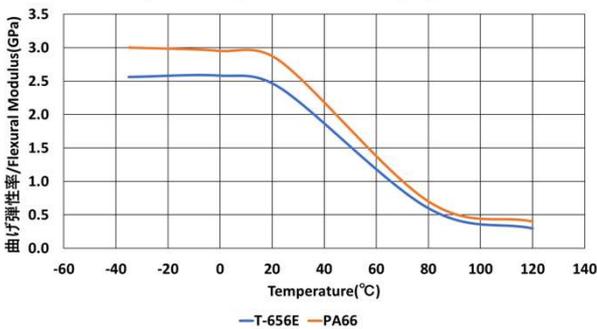
曲げ特性の温度依存性
Temperature dependence of flexural properties



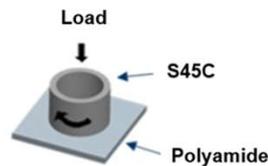
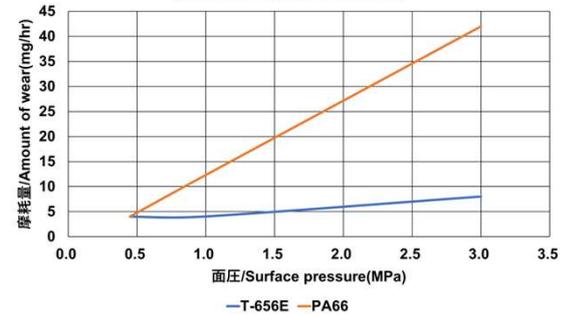
耐衝撃性 / Shock resistance



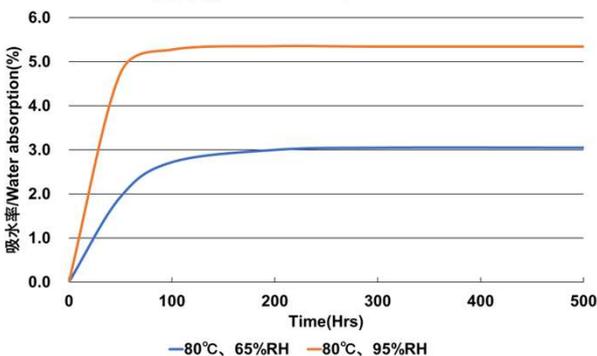
曲げ特性の温度依存性
Temperature dependence of flexural properties



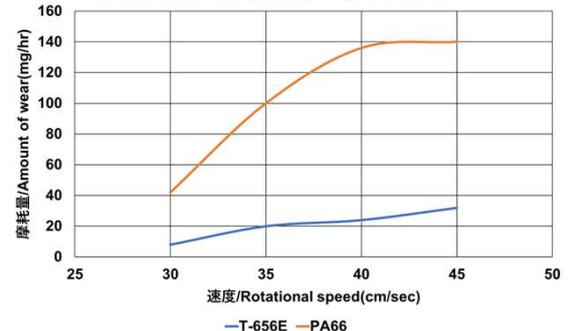
Surface pressure dependence
(rotational speed 30cm/sec)



吸水曲線/Water absorption curve



Speed dependency (surface pressure 3.0MPa)



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GLAMIDE™ Non-reinforced and Non-halogen flame retardant Polyamide Resin “T-808”

Features

- Non - halogen flame retardant
- Non - reinforced
- Good appearance
- Colorable

Applications

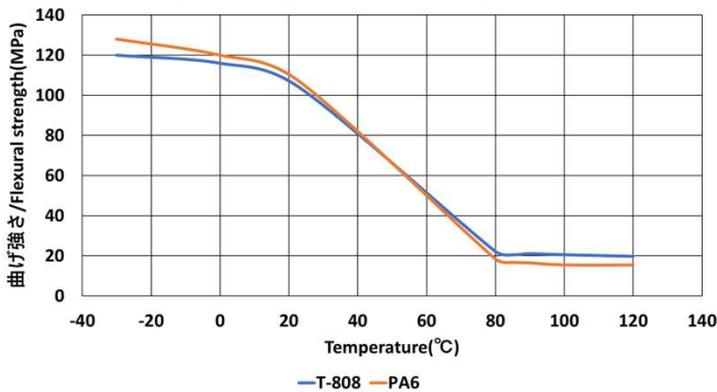
- Automotive parts
- Electrical and electronic parts
- Sporting goods
- Industrial parts etc.

Spec · Quality

	Unit	GLAMIDE™ T-808	General PA6
Features		Non-halogen flame retardant	Standard
ISO Material Indication		>PA6-FR(30) <	>PA6<
Density	g/cm ³	1.21	1.13
Flexural strength	MPa	104	93
Flexural modulus	GPa	3.9	2.3
Charpy notched impact strength	-40℃	kJ/m ²	3
	0℃	kJ/m ²	3
	23℃	kJ/m ²	4
Flame retardant, 0.8mmt		V-0 equivalent	HB equivalent

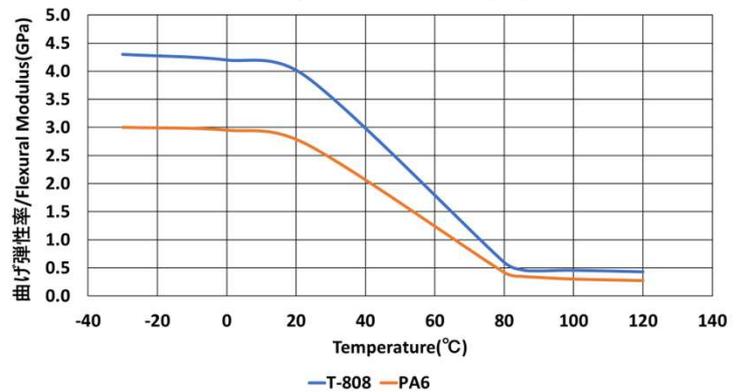
曲げ特性の温度依存性

Temperature dependence of flexural properties

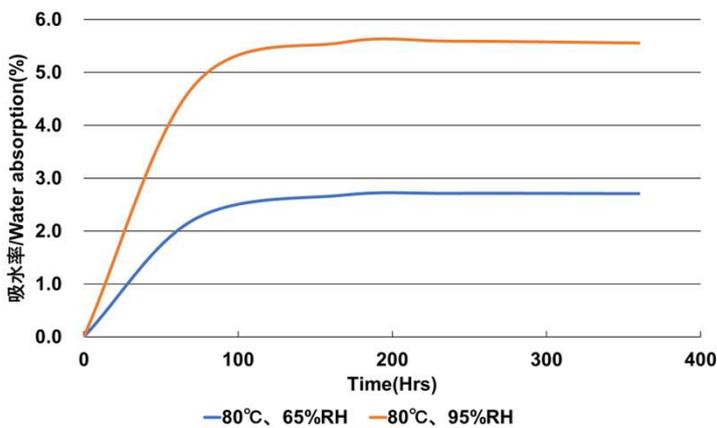


曲げ特性の温度依存性

Temperature dependence of flexural properties

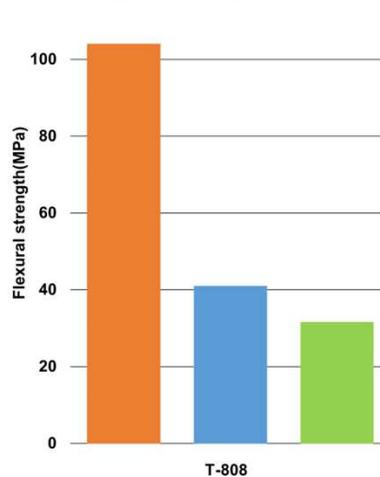


吸水曲線/Water absorption curve



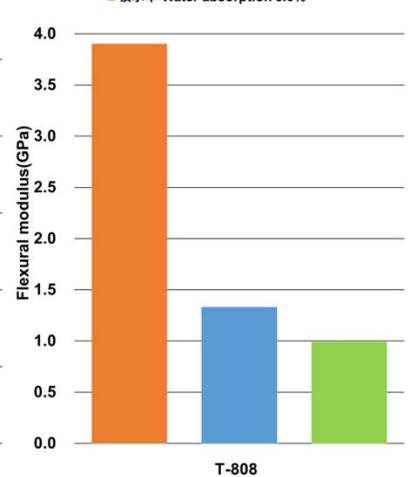
曲げ強さ/Flexural strength

■ 絶乾 Dry
■ 吸水率 Water absorption 2.7%
■ 吸水率 Water absorption 5.6%



曲げ弾性率/Flexural modulus

■ 絶乾 Dry
■ 吸水率 Water absorption 2.7%
■ 吸水率 Water absorption 5.6%



*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ Non-reinforced impact resistant Polyamide Resin “T-823SA”

Features

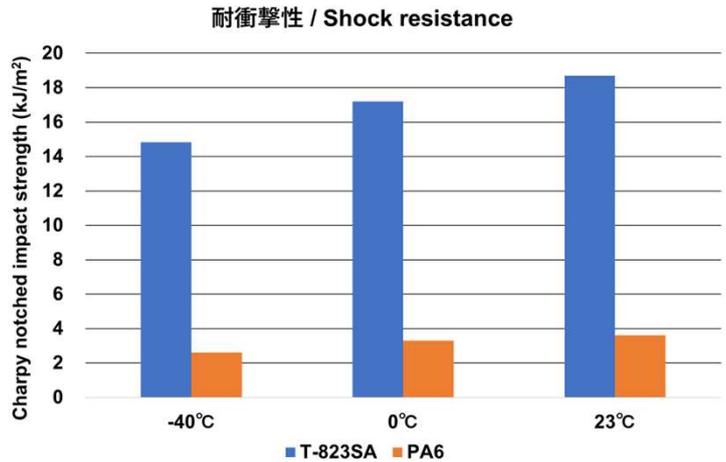
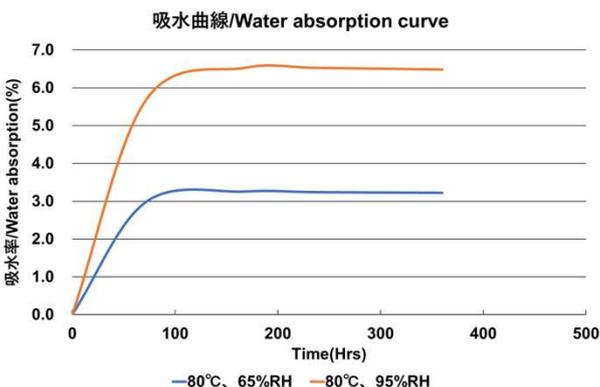
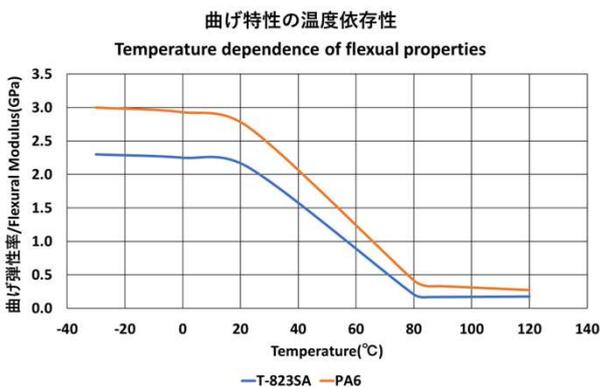
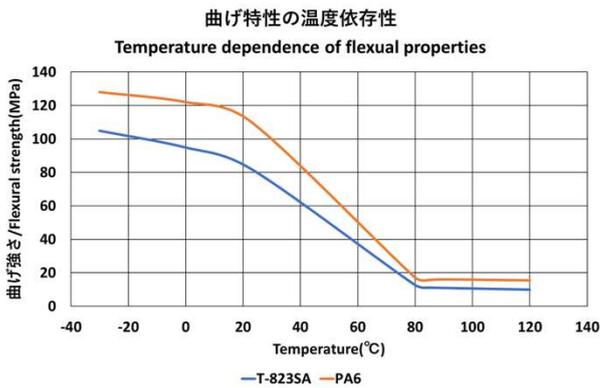
- Low specific gravity
- High Impact
- Elastic
- Injection molding

Applications

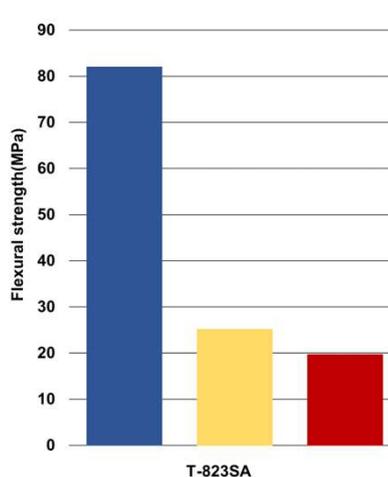
- Automotive parts
 - Electrical and electronic parts
 - Sporting goods
 - Clock parts
 - Industrial parts
- etc.

Spec · Quality

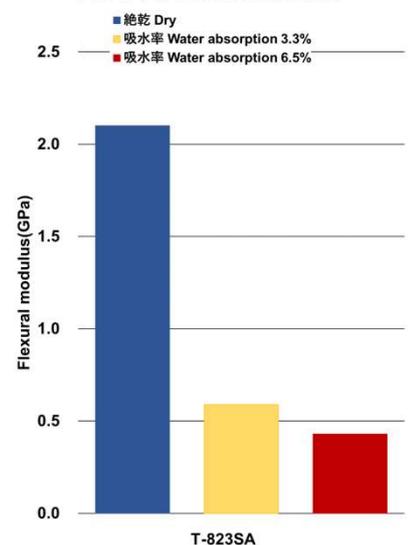
	Unit	GLAMIDE™ T-823SA	General PA6
Features		High impact, Elastic	Standard
ISO Material Indication		>PA6-I<	>PA6<
Density	g/cm ³	1.09	1.13
Flexural strength	MPa	82	93
Flexural modulus	GPa	2.1	2.3
Charpy notched impact strength	-40℃	kJ/m ²	3
	0℃	kJ/m ²	3
	23℃	kJ/m ²	4



曲げ強さ/Flexural strength



曲げ弾性率/Flexural modulus



*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ Super heat aging resistance Polyamide Resin “HR-252GFZ”

Features

- Super heat aging resistance
- GF reinforced
- Good appearance

Applications

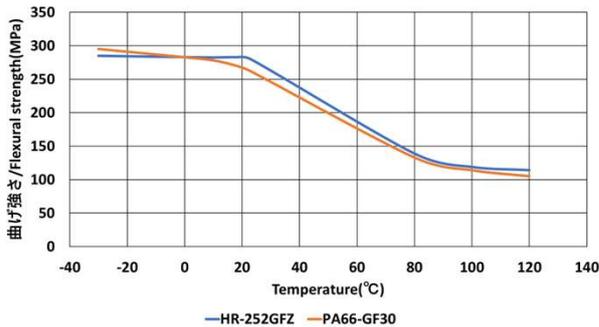
- Air-duct parts
- Engine compartment parts
- Electrical and electronic parts
- Industrial parts etc.

Spec · Quality

	Unit	GLAMIDE™ HR-252GFZ	General PA66-GF30
Features		GF reinforced, Super heat aging resistance	Standard
ISO Material Indication		>PA66-GF30<	>PA66-GF30<
Density	g/cm ³	1.35	1.37
Flexural strength	MPa	280	265
Flexural modulus	GPa	8.9	8.4
Charpy notched impact strength	-40℃	kJ/m ²	9
	0℃	kJ/m ²	9
	23℃	kJ/m ²	10

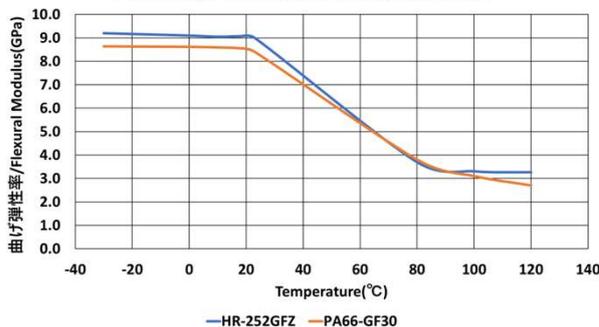
曲げ特性の温度依存性

Temperature dependence of flexural properties

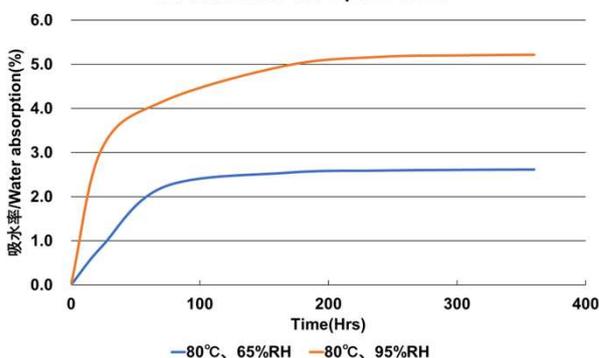


曲げ特性の温度依存性

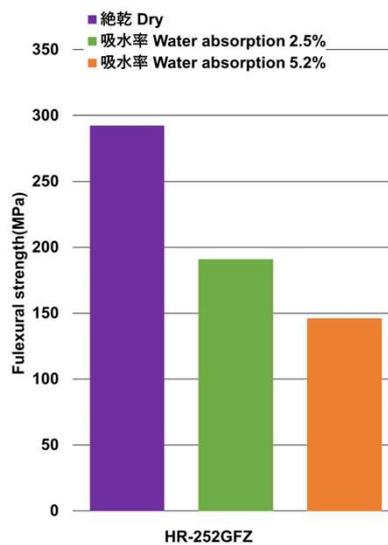
Temperature dependence of flexural properties



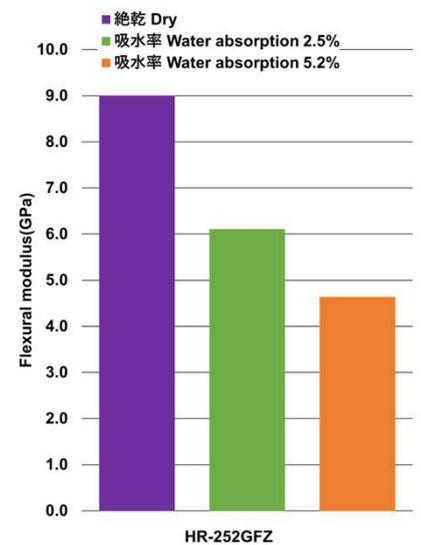
吸水曲線/Water absorption curve



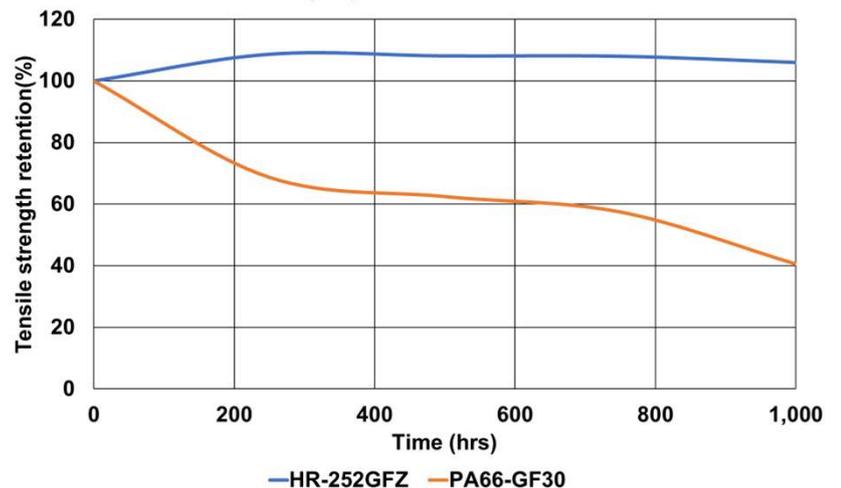
曲げ強さ/Flexural strength



曲げ弾性率/Flexural modulus



Heat aging resistance at 200℃



*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ Super heat aging resistance Polyamide Resin “HR-952GFZ”

Features

- Super heat aging resistance
- CaCl₂ resistance
- Good vibration welding
- Good appearance

Applications

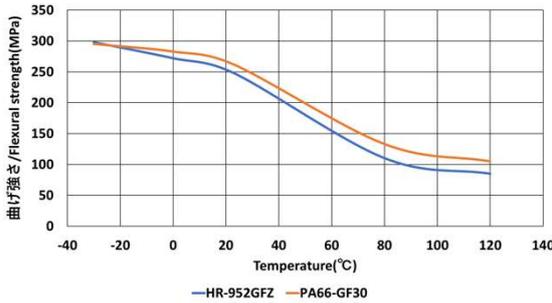
- Air-duct parts
- Engine compartment parts
- Electrical and electronic parts
- Industrial parts etc.

Spec · Quality

	Unit	GLAMIDE™ HR-952GFZ	General PA66-GF30
Features		Super heat aging resistance, CaCl ₂ resistance	Standard
ISO Material Indication		>PA6+PA610-GF30<	>PA66-GF30<
Density	g/cm ³	1.35	1.37
Flexural strength	MPa	248	265
Flexural modulus	GPa	8.6	8.4
Charpy notched impact strength	-40℃	kJ/m ²	9
	0℃	kJ/m ²	10

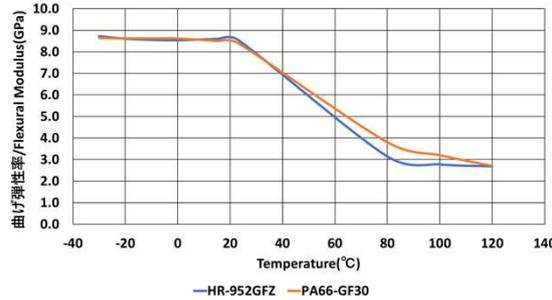
曲げ特性の温度依存性

Temperature dependence of flexural properties

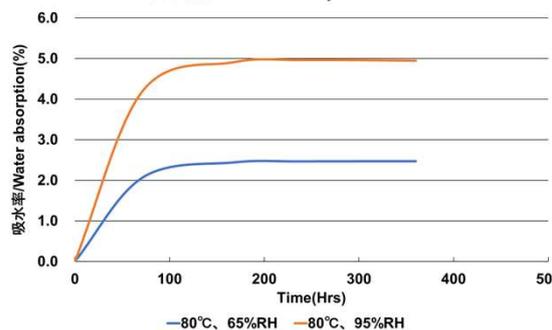


曲げ特性の温度依存性

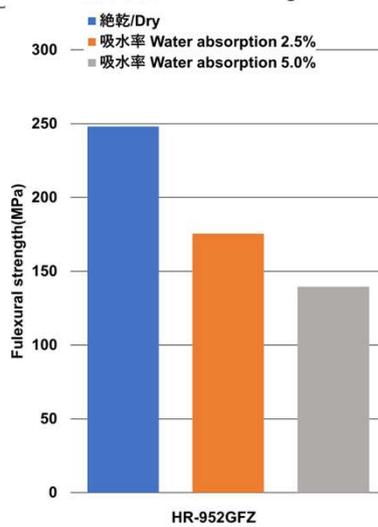
Temperature dependence of flexural properties



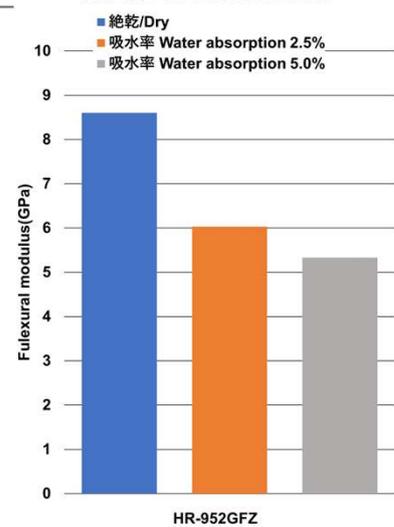
吸水曲線/Water absorption curve



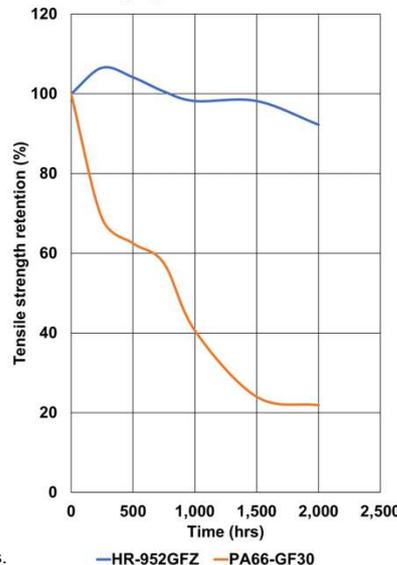
曲げ強さ/Flexural strength



曲げ弾性率/Flexural modulus



Heat aging resistance at 200℃



耐塩カル CaCl₂ resistant

cycle	HR-952GFZ	PA6-GF30
1	✓	✓
2	✓	✗
3	✓	✗
4	✓	✗
5	✓	✗
6	✓	✗
7	✓	✗
8	✗	✗

Pretreatment: 50℃, 95%Rh, 24hrs

① Coating 10%CaCl₂

② Leave for 30min

③ 145℃, 2hrs

④ Room temp, 6hrs

⑤ 50℃, 95%Rh, 15.5hrs

Judgment ;

✓ No change, ✗Crack

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GLAMIDE™ GF reinforced and sliding polyamide resin “T-656EG10”

Features

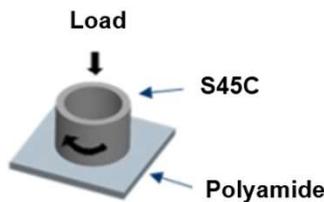
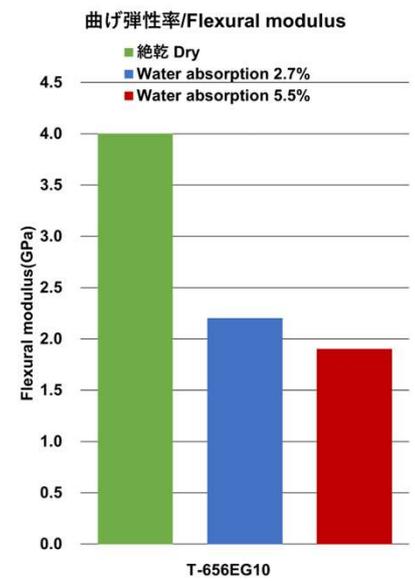
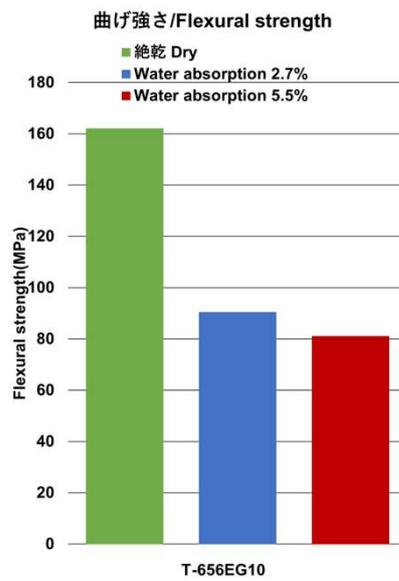
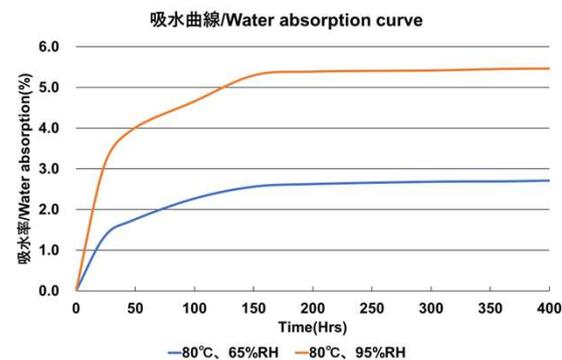
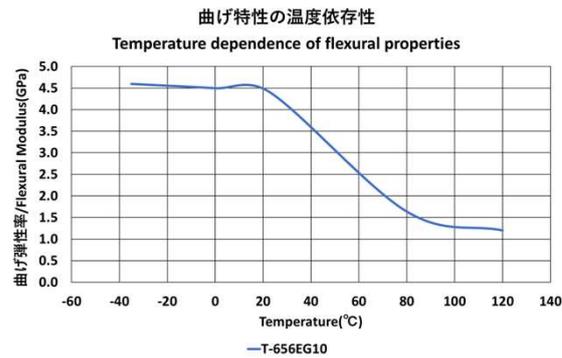
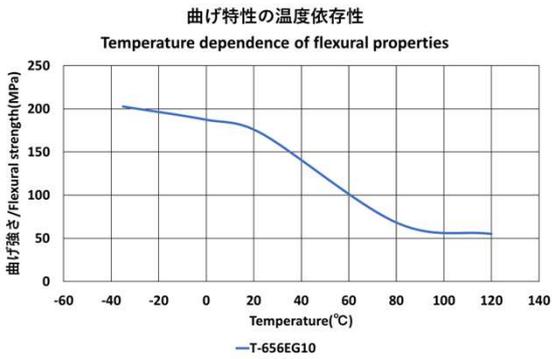
- GF reinforced
- Good sliding
- High strength
- Good appearance

Applications

- Bearing Parts
- Conveying Chains
- Gear
- Industrial components, etc.

Spec · Quality

		Unit	GLAMIDE™ T-656EG10
Features			GF reinforced, Good sliding
ISO Material Indication			>PA66-GF10<
Density		g/cm ³	1.17
Flexural strength		MPa	132
Flexural modulus		GPa	3.2
Charpy notched impact strength	-40℃	kJ/m ²	3
	0℃	kJ/m ²	3
	23℃	kJ/m ²	4



Rotational speed : 30cm/sec

荷重 Load	静摩擦係数 Coefficients of Static Friction	動摩擦係数 Coefficients of Sliding Friction	摩耗量 [mg/hr] Amount of wear
0.45MPa	0.26	0.45	2
0.98MPa	0.53	0.53	6
3.0MPa	0.83	0.73	10

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GLAMIDE™ GF reinforced polyamide resin for blow molding “TY-131GC”

Features

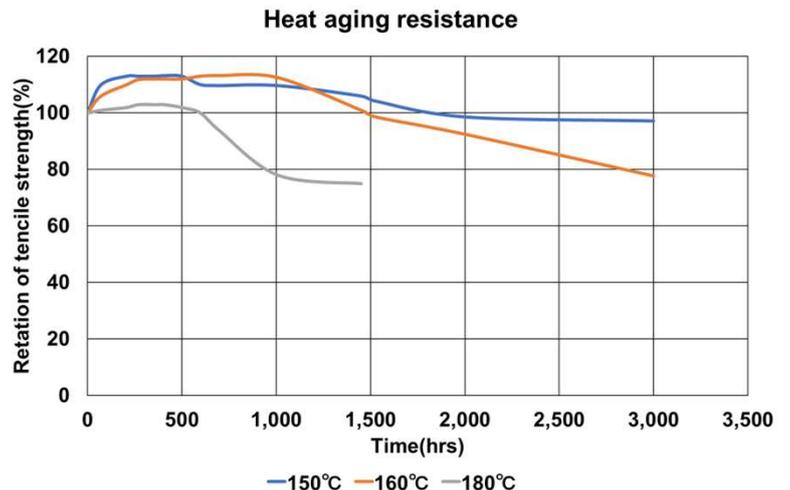
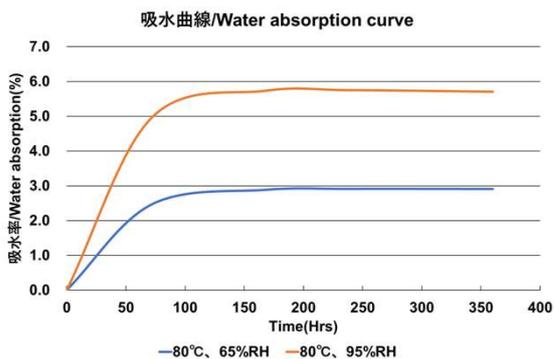
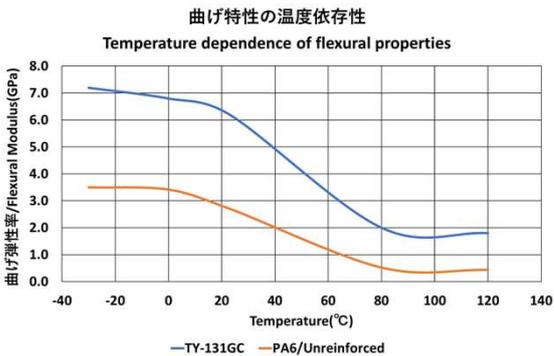
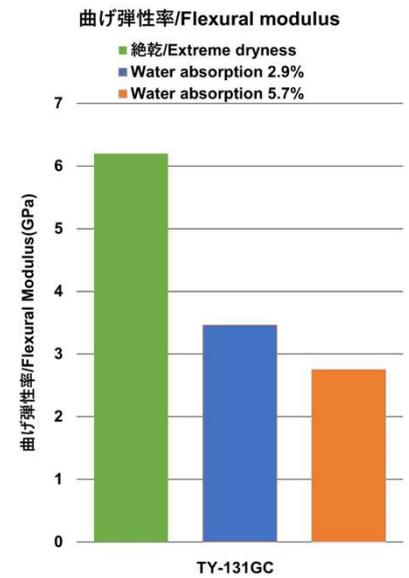
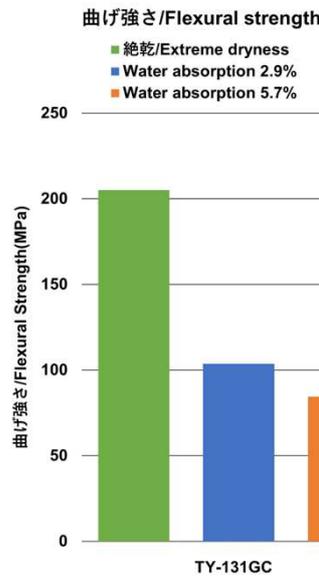
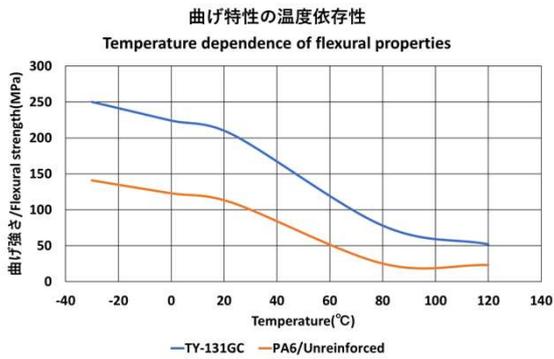
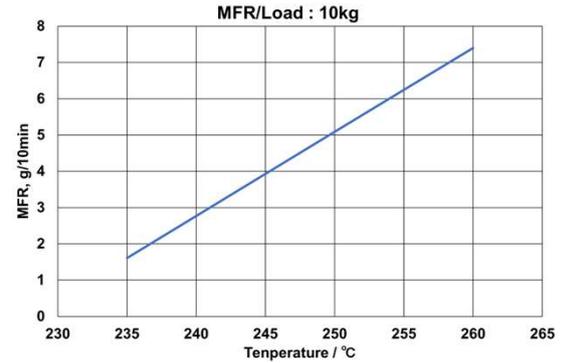
- Blow molding
- GF20 reinforced
- Good heat aging resistance
- Good appearance

Applications

- Air duct
- Bottle
- Industrial components, etc.

Spec · Quality

		Unit	GLAMIDE™ TY-131GC
Features			GF reinforced, Blow molding
ISO Material Indication			>PA6-GF20<
Density		g/cm ³	1.27
Flexural strength		MPa	205
Flexural modulus		GPa	6.2
Charpy notched impact strength	-40℃	kJ/m ²	11
	0℃	kJ/m ²	12
	23℃	kJ/m ²	12



*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ GF reinforced and low warpage polyamide resin “JF-152DG”

Features

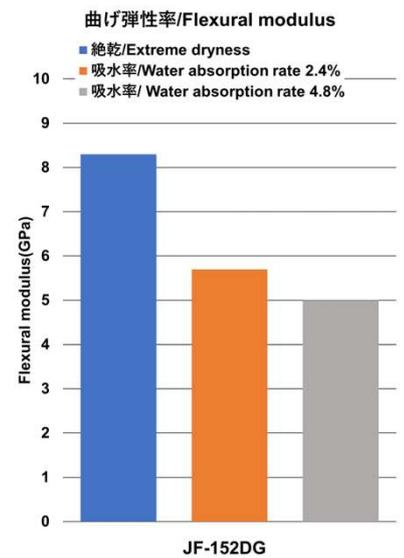
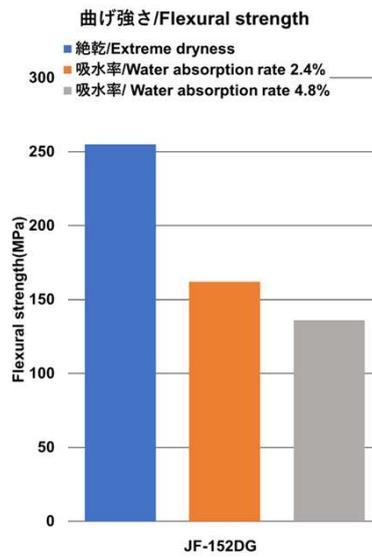
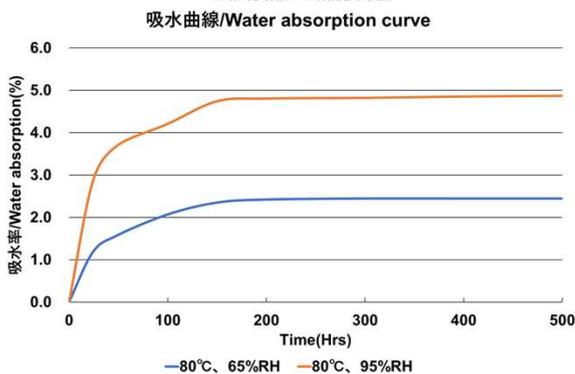
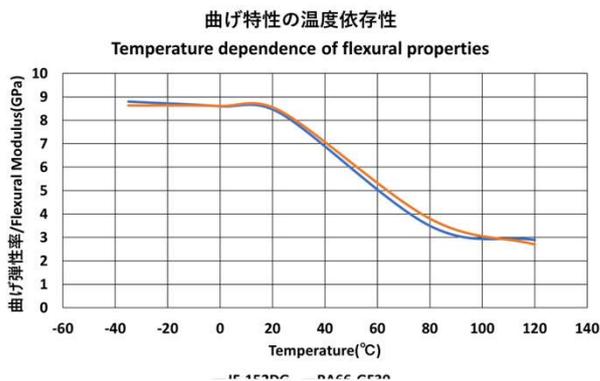
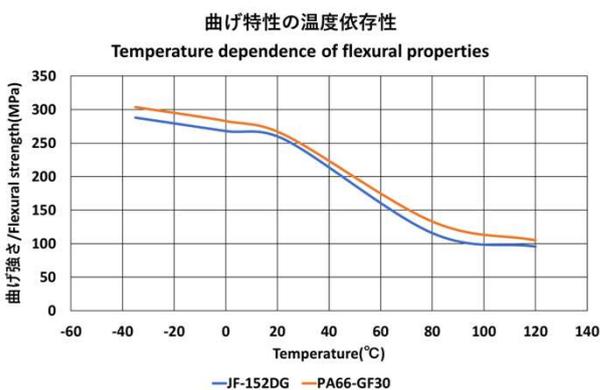
- High strength
- Low warpage
- High impact
- Good appearance

Applications

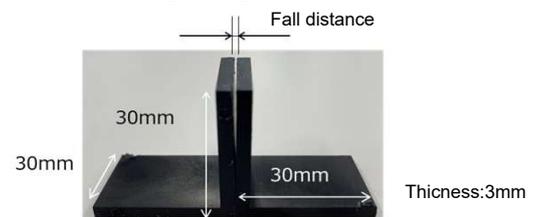
- Console box parts
- Guide rail components
- Refueling port hinji
- Electrical and electronic parts
- Industrial components, etc.

Spec · Quality

		Unit	GLAMIDE™ JF-152DG	General PA66-GF30
Features			GF reinforced, Low warpage	Standard
ISO Material Indication			>PA6-GF30<	>PA66-GF30<
Density		g/cm ³	1.36	1.37
Flexural strength		MPa	255	265
Flexural modulus		GPa	8.3	8.4
Charpy notched impact strength	-40℃	kJ/m ²	12	9
	0℃	kJ/m ²	13	9
	23℃	kJ/m ²	13	10



L-shaped collapse “90° right-angle”



	Fall distance
JF-152DG	2.6mm
PA66-GF30	3.4mm

*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ High rigidity and low warpage polyamide resin “JF-792DG”

Features

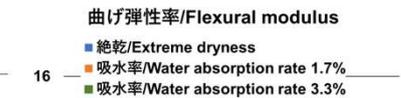
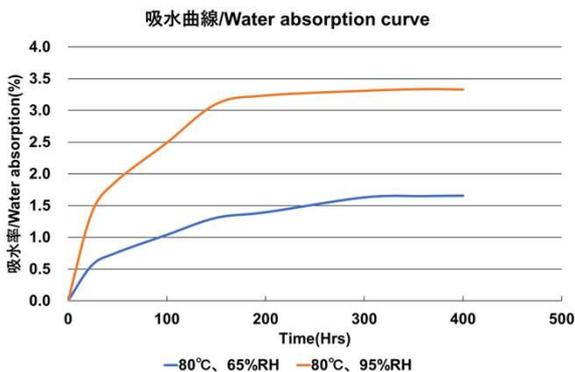
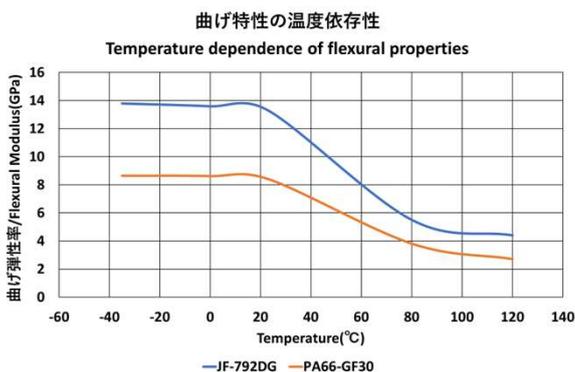
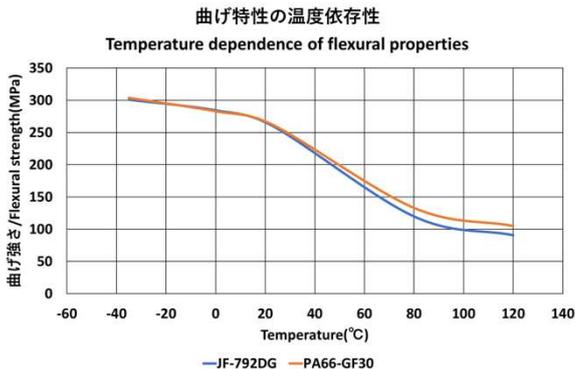
- High rigidity
- Low warpage
- High impact
- Good appearance

Applications

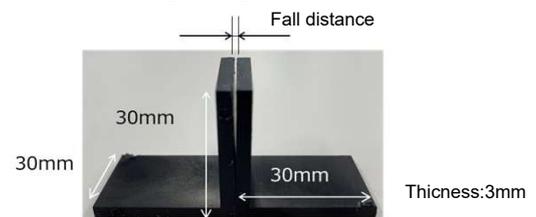
- Console box parts
- Guide rail components
- Refueling port hinji
- Electrical and electronic parts
- Industrial components, etc.

Spec · Quality

		Unit	GLAMIDE™ JF-792DG	General PA66-GF30
Features			GF+MD reinforced, Low warpage	Standard
ISO Material Indication			>PA6+PA6I/X-(GF+MD)50<	>PA66-GF30<
Density		g/cm ³	1.60	1.37
Flexural strength		MPa	240	265
Flexural modulus		GPa	13.3	8.4
Charpy notched impact strength	-40℃	kJ/m ²	8	9
	0℃	kJ/m ²	9	9
	23℃	kJ/m ²	9	10



L-shaped collapse “90° right-angle”



	Fall distance
JF-792DG	2.0mm
PA66-GF50	2.8mm

*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ Carbon fiber high filling Polyamide Resin "TY-671C"

Features

- Low density(CF45)
- High strength
- Good sliding
- High impact

Applications

- Automotive parts
 - Electrical and electronic parts
 - Sporting goods
 - Watch parts
 - Industrial parts
- etc.

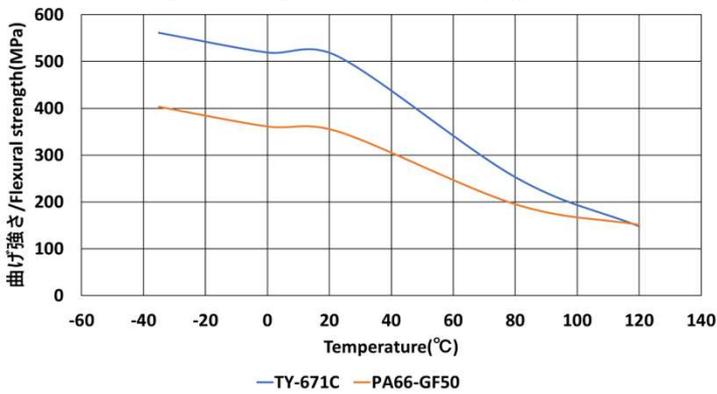
Spec · Quality

	Unit	GLAMIDE™ TY-671C	General PA66-GF50
Features		CF-reinforced, High Strength	Standard
ISO Material Indication		>PAMXD6+PA66-CF45<	>PA66-GF50<
Density	g/cm ³	1.40	1.57
Flexural strength	MPa	510	350
Flexural modulus	GPa	40.7	15.4
Charpy notched impact strength	-40℃	kJ/m ²	7
	0℃	kJ/m ²	8
	23℃	kJ/m ²	9
			16

Flexural properties

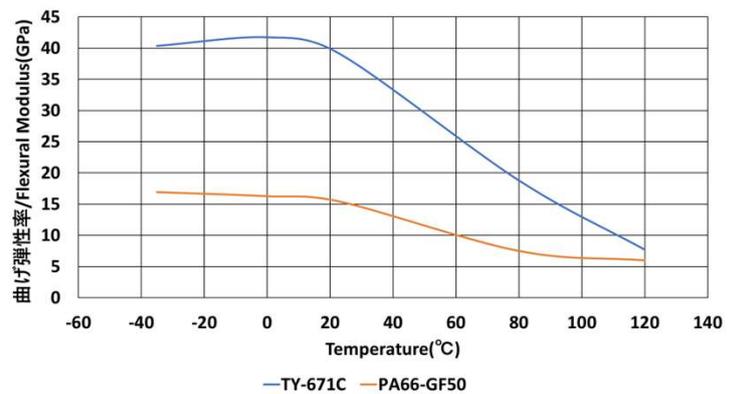
曲げ特性の温度依存性

Temperature dependence of flexural properties



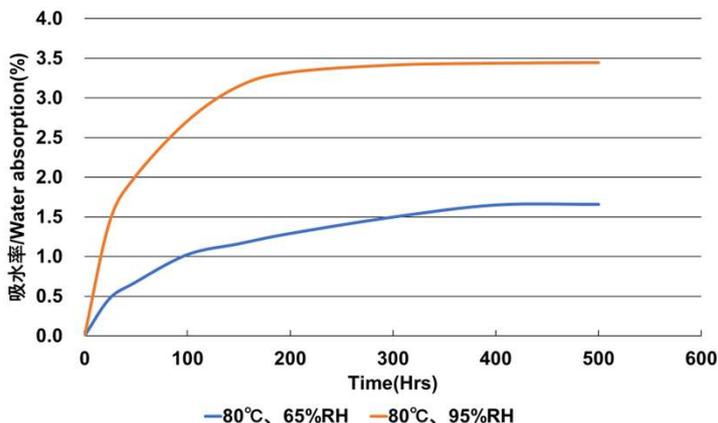
曲げ特性の温度依存性

Temperature dependence of flexural properties



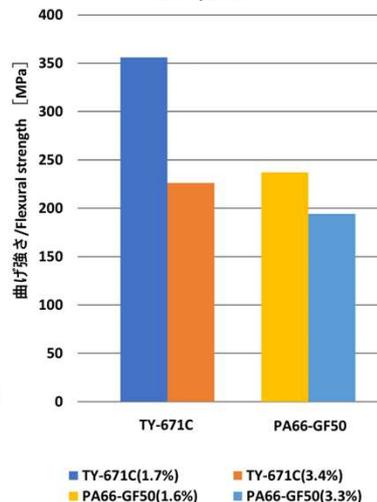
平衡吸水

吸水曲線/Water absorption curve



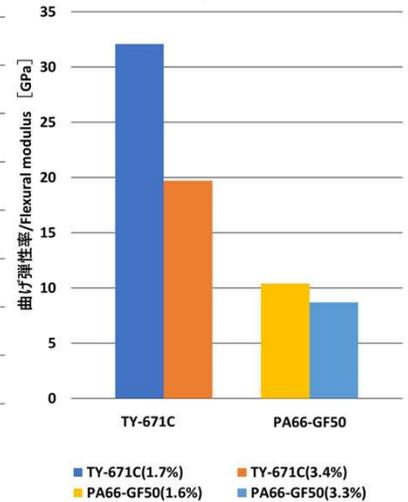
吸水時曲げ強さ

Flexural strength during water absorption



吸水時曲げ弾性率

Flexural modulus during water absorption



*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ Carbon fiber high filling Polyamide Resin “TY-665C”

Features

- Low density(CF36)
- High strength
- Good sliding
- High impact

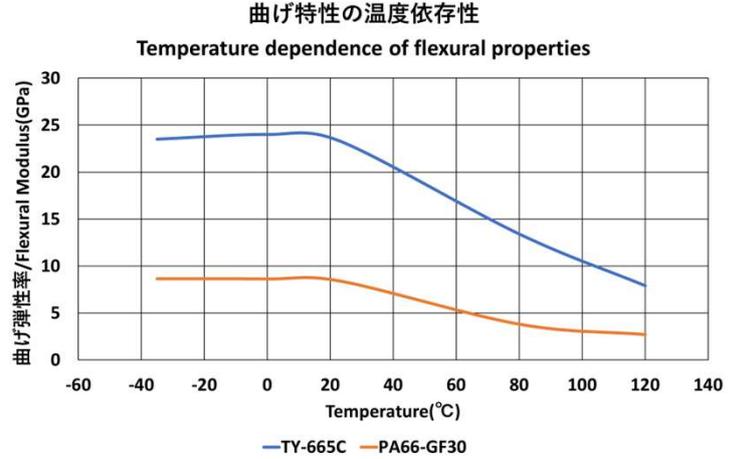
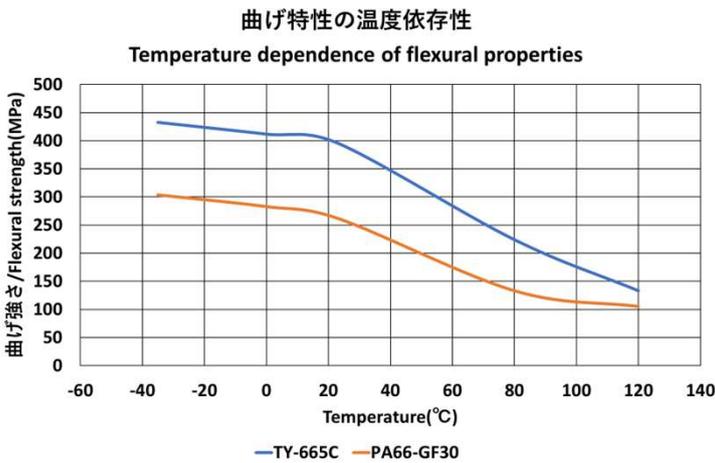
Applications

- Automotive parts
- Electrical and electronic parts
- Sporting goods
- Watch parts
- Industrial parts etc.

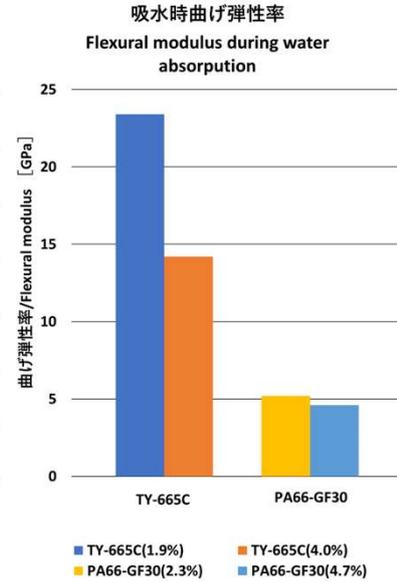
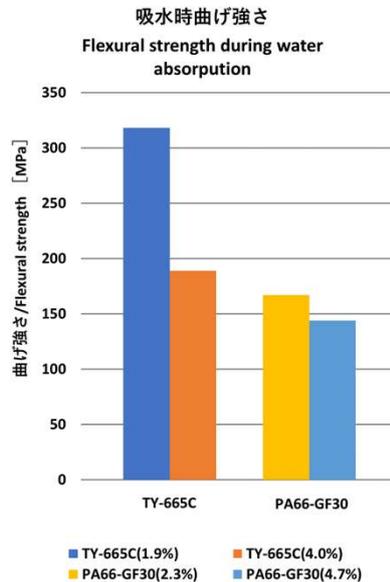
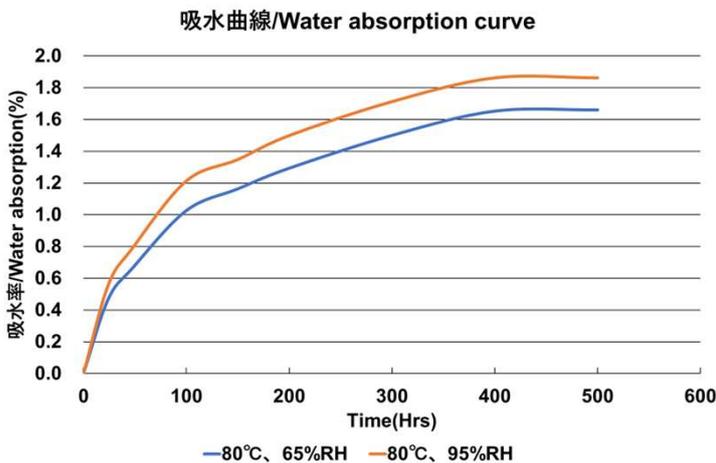
Spec · Quality

	Unit	GLAMIDE™ TY-665C	General PA66-GF30
Features		CF-reinforced, High Strength	Standard
ISO Material Indication		>PAMXD6+PA66-CF36<	>PA66-GF30<
Density	g/cm ³	1.35	1.37
Flexural strength	MPa	450	265
Flexural modulus	GPa	29	8.4
Charpy notched impact strength	-40℃	kJ/m ²	5
	0℃	kJ/m ²	6
	23℃	kJ/m ²	6

Flexural properties



平衡吸水



*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ High Strength and Low warpage Polyamide Resin “TY-891G60S”

Features

- High strength
- Good appearance
- Good sliding
- Low Water Absorption

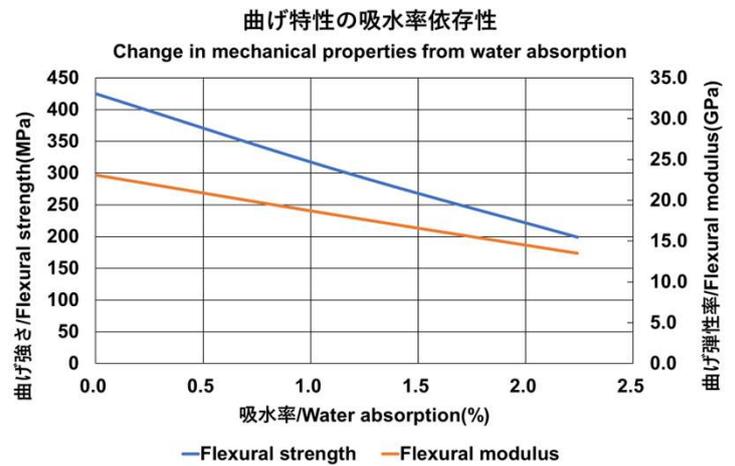
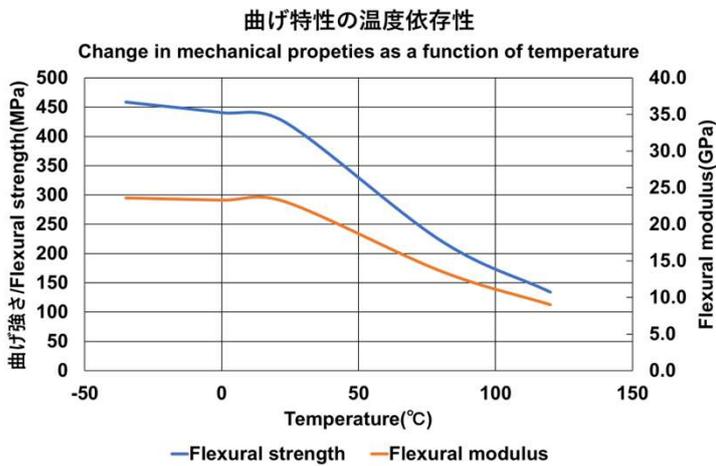
Applications

- Door mirror parts
- Console box hinge
- Refueling port
- Sporting goods
- Industrial Components, etc.

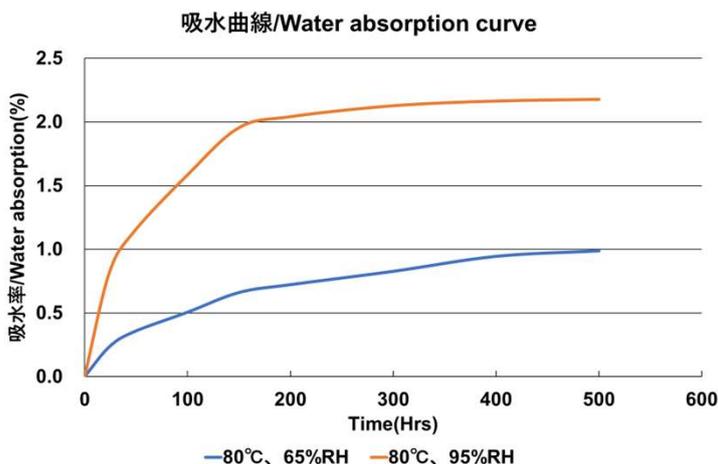
Spec · Quality

		Unit	GLAMIDE™ TY-891G60S	General PA66-GF50
Features			High Strength, Sliding	Standard
ISO Material Indication			>PAMXD6+PA66-GF60<	>PA66-GF50<
Density		g/cm ³	1.76	1.57
Flexural strength		MPa	425	350
Flexural modulus		GPa	23.1	15.4
Charpy notched impact strength	-40℃	kJ/m ²	13	11
	0℃	kJ/m ²	15	15
	23℃	kJ/m ²	17	16
Temperature of deflection under load	0.45MPa	℃	235	260
	1.8MPa	℃	230	255

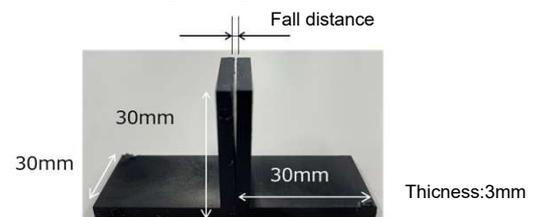
Flexural properties



Balances moisture



L-shaped collapse “90° right-angle”



	Fall distance
TY-891G60S	1.8mm
PA66-GF50	2.8mm

*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ High Rigidity and Sliding Polyamide Resin “TY-791G60”

Features

- High rigidity
- Good appearance
- Good sliding
- Low Water Absorption

Applications

- Door mirror parts
- Console box hinge
- Refueling port
- Sporting goods, etc.

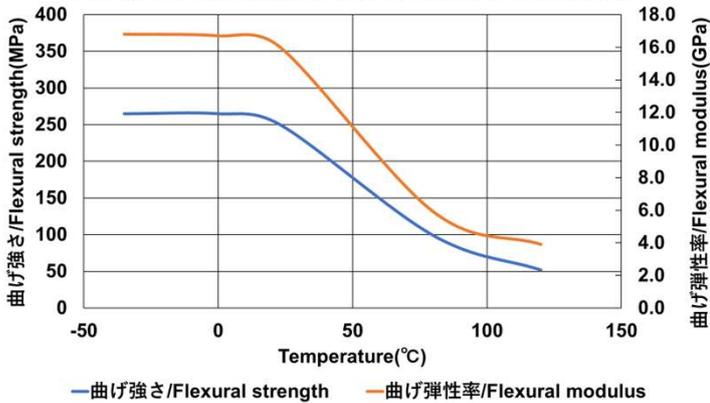
Spec · Quality

		Unit	GLAMIDE™ TY-791G60	General PA66-GF50
Features			High rigidity, Sliding	Standard
ISO Material Indication			>PA6+PA6I/X-GF60<	>PA66-GF50<
Density		g/cm ³	1.72	1.57
Flexural strength		MPa	378	350
Flexural modulus		GPa	19.2	15.4
Charpy notched impact strength	-40℃	kJ/m ²	11	11
	0℃	kJ/m ²	15	15
	23℃	kJ/m ²	17	16
Temperature of deflection under load	0.45MPa	℃	215	260
	1.8MPa	℃	205	255

Flexural properties

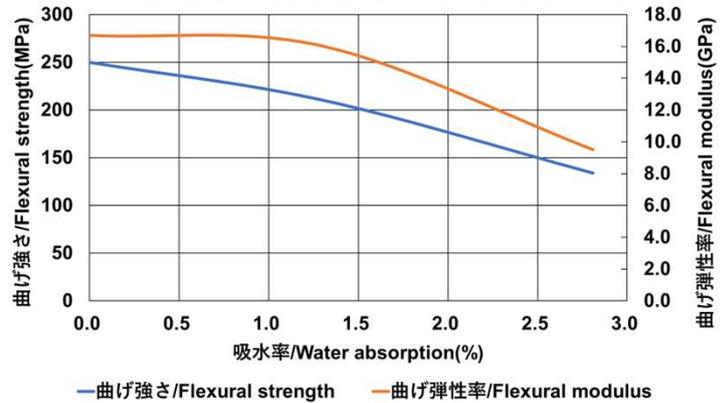
曲げ特性の温度依存性

Change in mechanical properties as a function of temperature



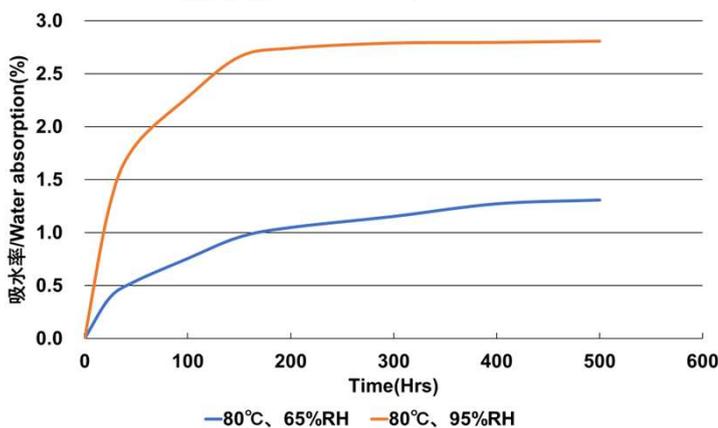
曲げ特性の吸水率依存性

Change in mechanical properties from water absorption

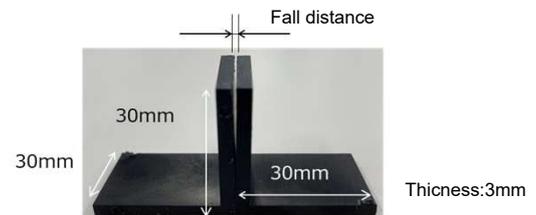


Balances moisture

吸水曲線/Water absorption curve



L-shaped collapse “90° right-angle”



	Fall distance
TY-791G60	2.2mm
PA66-GF50	2.8mm

*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ High Rigidity and Low warpage Polyamide Resin “TY-791HQ”

Features

- High rigidity
- Low warpage
- Good appearance
- Low Water Absorption

Applications

- Door mirror parts
- Console box hinge
- Engine cover
- Reel Parts etc.

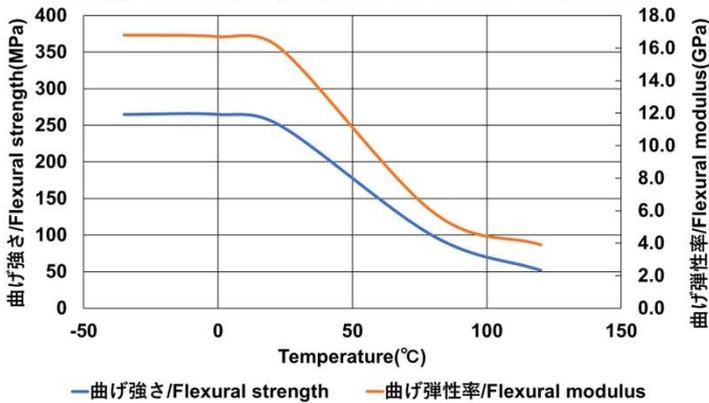
Spec · Quality

		Unit	GLAMIDE™ TY-791HQ	General PA6-GF30
Features			High rigidity, Low warpage	Standard
ISO Material Indication			>PA6+PA6I/X-(MD+GF)60<	>PA6-GF30<
Density		g/cm ³	1.74	1.36
Flexural strength		MPa	250	218
Flexural modulus		GPa	16.7	8.0
Charpy notched impact strength	-40℃	kJ/m ²	6.3	8.0
	0℃	kJ/m ²	6.5	9.0
	23℃	kJ/m ²	7.0	9.5
Temperature of deflection under load	0.45MPa	℃	210	220
	1.8MPa	℃	185	200

Flexural properties

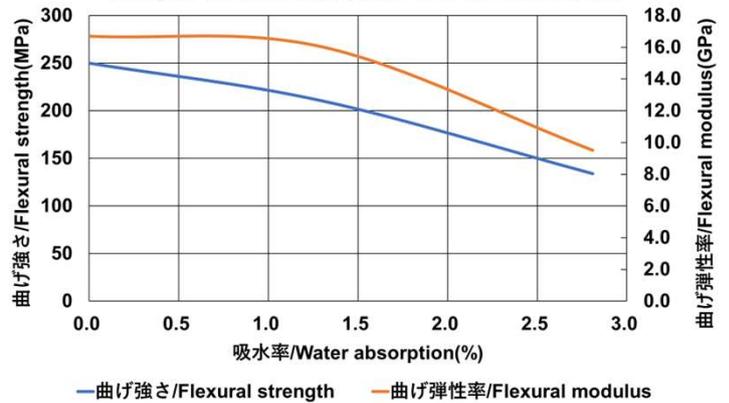
曲げ特性の温度依存性

Change in mechanical properties as a function of temperature



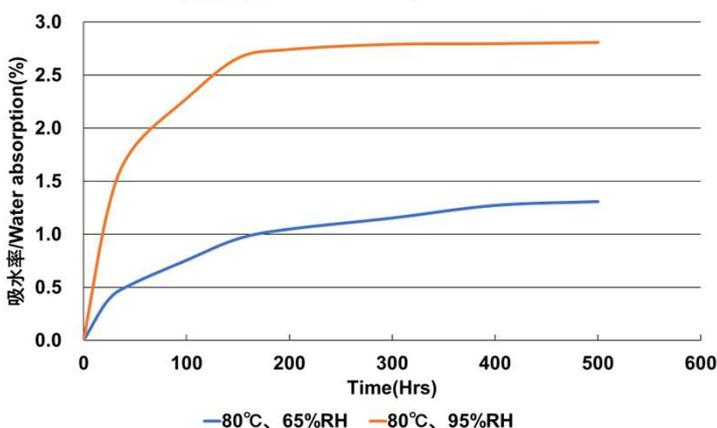
曲げ特性の吸水率依存性

Change in mechanical properties from water absorption

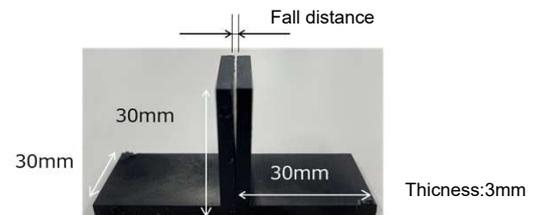


Balances moisture

吸水曲線/Water absorption curve



L-shaped collapse “90° right-angle”



	Fall distance
TY-791HQ	0.7mm
PA66-GF50	2.8mm

*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ High impact polyamide resin "TY-722GDQ" and "TY-752GDQ"

Features

- "TY-722GDQ" ISO Material Indication : PA6-I-GF15
- "TY-752GDQ" ISO Material Indication : PA6-I-GF30
- High impact
- Low-temperature impact resistant
- Good appearance

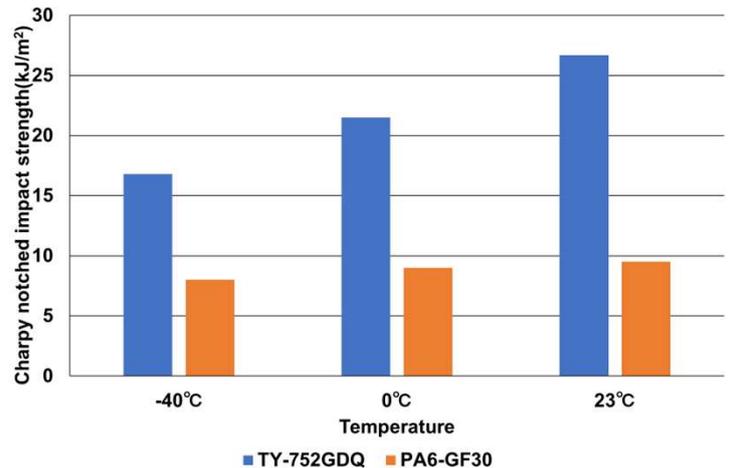
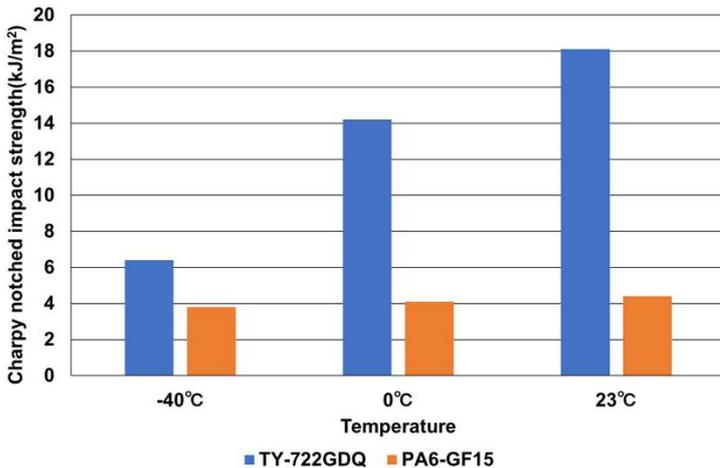
Applications

- Automotive parts
- Electrical and electronic parts
- Industrial parts
- Snowboard bindings
- Sporting goods, etc.

Spec · Quality

	Unit	GLAMIDE™ TY-722GDQ	General PA6-GF15	GLAMIDE™ TY-752GDQ	General PA6-GF30	
Features		High impact Good appearance	Standard	High impact Good appearance	Standard	
ISO Material Indication		>PA6-I-GF15<	>PA6-GF15<	>PA6-I-GF30<	>PA6-GF30<	
Density	g/cm ³	1.17	1.23	1.30	1.36	
Flexural strength	MPa	121	152	203	218	
Flexural modulus	GPa	3.5	4.5	6.9	8.0	
Charpy notched impact strength	-40°C	kJ/m ²	6.4	3.8	16.8	8.0
	0°C	kJ/m ²	14.2	4.1	21.5	9.0
	23°C	kJ/m ²	18.1	4.4	26.7	9.5
Temperature of deflection under load	0.45M Pa	°C	210	215	215	220
	1.8 MPa	°C	180	190	190	200

Impact resistant



*Values and properties listed here are typical values, not guaranteed values.

GLAMIDE™ Ultra-High Rigidity Polyamide Resin "JF-30G"

Features

- World-class GF reinforced material with flexural modulus of 26.5GPa
- Ultra-high strength: Flexural strength of 470MPa is stronger than metal and CFRP
- Ultra-high impact resistance: Outstanding impact strength (Charpy) of 38kJ/m² plus
- Attractive appearance: High gloss even with high GF filling
- Low warpage and outstanding dimensional precision

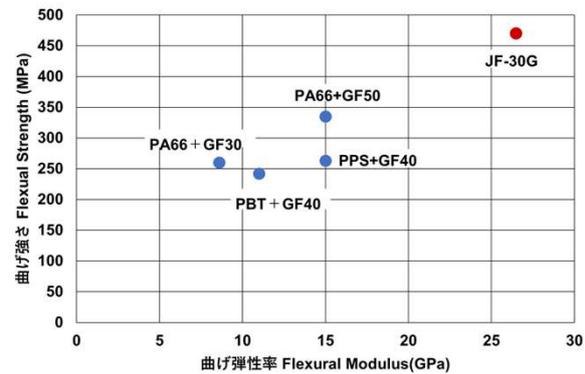
Applications

- Door mirror parts
- Automotive pedals
- Gear
- Resin screws
- Leisure goods such as fishing tackle, etc.

Spec · Quality

	GLAMIDE™ JF-30G	General PA66-GF50
Features	Ultra-high rigidity High impact resistance Low sled Low water absorption Good appearance	High rigidity
ISO Material Indication	>PAMXD6+PA66-GF70<	>PA66-GF50<
Density(g/cm ³)	1.87	1.57
Flexural strength(MPa)	470	350
Flexural modulus(GPa)	26.5	15.4
Charpy impact(kJ/m ²)	38	16

Comparison with injection materials



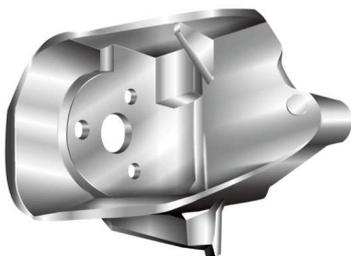
Advantages of switching to JF-30G

1. Lightweight. Depending on shape and product quality, weight reduction is possible.
2. Creativity. Manufacture products with complex shapes and reduced number of parts.
3. No burr treatment during die-cast manufacturing.
4. Shorten processing time and reduce manpower.
5. Chemical resistance
6. Insulating properties
7. Rust resistance

	Density(g/cm ³)
GLAMIDE™ JF-30G	1.87
Die-cast aluminum	About 2.7
Zinc die-cast	About 6.6
Stainless Steel(SUS)	About 7.7~8.0

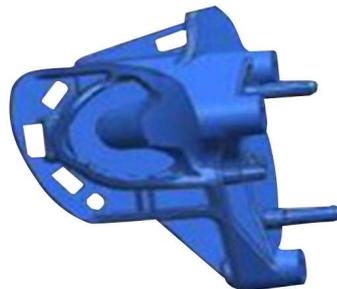
Examples of Consideration

Formulate optimal geometry with topology analysis



Die-cast aluminum

⇒
24% lighter



JF-30G

*Values and properties listed here are typical values, not guaranteed values.