

Features

Thermoplastic Polyamide Resin - GLAMIDE™

- GLAMIDE™ can be used as an alternative to metals and thermoplastic resins.
- GLAMIDE™ meets requirements for both ample strength and good appearance.
- GLAMIDE™ has a line-up of ultra-high Stiffness grades with 70% GF.
- GLAMIDE™ has a line-up of low solids grades with mineral reinforcement.
- Injection and blow molding grades are available.



GLAMIDE™ Main Grades

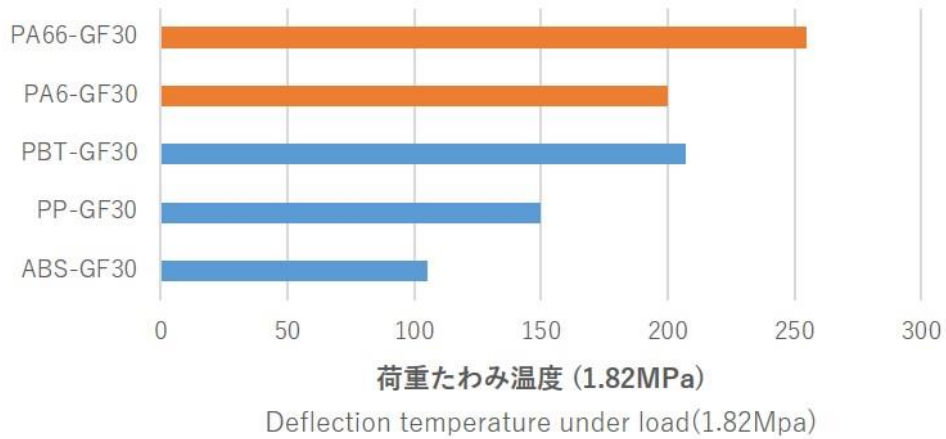
Type	Classification	Grades	Characteristics
PA6	Unreinforced	T-803	Unreinforced
	GF reinforced	TY-722GDQ	GF15%, Impact resistant, Good Appearance
	GF reinforced	TY-155TNH	GF30%
	Blow Molding	TY-131GC	GF20%, Blow molding
	Impact Resistant	TY-181GC	GF43%, Impact resistant
PA66	Unreinforced	T-662	Unreinforced
	GF reinforced	T-663G30	GF30%
	GF reinforced	T-663G50	GF50%
	Low Friction	T-656E	Unreinforced, Low Friction
	Low Friction	TY-262LS	GF35%, Low Friction
Special purpose PA	High Stiffness	TY-791G60	PA6+PA66-GF60, Low Friction
	High Stiffness	TY-891G60S	PAMXD6+PA66-GF60, Low Water Absorption, Good Appearance
	High Stiffness	JF-30G	PAMXD6+PA66-GF70, High Stiffness, Good Appearance, Low warpage
	High Stiffness	JF-792DG	PA6-(GF+MD)50, High Stiffness, Good Appearance, Low Warpage
	High Stiffness	TY-791HQ	PA6-(GF+MD)60, Good Appearance, Low Warpage

Comparison with Other Resins

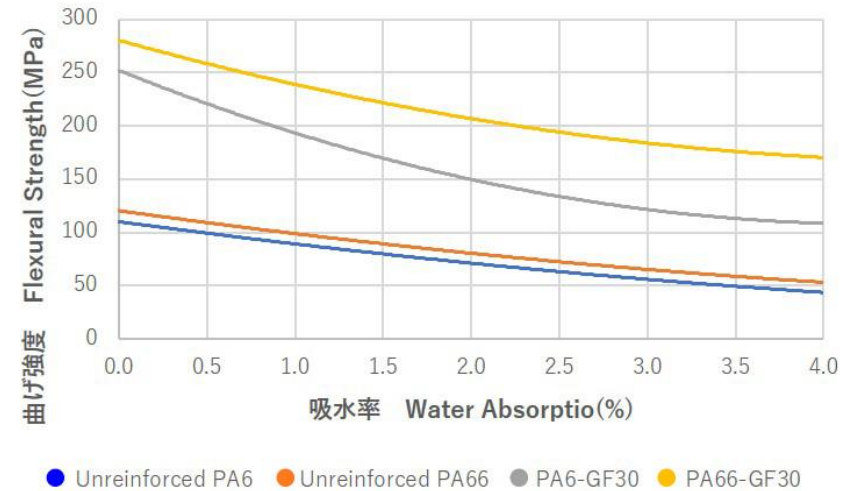
		Polyamide6	Polyamide66	ABS	PBT	PC	POM
Representative Grades		T-802	T-662				
T _m T _g		220°C (60°C)	260°C (60°C)	(100°C)	220°C (50°C)	(150°C)	170°C (-60°C)
Water absorption (24 hours)		2.3%	1.2%	-	0.08%	0.24%	0.2%
Density		1.14	1.14	1.03	1.31	1.20	1.42
Toughness		◎	◎	○	○	◎	◎
Wear resistance		◎	◎	△	○	△	◎
Flammability		△	△	×	△	△	×
Dimensional accuracy		×	△	◎	◎	◎	◎
Chemical Resistance	Weak acid	○	○	◎	○	◎	△
	Strong acid	×	×	△	△	△	×
	Weak alkali	○	○	◎	○	○	○
	Strong alkali	○	○	◎	×	×	○
	Oils and grease	○	○	△	○	△	○
	Ketone	○	○	×	○	×	◎
	Aromatic hydrocarbon	◎	◎	×	◎	×	◎
	Halogenated hydrocarbon	◎	◎	×	◎	×	◎
	Alcohols	△	△	△	○~△	△	◎
Esters	◎	◎	×	◎	×	◎	

Spec · Quality

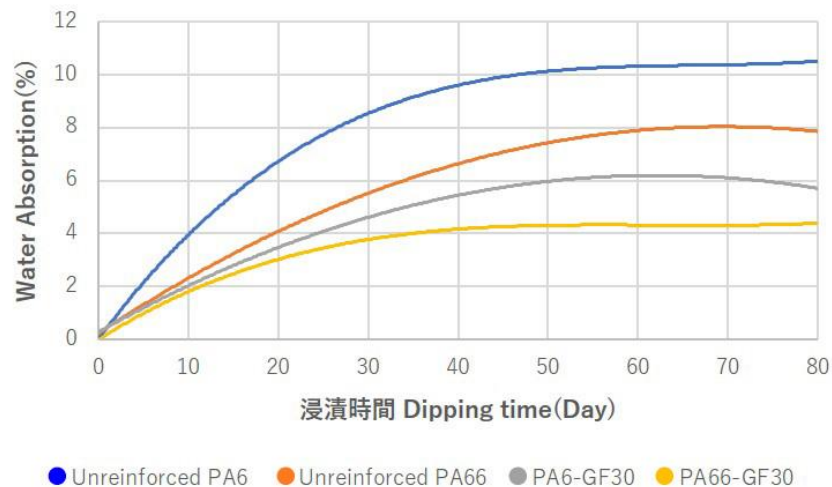
Flexural strength vs. Temperature



Water absorption vs. Flexural strength



Dipping time vs. Water absorption



Processing

Pre-drying of Pellets

GLAMIDE™ is shipped as a dried pellet packed in a moisture-proof bag. If the bag is unsealed pre-drying will be required. We recommend using the pellets immediately after unsealing the bags. If the pellets are left as is they will absorb moisture from the air. Accordingly please avoid exposing pellets to the air for a long time. A general guideline for drying pellets that have absorbed moisture: Dry for 3-5 hours at 80-120°C taking care not to over dry the pellets which may cause discoloration due to oxidation.

Standard Injection Molding Temperatures

	PA6 Series	PA66 Series	High Stiffness
Typical Grades	TY-155TNH	T-663G30	TY-791HQ
C1	230~240°C	265~285°C	240~260°C
C2	240~260°C	275~290°C	260~300°C
C3	240~260°C	275~290°C	260~300°C
NZ	240~260°C	275~290°C	260~300°C
Mold Temperature	80~100°C	80~100°C	80~110°C

Processing

Injection Molding Troubleshooting

Trouble	Cause		Countermeasure
Sink marks	Condition	<ol style="list-style-type: none"> 1. High resin temperature 2. High/low mold temperature 3. Low holding pressure 4. Insufficient holding pressure time 5. Insufficient cooling time 6. No cushion 	<ol style="list-style-type: none"> 1. Reduce the cylinder temperature 2. Set the mold temperature accordingly 3. Increase the holding pressure 4. Increase the holding pressure time 5. Increase the cooling time 6. Make cushion 5-10mm
	Design	<ol style="list-style-type: none"> 1. Small runner/ gate 2. Unsuitable gate location 	<ol style="list-style-type: none"> 1. Enlarge the runner/gate size 2. Relocate the gate to a thicker area
	Machine	<ol style="list-style-type: none"> 1. Back-flow during injection 	<ol style="list-style-type: none"> 1. Inspect or exchange the backflow valve
Warping, Deformation	Condition	<ol style="list-style-type: none"> 1. Unsuitable injection conditions 2. Insufficient holding pressure time 3. Insufficient Cooling time 4. Temperature difference between cavity and core 	<ol style="list-style-type: none"> 1. Increase the injection pressure/speed 2. Increase the holding pressure 3. Increase the cooling time 4. Control the temperature of cavity and core separately
	Mold	<ol style="list-style-type: none"> 1. Unsuitable ejector pin placement 2. Insufficient ejector pin size 	<ol style="list-style-type: none"> 1. Balance ejector pin placement 2. Enlarge ejector pin size 3. Increase the draft angle
	Design	<ol style="list-style-type: none"> 1. Unsuitable gate location 2. Extreme change in part thickness 3. Not enough gates for the part size 	<ol style="list-style-type: none"> 1. Change gate location 2. Even out the part thickness 3. Increase the number of gates
Flash	Condition	<ol style="list-style-type: none"> 1. High resin temperature 2. High injection speed 3. High holding pressure 4. Low mold clamping force 5. Filling resin Volume is too high 	<ol style="list-style-type: none"> 1. Reduce the resin temperature 2. Reduce the injection speed 3. Reduce the holding pressure 4. Increase the mold clamping force 5. Set the cushion about 5mm
	Mold	<ol style="list-style-type: none"> 1. Mold surface doesn't mate properly 	<ol style="list-style-type: none"> 1. Modify the mold
Burn marks	Condition	<ol style="list-style-type: none"> 1. High resin temperature 2. Air entrapment 3. High injection speed 4. Filling resin volume is too high 	<ol style="list-style-type: none"> 1. Reduce the resin temperature 2. Reduce the screw rotation 3. Reduce the injection speed 4. Decrease the residence time
	Mold	<ol style="list-style-type: none"> 1. Inadequate venting 	<ol style="list-style-type: none"> 1. Increase gas ventilation
	Design	<ol style="list-style-type: none"> 1. Unsuitable gate location 2. Small gate size 	<ol style="list-style-type: none"> 1. Change the gate location to make the welding line on the PL 2. Enlarge the gate size
Welding line	Condition	<ol style="list-style-type: none"> 1. Low resin temperature 2. Low mold temperature 3. Low injection speed 	<ol style="list-style-type: none"> 1. Increase the cylinder temperature 2. Increase the mold temperature 3. Increase the injection speed
	Mold	<ol style="list-style-type: none"> 1. Inadequate holding pressure 	<ol style="list-style-type: none"> 1. Increase gas venting and/or change gate location to move the weld line onto the parting line.
Poor surface appearance	Condition	<ol style="list-style-type: none"> 1. Low resin temperature 2. Low mold temperature 3. Low injection speed 4. Inadequate holding pressure 5. Insufficient amount of resin for fill 	<ol style="list-style-type: none"> 1. Increase the cylinder temperature 2. Increase the mold temperature 3. Increase the injection speed 4. Increase the holding pressure/time 5. Make cushion 5-10mm
	Mold	<ol style="list-style-type: none"> 1. Inadequate holding pressure 2. Unclean mold 	<ol style="list-style-type: none"> 1. Increase the holding pressure/time 2. Clean the mold

Processing

Mold Design

(1) Selecting the Tool Material

In general, polyamides reinforced with glass fiber or other fillers cause more abrasion to a mold than non-reinforced polyamides during molding. For that reason, we advise that you adhere to the following guidelines when making the tool. As damage around the gate area can be particularly severe, we strongly recommend using the following materials for at least that region of the tool.

1. Use tool steel alloys such as SK, SKS, or SKD treated with hardening and tempering agents to reach HRC55 to 60.
2. Use pre-hardened steel or precipitation hardened steel.
3. Use one of the following surface hardening treatments.
 - Rigid chrome plating treatment
 - Nitriding treatment
 - Cermet treatment

(2) Gate

When designing gates, minimizing damage to the glass fiber in filled resin should be carefully considered. As the viscosity of GF-reinforced polyamide is higher than that of non-reinforced material, it is important to ensure a well-rounded corner at the junction between a runner and a gate to reduce flow resistance.

Additionally, optimal gate placement should be considered given that the position of the gate can affect weld lines, causing undesirable appearance, decreased strength, and/or warpage. As a general guideline for the dimensions of a side gate, please use a thickness of around 60% of the molded part wall thickness, a width 1.5-3 times as wide as the gate thickness, and a land length of about 50% of the gate thickness. For a pin gate, a gate diameter of 0.8-1.5mm can be used as a general guideline.

(3) Venting

Reinforced polyamide tends to generate more gas than non-reinforced polyamides. Please ensure good mold ventilation by fitting with air vents about 50µm deep in areas where resin flow converges.

Processing

Safety

Molding Operation

- When purged resin contains a large quantity of gas or steam, the resin may have been insufficiently dried. We recommend re-drying the resin.
- Resin held in the cylinder for an extended period of time may lose viscosity or experience other impacts on quality. Please resume molding only after thoroughly replacing the resin that has been held too long in the cylinder with new resin.
- When switching from GLAMIDE™ to another polymer, replace the GLAMIDE™ with polyethylene or polypropylene to purge. Local and general ventilation are recommended.
- Keep hands and face away from the nozzle during molding to prevent burn injury.
- Please ensure proper ventilation, as a small amount of gas and fine dust may be produced during molding.

Protective equipment

- Wear appropriate protective equipment such as protective clothing, safety glasses, and gloves to protect eyes and skin from the molten resin.

Emergency Response

- Should molten resin adhere to the skin, cool the area immediately with cold water or an ice pack and then seek medical attention. Do not attempt to peel the resin off of the skin.

Other

- Do not let molten resin touch electric wires or hoses.
- Molten resin reaches high temperatures and can catch fire if it forms large clumps when purging. Break up large clumps and allow to cool before disposal.
- Spilled pellets can be a slipping hazard, so be sure to clean them off the floor immediately.

Notes

Disclaimer

- All of the property data is based on natural color or general black. Data may vary depending on color.
- All information in this technical data sheet is based on the experiences of TOYOBO MC Corporation.
- These information may vary depending on mold condition and application.
- There may also be laws and regulations depending on intended use. Please be careful of this things when using this product.
- If this material is to be used for medical, military, or food contact applications, or if it is to be used in a product where a defect in the product is likely to result in death, bodily harm, or substantial property damage, please contact us separately beforehand.
- Export of our materials and products using our materials must comply with the Foreign Exchange and Foreign Trade Law and other relevant laws and regulations.
- Chemical substances used in this material may be regulated by laws and regulations related to chemical substances in each country, and separate applications may be required or import/export may not be allowed. If you are an importer or exporter of this material, please inquire about compliance with regulations in the relevant country.
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