

Polybutylene Terephthalate (PBT)

DURANEX®

SF755

EF2001/ED3020

Super high flow, HB

POLYPLASTICS CO., LTD.



Introduction

DURANEX® PBT has excellent heat resistance and mechanical and electrical properties. It is used in various applications such as automotive, electrical and electronic, OA equipment, and industrial machine components.

In recent years, the market trend toward high functionality, modularization and integration of components is advancing, especially in the automotive industry and electrical and electronic industry. Accordingly, downsizing and wall thickness reduction of such components are progressing. Therefore, materials with high flowability, strength and stiffness are desired to meet such market requirements.

DURANEX PBT® SF Series are specialty grades to meet these market requirements.

DURANEX® PBT SF Series Properties

Compared to conventional PBT materials, flow length has improved by 30% ~ 100%, which may result in the following advantages:

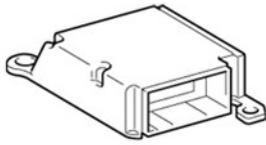
1. Thin, lightweight product design
2. Use of multi-cavity molds with a larger number of cavities
3. Shorter molding cycle due to thin-wall design
4. Wider window of molding process conditions
5. Longer mold life due to a reduction in injection peak pressure

DURANEX® PBT SF Series Grade Line-up

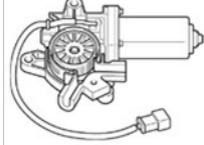
- **SF3300** GF30% reinforced, standard, high-cycle and high flowability
- **SF733LD** GF30% reinforced, low warpage, low specific gravity, high-cycle and high flowability
- **SF755** GF 55% reinforced, high rigidity, good surface appearance, high-cycle and high flowability



【 Examples of Practical Applications 】



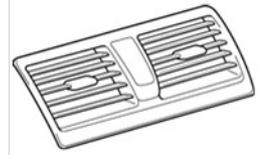
ECUs



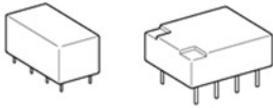
Actuators



Door mirror stays



Ventilators



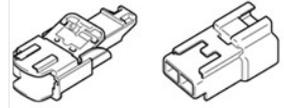
Relays



Bobbins



Smartphone parts



Connectors



1. SF755 General Properties

Table 1- 1 SF755 General Properties (ISO)

Item	Unit	Test method	High flow high cycle High rigidity	Low warpage, Better Surface Appearance	Standard
			SF755	702MS	3405
			GF55%	GF +Inorganic55%	GF45%
Color Number			EF2001/ED3020	ED3002	EF2001/ED3002
ISO Marking Code		ISO11469 JIS K6999	>PBT+PET-GF55<	>PBT+PC- (GF+PS)55<	>PBT-GF45<
Density	g/cm ³	ISO 1183	1.79	1.73	1.70
Tensile strength	MPa	ISO 527-1,2	165	153	162
Strain at break	%	ISO 527-1,2	1.5	1.3	1.7
Flexural strength	MPa	ISO 178	265	205	254
Flexural modulus	MPa	ISO 178	18200	15500	14500
Charpy notched impact strength	kJ/m ²	ISO 179/1eA	10	6.5	16
Temperature of deflection under load (1.8MPa)	°C	ISO 75-1,2	214	197	214
Flammability		UL94	HB	HB	HB
UL Yellow Card file number.			E213445	E213445	E213445
Appropriate list number of Ministerial Ordinance for Export Trade Control			Item 16 of Appendix -1	Item 16 of Appendix -1	Item 16 of Appendix -1

The above values are representative values obtained by injection molding. They are not minimum values of the material. The data shown here cannot necessarily be applied "as is" to parts that are utilized under different Conditions.



2. High-Cycle Properties

2.1 Mold Release Performance

Figure 2-1 shows the cooling time for mold release at each holding pressure with use of molding cycle evaluation mold .

SF755 shows excellent mold release performance, with enables high-cycle molding as compared to conventional high-filler materials.

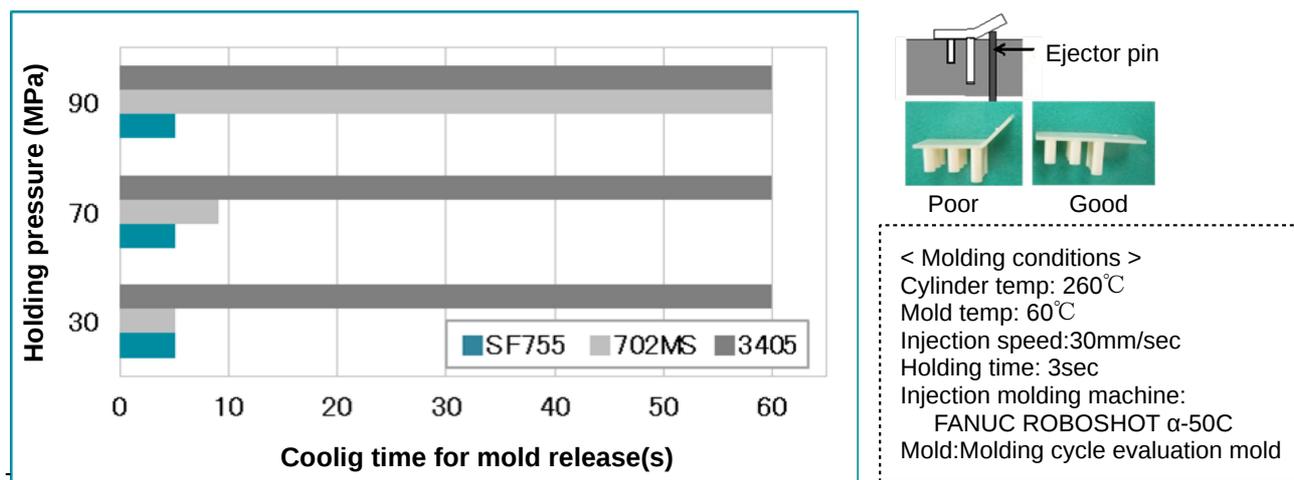


Figure 2-1 Comparison of SF755 and conventional grade Mold Release Performance

Note) This is based on the assumption that molding cycle is determined by release performance. The degree of improvement varies with the mold design and molding conditions.



3. SF755 Moldability

3.1 Flowability

SF755 shows improved flow properties as compared to conventional grades.

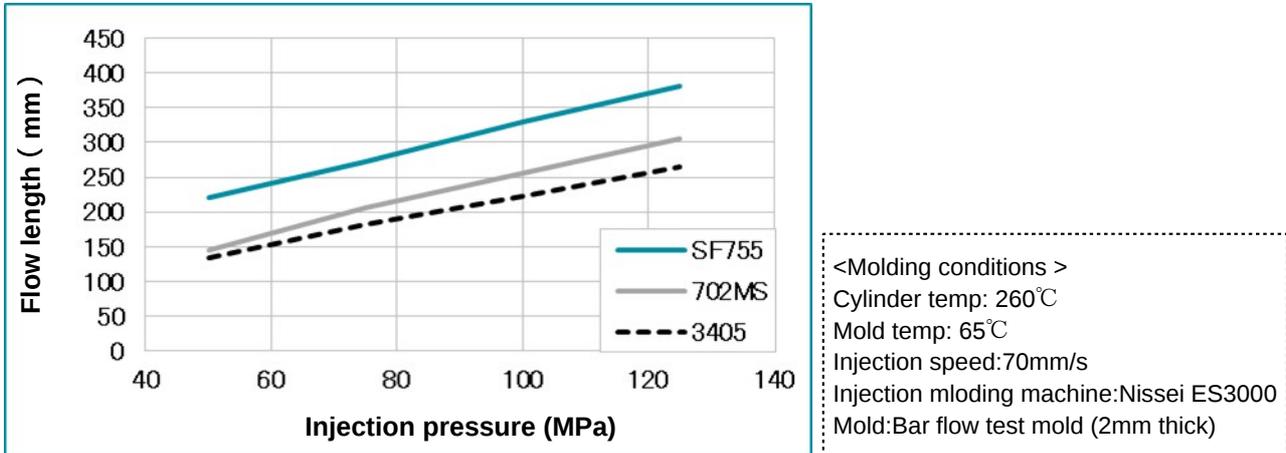


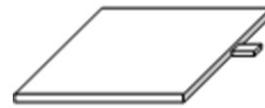
Figure 3-1 Bar Flow Length (2mmt)

3.2 Mold Shrinkage

Table 3-1 Mold shrinkage(2mmt)

(Unit %)

		High flow , High cycle, High rigidity	General PBT
		SF755	3405
		GF55%	GF45%
Holding pressure : 60MPa	Flow direction	0.2	0.3
	Transverse direction	0.8	1.2
Holding pressure : 70MPa	Flow direction	0.2	0.3
	Transverse direction	0.7	1.1



<Molding conditions >
 Cylinder temp: 260°C
 Mold temp: 65°C
 Injection speed: 17mm/sec
 Injection molding machine: Nissei ES3000
 Mold: 120×120×2mmt Flat plate
 Side gate: 4w×2t



4. Appearance (Surface gloss)

SF755 shows good surface appearance with high glossiness.

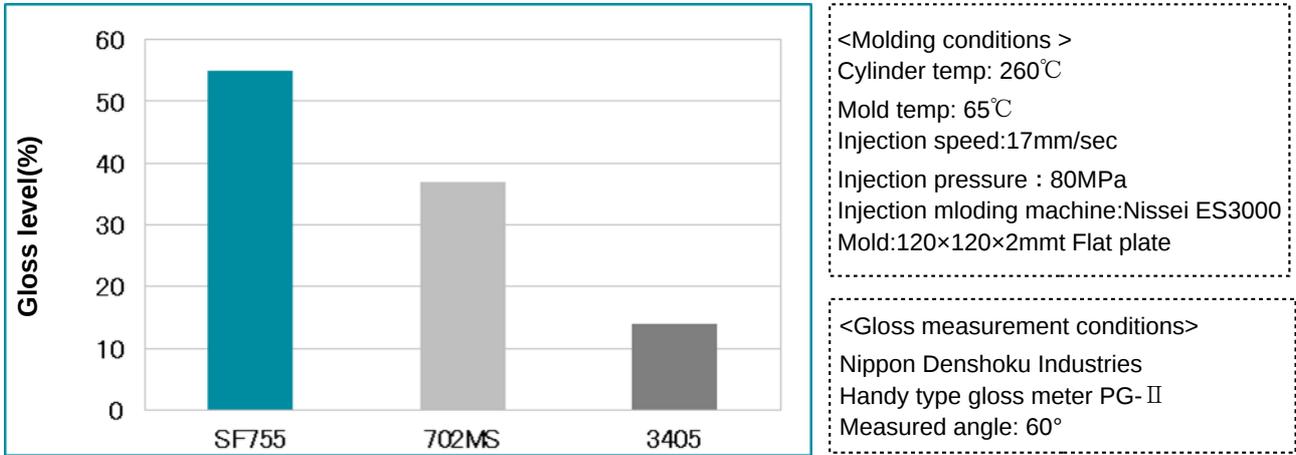


Figure 4-1 Gloss level of SF755 and conventional grades

5. Heat resistance (at 150°C)

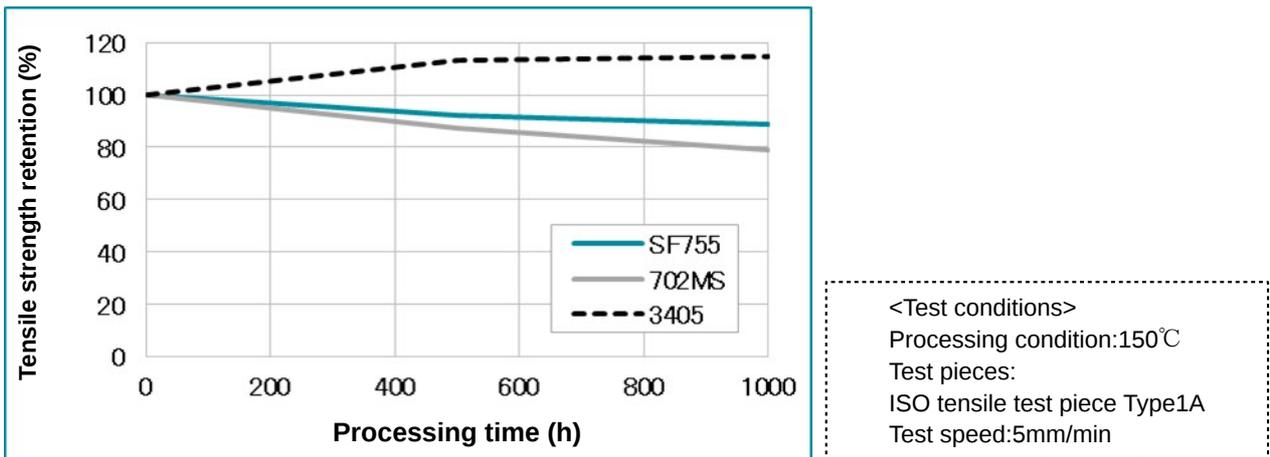


Figure 5-1 Heat resistance of SF755 and conventional grades



6. Effects of temperature on tensile strength

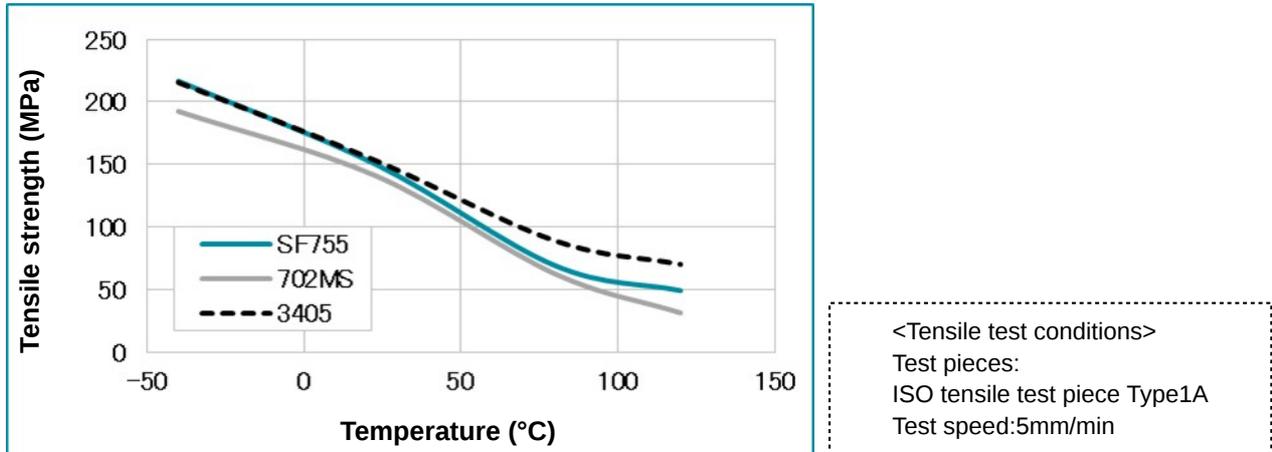


Figure 6-1 Effects of temperature on tensile strength of SF755 and conventional grades

7. Weatherability

SF755 shows good weather resistance with small change in color difference after weathering test.

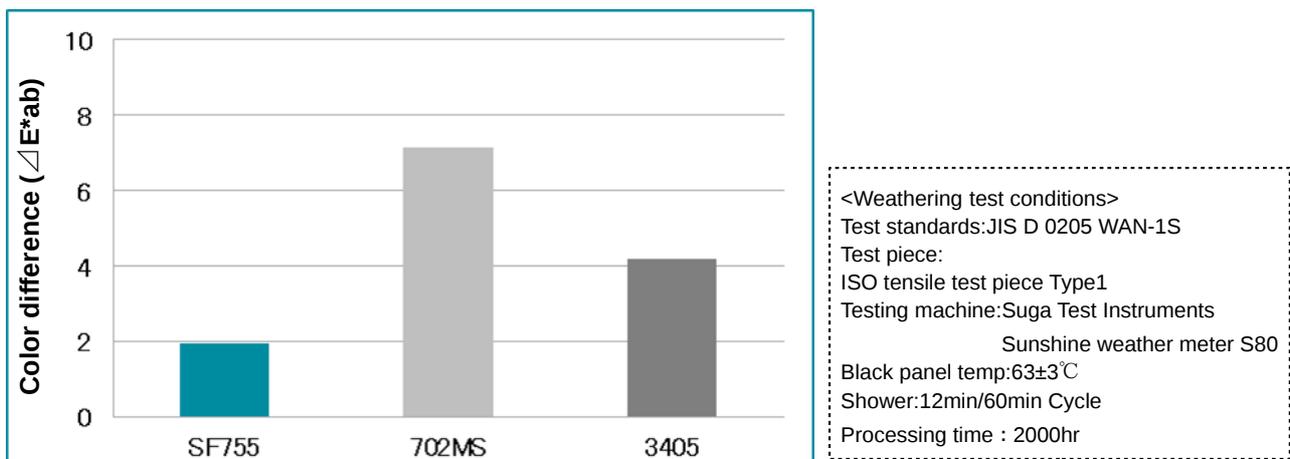


Figure 7-1 Color difference of SF755 and conventional grades after weathering rest



NOTES TO USERS

- All property values shown in this brochure are the typical values obtained under conditions prescribed by applicable standards and test methods.
- This brochure has been prepared based on our own experiences and laboratory test data, and therefore all data shown here are not always applicable to parts used under different conditions. We do not guarantee that these data are directly applicable to the application conditions of users and we ask each user to make his own decision on the application.
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