

Polybutylene Terephthalate (PBT)

**DURANEX®**

552HS

EF2001/ED3002

Flame Retardant,  
Hydrolysis Resistant,  
Heat Shock Resistant

# Introduction

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DURANEX® PBT is a crystalline engineering plastic with a polybutylene terephthalate (PBT) base.

In particular, it has excellent heat resistance and electrical properties. And because it also has excellent moldability, it has gained a high degree of reliability as a material suitable for electrical and electronic parts, automobile parts and a wide variety of precision parts.

Here we introduce **DURANEX® PBT 552HS**, a 30% GF reinforced flame retardant, heat shock and hydrolysis resistant grade. It is a material suitable for various parts such as sensors and switches into which metal terminals and metal electrode plates are inserted.

# General Properties of 552HS

table1-1 General Properties (ISO)

Item	Unit	Test Method	Flame Retardant, Hydrolysis Resistant, Heat Shock Resistant
			552HS
Color			GF30% Reinforced EF2001/ED3002
ISO(JIS)quality-of-the-material display:		ISO11469 (JIS K6999)	>PBT-I-GF30FR(17)<
Density	g/cm <sup>3</sup>	ISO 1183	1.59
Water absorption (23°C,24hrs,1mmt)	%	ISO 62	0.2
Tensile strength	MPa	ISO 527-1,2	92
Strain at break	%	ISO 527-1,2	1.9
Flexural strength	MPa	ISO 178	132
Flexural modulus	MPa	ISO 178	8,100
Charpy notched impact strength (23°C)	kJ/m <sup>2</sup>	ISO 179/1eA	7.8
Temperature of deflection under load (1.8MPa)	°C	ISO 75-1,2	201
Coefficient of linear thermal expansion (23 - 55°C、 Flow direction)	x10 <sup>-5</sup> /°C	Our standard	-
Coefficient of linear thermal expansion (23 - 55°C、 Transverse direction)	x10 <sup>-5</sup> /°C	Our standard	-
Electric strength (3mmt)	kV/mm	IEC 60243-1	-
Volume resistivity	Ω·cm	IEC 60093	-
Volume resistivity (Our standard)	Ω·cm		-
Tracking resistance (CTI)	V	IEC 60112	-
Rockwell hardness	M(Scale)	ISO2039-2	-
Flammability		UL94	V-0
The yellow card File No.			E213445
Appropriate List number of Ministerial Ordinance for Export Trade Control			Item 16 of Appendix -1

All figures in the table are the typical values of the material and not the minimum values of the material specifications.

## 2. Heat Shock Resistance

### 2.1 Comparison of heat shock resistance

When a metal insert molding is used in conditions ranging widely from high to low temperatures, breakage may occur from internal stress due to the difference in linear expansion coefficient between the insert metal and the resin. Therefore, to evaluate long-term reliability, heat shock resistance (thermal cycle) tests are conducted.

Figure 2-1 is a graph showing heat shock resistance. 552 HS is compared with 3316 (a GF 30% reinforced general flame retardant grade). Compared to 3316, 552 HS shows very good results.

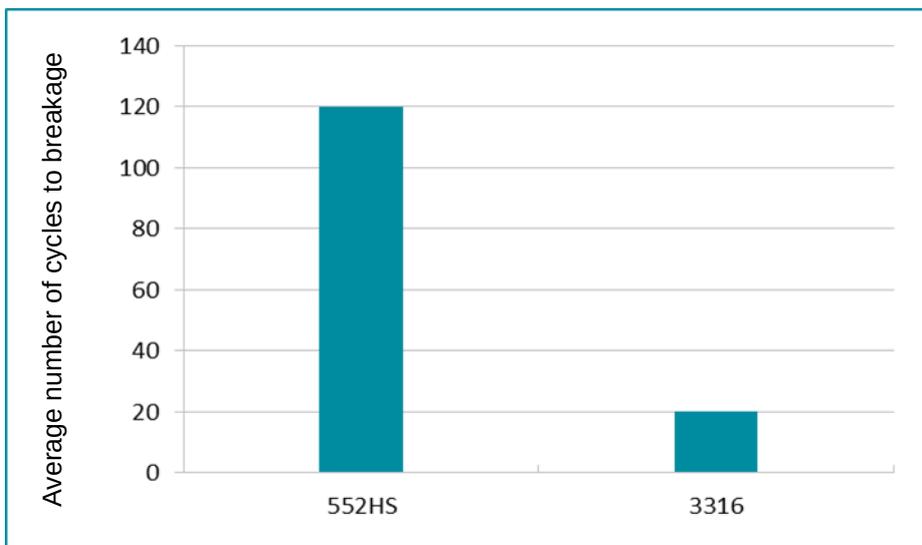
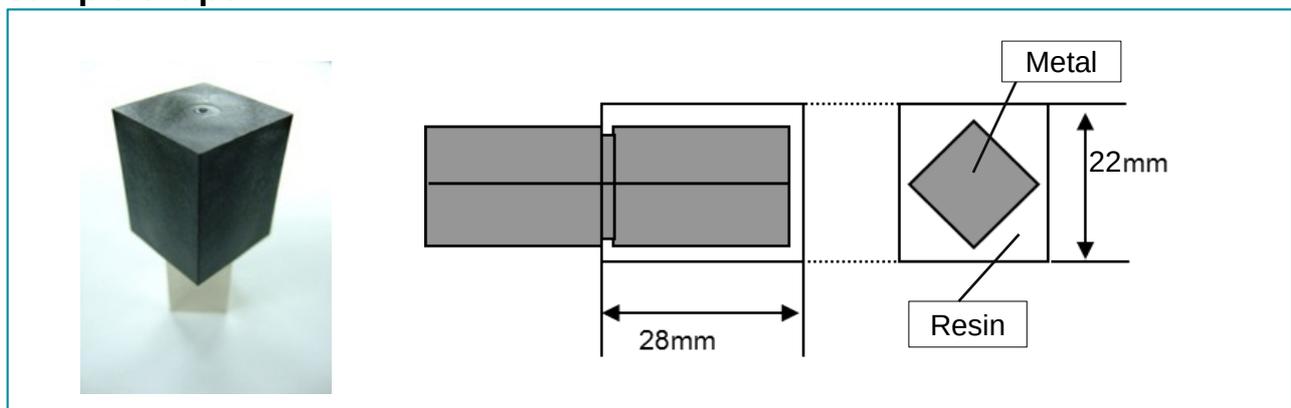


Fig. 2-1 Heat shock resistance of DURANEX® PBT 552HS and 3316  
(Test conditions: 1 cycle is  $-40^{\circ}\text{C}\times 1.5\text{ hours} \Leftrightarrow 140^{\circ}\text{C}\times 1.5\text{ hours}$ )

### Sample shape



## 3. Durability

### 3.1 Hydrolysis resistance

Figure 3-1 shows a comparison of 552 HS and 3316. 552HS has better heat and moisture resistance than 3316.

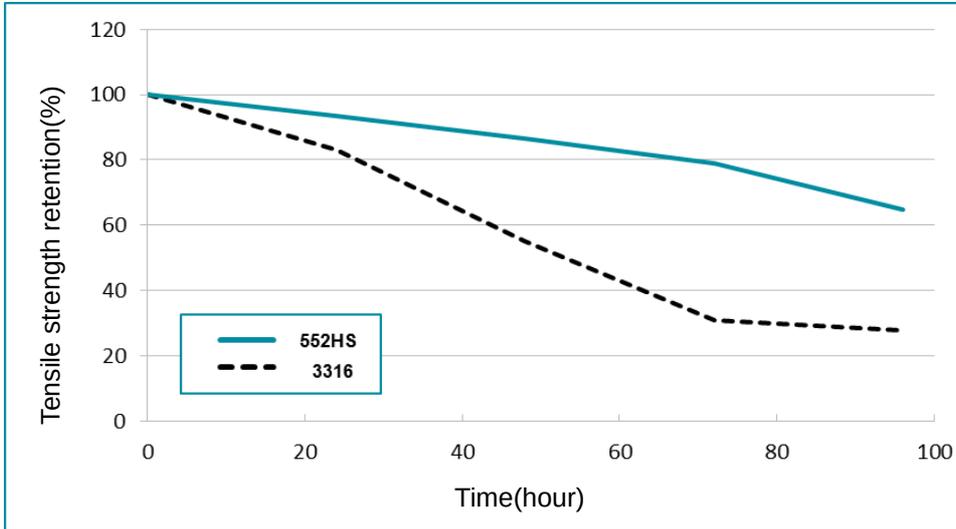


Fig.3-1 DURANEX® PBT 552HS hydrolysis resistance  
(Test conditions : 121°C×203kPa 100%Rh)

### 3.2 Heat resistance

Figure 3-2 shows a comparison of 552 HS and 3316. 522 HS demonstrates the same good dry heat resistance as 3316.

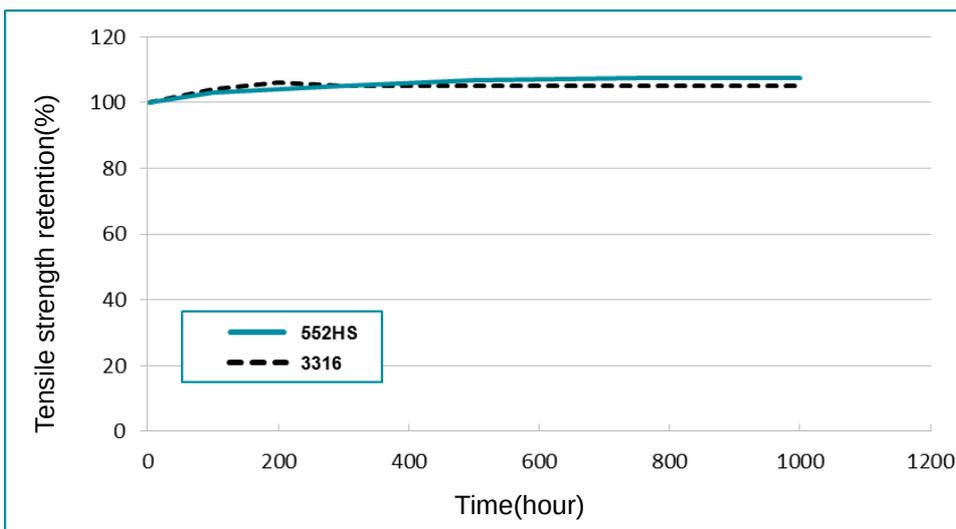


Fig.3-2 DURANEX® PBT 552HS Heat resistance  
(Test conditions : 150°C)

## 4. Moldability

### 4.1 Mold shrinkage

Table 4-1 Mold shrinkage of DURANEX® PBT 552HS  
(Unit %)

Holding pressure		552HS
60MPa	Flow direction	0.3
	Transverse direction	0.8
70MPa	Flow direction	0.2
	Transverse direction	0.7

<Molding condition>  
 Cylinder temperature : 260°C  
 Mold temperature : 65°C  
 Injection speed : 17mm/sec  
 Mold : 120×120×2mm Flat plate  
 Side gate : 4w×2t

### 4.2 Bar flow length

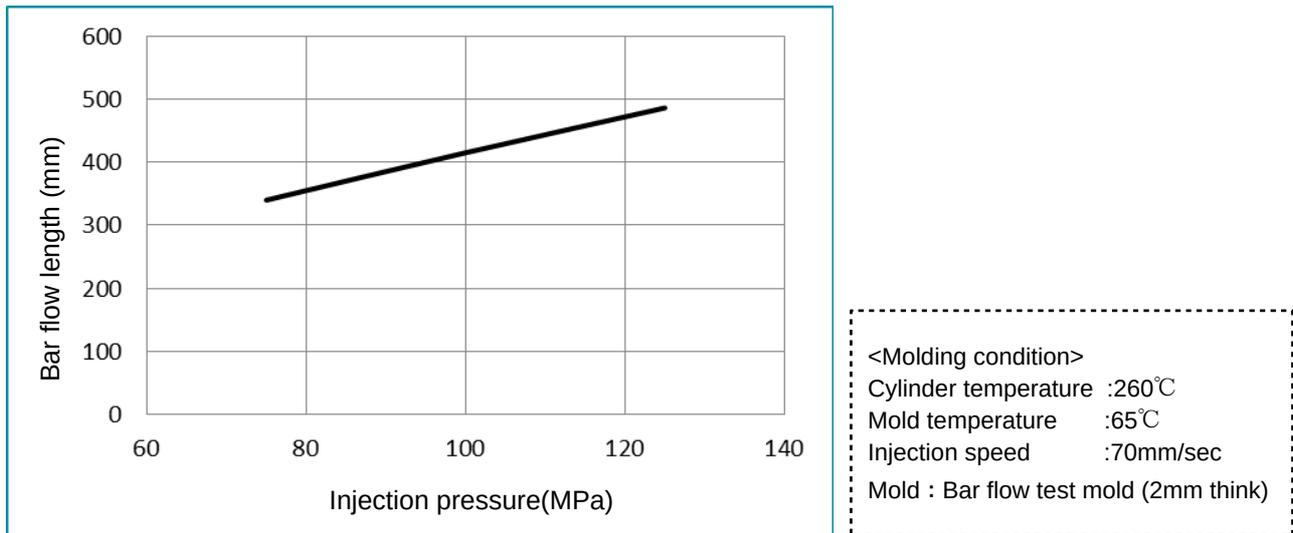


Fig. 4-1 Bar flow length of DURANEX® PBT 552HS

## **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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