Polybutylene Terephthalate (PBT)

DURANEX®

7400W

EF2001/ED3002

Low Warpage, HB,
Standard

POLYPLASTICS CO., LTD.

Introduction

DURANEX® PBT is an engineering plastic based on polybutylene terephthalate(PBT) resin. It possesses superior strength, stiffness, heat resistance, electrical properties, and dimensional stability, and also combines excellent processability. It is therefore used in a variety of areas, such as the electrical/electronics, and automotive industires.

In particular, for applications which demand high strength, high stiffness, and heat resistance, glass fiber-reinforced grades are traditionally employed, but as the glass fibers tend to align themselves when injected into the mold cavity, there are caes in which the molded part suffers from warpage or deformation.

For such cases, **DURANEX 7400W** is offered as an effective, glass fiber-reinforced low warpage grade.

By composite filling of **7400W** with glass fillers, the grades suppresses the anisotropy of the mold shrinkage ratio, and thereby reduces warpage and deformation.

General Properties of 7400W

table1-1 General Properties（ISO）

Item	Unit	Test Method	Low Warpage, HB, Standard
			7400W
			GF Reinforced, Super Low Warpage
Color			EF2001/ED3002
ISO(JIS)quality-of-the-material display:		ISO11469 (JIS K6999)	>PBT-(GF+GS)40<
Density	g/cm^3	ISO 1183	1.63
Water absorption (23°C,24hrs,1mmt)	%	ISO 62	0.1
Tensile strength	MPa	ISO 527-1,2	94
Strain at break	%	ISO 527-1,2	2.2
Flexural strength	MPa	ISO 178	151
Flexural modulus	MPa	ISO 178	9,500
Charpy notched impact strength (23℃)	kJ/m^2	ISO 179/1eA	4.1
Temperature of deflection under load (1.8MPa)	℃	ISO 75-1,2	200
Coefficient of linear thermal expansion (23 - 55℃、Flow direction)	$x10^{-5}$/℃	Our standard	3
Coefficient of linear thermal expansion (23 - 55℃、Transverse direction)	$x10^{-5}$/℃	Our standard	6
Electric strength (3mmt)	kV/mm	IEC 60243-1	28
Volume resistivity	Ω·cm	IEC 60093	2×10^{15}
Volume resistivity (Our standard)	Ω·cm		-
Tracking resistance (CTI)	V	IEC 60112	325
Rockwell hardness	M(Scale)	ISO2039-2	95
Flammability		UL94	HB
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. Flexural properties of DURANEX® 7400W

Figure 2-1 Temperature dependence of flexural strength

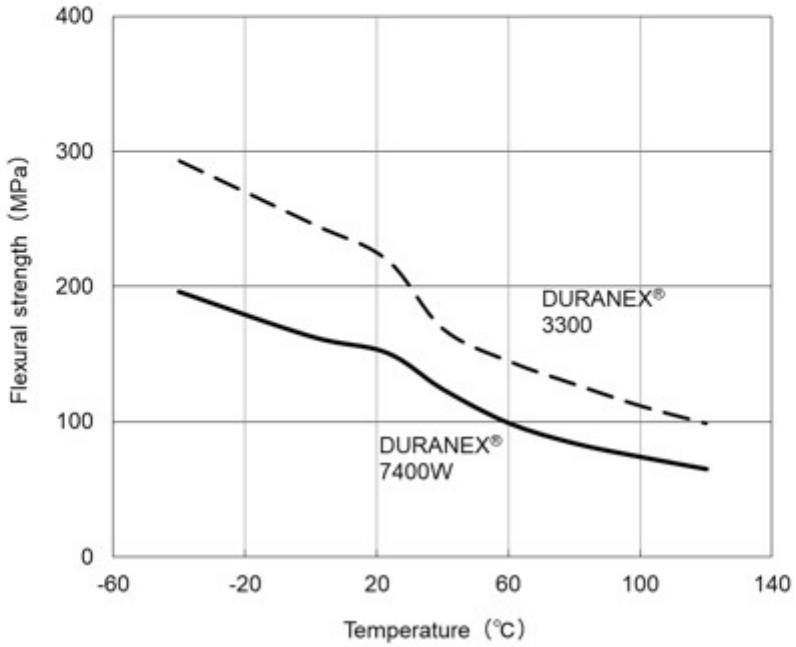
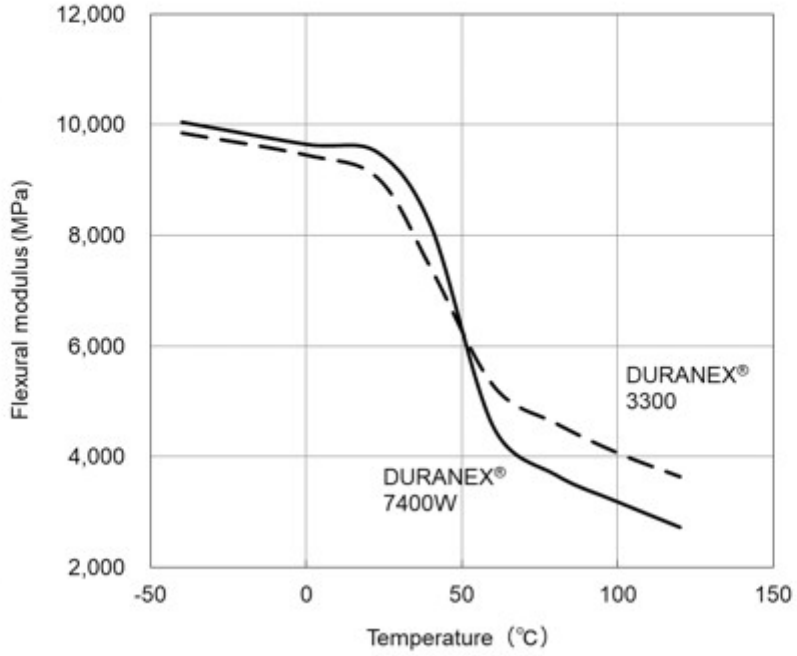
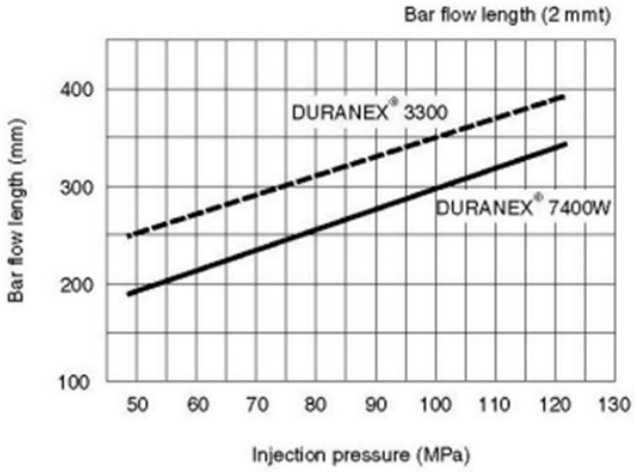


Figure 2-2 Temperature dependence of flexural modulus



3. Processing characteristics of DURANEX® 7400W

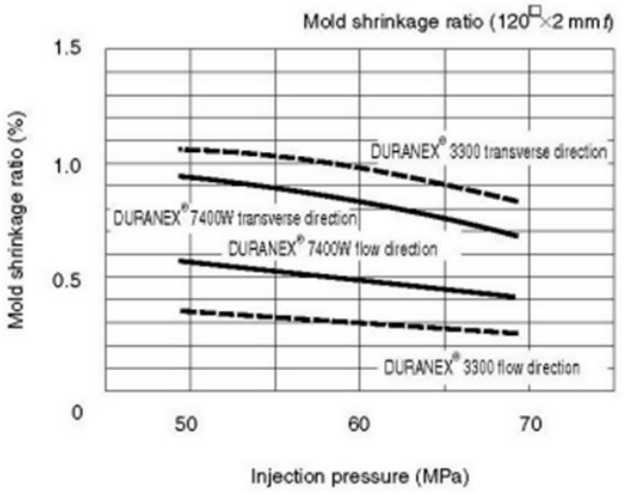
Figure 3-1 Flowability of DURANEX® 7400W



Processing parameters

Cylinder temperature	: 250-250-230-210˚C
Mold temperature	: 65˚C
Injection speed	: 67 mm/sec
Cycle	:10 s hold phase/7 s cooling
Mold	: Bar flow test mold

Figure 3-2 Mold shrinkage ratio of DURANEX® 7400W



Processing parameters

Cylinder temperature	: 250-250-230-210˚C
Mold temperature	: 65˚C
Injection speed	: 50 mm/sec
Cycle	: 15 s hold phase/10 s cooling
Test piece	: (120×120×2 mmt) flat plate (Side gate: 4 (W)×2 (*t*) mm)

4. Warpage deformation in parts molded from DURANEX® 7400W

Table 4-1 Warpage deformation of flat plate (120x120x2 mmt)

Grade	Warpage (mm)
DURANEX® 7400W	0.14
DURANEX® 3300	23.32

Processing parameters
- Cylinder temperature : 250-250-220-200˚C
- Mold temperature : 60˚C
- Injection speed : 50 mm/sec
- Injection pressure : 68.6 MPa
- Cycle : 15 s hold phase/10 s cooling

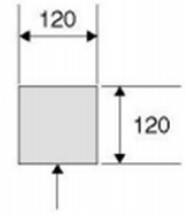
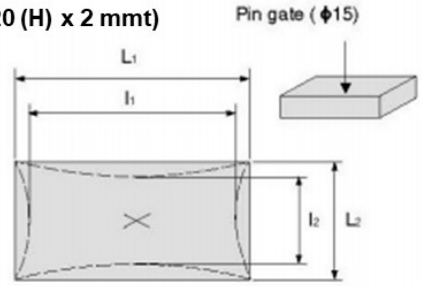


Table 4-2 Inner warpage deformation of box (40 (W) x 80 (L) and 20 (H) x 2 mmt)

Grade	Warpage (mm)
DURANEX® 7400W	1.27
DURANEX® 3300	1.82

Processing parameters
- Cylinder temperature : 250-250-220-200˚C
- Mold temperature : 60˚C
- Injection speed : 33 mm/sec
- Injection pressure : 78.4 MPa
- Cycle : 15 s hold phase/10 s cooling

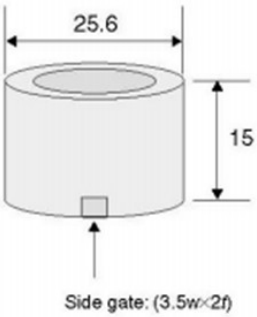


Inner warpage = $(L_1 - l_1) + (L_2 - l_2)$

Table 4-3 Precision in Suzuki-type friction and wear and test piece (20 mm i.d.x25.6 mm o.d.x15 mm height)

Grade	Concentricity (mm)	O.D. variation
DURANEX® 7400W	0.029	0.045
DURANEX® 3300	0.061	0.064

Processing parameters
- Cylinder temperature : 240-240-210-200˚C
- Mold temperature : 60˚C
- Injection speed : 17 mm/sec
- Injection pressure : 73.5 MPa
- Cycle : 15 s hold phase/10 s cooling



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NOTES TO USERS

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- 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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- For safe handling of materials we supply, it is advised to refer to the Safety Data Sheet "**SDS**" of the proper material.
- This brochure is edited based on reference literature, information and data available to us at the time of creation. The contents of this brochure are subject to change without notice upon achievement of new data.
- Please contact our office for any questions about products we supply, descriptive literatures or any description in this brochure.

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