

Polybutylene Terephthalate (PBT)

DURANEX®

6302T

EF2001/ED9050

(Low Friction, Low Wear
grade)

WinTech Polymer Ltd.

Introduction

The superior mechanical properties, heat resistance, dimensional stability, and excellent processability of **DURANEX®**

PBT are utilized in its application to various functional parts in a wide variety of areas, including electrical/electronic, OA equipment, and automotive. Moreover, various grades are offered to meet the demands of these diverse applications.

Reinforcement and filling of glass fibers is normally adopted in order to enhance stiffness, and in the **DURANEX** series, we offer glass fiber reinforced grades such as 3300.

However, glass fiber reinforced grades wear counter metals, and the resulting dust that is generated wears the grades in turn. Moreover, the interaction of these two phenomena further increases wear, and therefore, such grades are not suited for uses serving as mechanical components and rotating of sliding parts.

For such applications, we offer **DURANEX 6302T** and **6300T**, in which inorganic filler is used in place of glass fibers to enhance stiffness, and the grades do not cause metal counter materials to wear.

6302T and **6300T** have the following characteristics.

1. High stiffness

6302T and **6300T** are filled with inorganic fillers, which enhances their stiffness.

2. Superior friction and wear properties

The inorganic filler used in **6302T** and **6300T** not only has a reinforcing effect, it also possesses superior friction and wear properties, meaning the counter material is not worn as is the case with glass fibers.

3. Superior surface flatness

The inorganic filler used in **6302T** and **6300T** is of microscopic form, and compared with glass fiber reinforced grades, a part surface possessing considerably greater flatness can be obtained.

4. Excellent dimensional stability

As there is minimal filler orientation, unlike the case for injection molding of glass fiber reinforced grades, little warping and deformation occurs, and excellent dimensional stability is achieved.

5. A choice of flow characteristics

Besides the standard **6302T** type, we also offer a high flow type called **6300T**, which makes possible the molding of thin-wall parts.



General Properties of 6302T

table1-1 General Properties (ISO)

Item	Unit	Test Method	Low Friction, Low Wear
			6302T
			Mineral reinforced, Standard
Color			EF2001/ED9050
ISO(JIS)quality-of-the-material display:		ISO11469 (JIS K6999)	>PBT-MH30<
Density	g/cm ³	ISO 1183	1.6
Water absorption (23℃,24hrs)	%	ISO 62	0.2
Tensile strength	MPa	ISO 527-1,2	105
Strain at break	%	ISO 527-1,2	3.5
Flexural strength	MPa	ISO 178	174
Flexural modulus	MPa	ISO 178	9,000
Charpy impact strength (notched)	kJ/m ²	ISO 179/1eA	4
Temperature of deflection under load (1.8MPa)	℃	ISO 75-1,2	196
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	7
Dielectric breakdown strength (3mmt)	kV/mm	IEC 60243-1	14
Volume resistivity	Ω·cm	IEC 60093	5 × 10 ¹⁴
Tracking resistance (CTI)	V	IEC 60112	280
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

※1) Nominal strain at break

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



2. Friction and wear properties of DURANEX® 6300T and 6302T

Figure 2-1 Friction and wear properties of DURANEX® 6300T and 6302T (against steel)

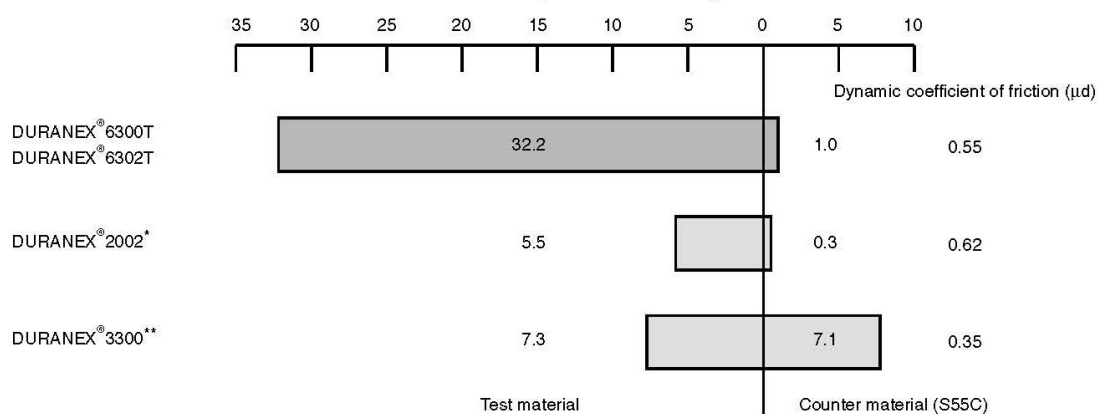
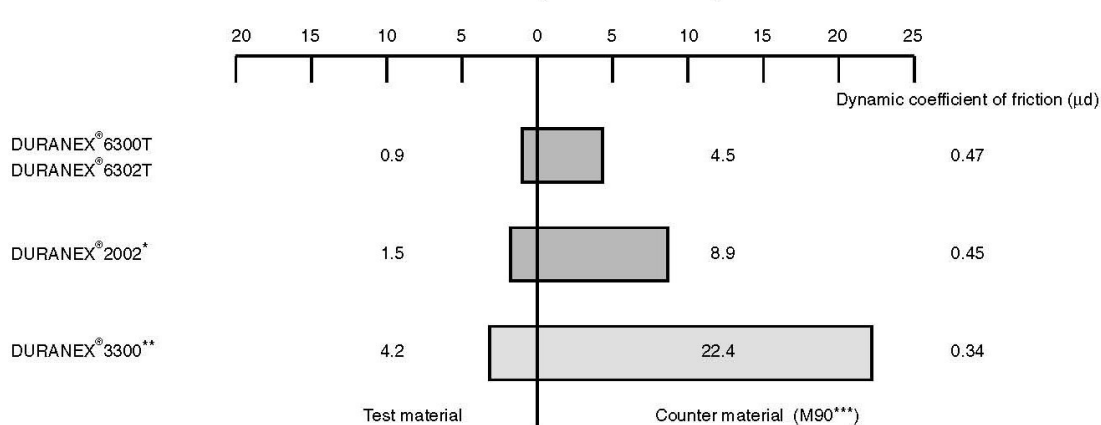


Figure 2-2 Friction and wear properties of DURANEX® 6300T and 6302T (against M90***)



*2002 : DURANEX® non-reinforced grade
 **3300 : DURANEX® 30% glass fiber reinforced grade
 ***M90 : POM(Acetal Co-polymer) "DURACON®" general-purpose grade

Test parameters
 Test apparatus : Thrust-type friction and wear testing apparatus
 Counter material : DURACON® M90 S55C
 Surface pressure : 0.05MPa 0.98MPa
 Speed : 15cm/s 30cm/s
 DURACON® : 24h

DURACON® is a registered trademark for Polyplastics' POM (Acetal Co-polymer) resin.

3. Flexural properties of DURANEX® 6302T

Figure 3-1 Temperature dependence of flexural strength of DURANEX® 6302T

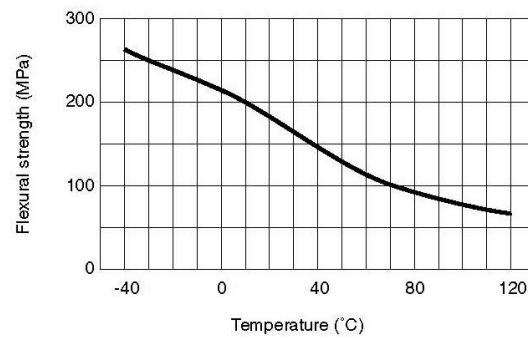
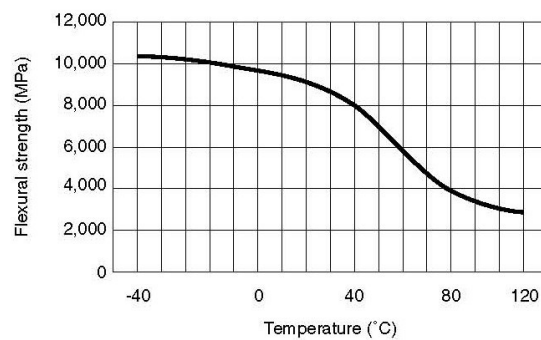
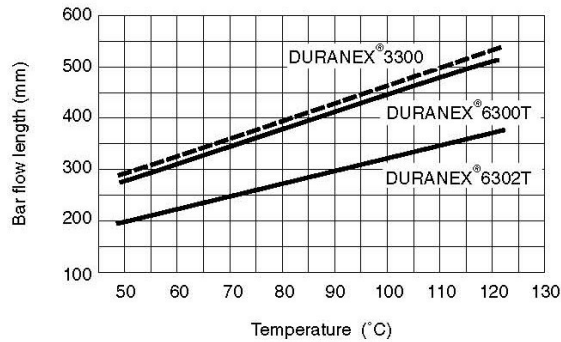


Figure 3-2 Temperature dependence of flexural modulus of DURANEX® 6302T



4. Processing characteristics of DURANEX® 6300T and 6302T

Figure 4-1 Bar flow lengths (2mm $\bar{t}$) of DURANEX® 6300T and 6302T



Processing parameters

Cylinder temperature : 250-250-230-210°C

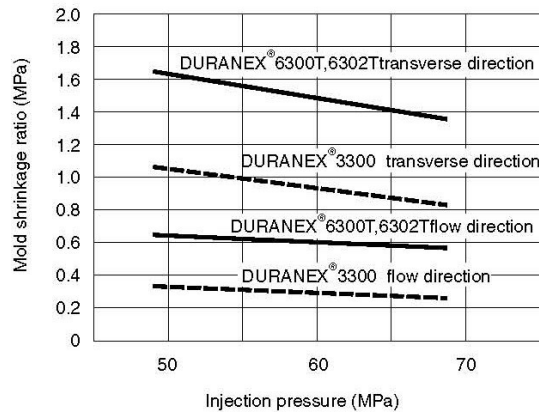
Mold temperature : 65°C

Injection speed : 67mm/sec

Cycle : 10 s hold phase/7 s cooling

Mold : Bar flow test mold

Figure 4-2 Mold shrinkage ratio (2mm $\bar{t}$) of DURANEX® 6300T and 6302T



Processing parameters

Cylinder temperature : 250-250-220-200°C

Mold temperature : 65°C

Injection speed : 50mm/sec

Cycle : 15 s hold phase/10 s cooling

Test piece : 120×120×2mm $\bar{t}$ flat plate

5. Properties of DURANEX® 6302T/2002 blends

Figure 5-1 Tensile strength

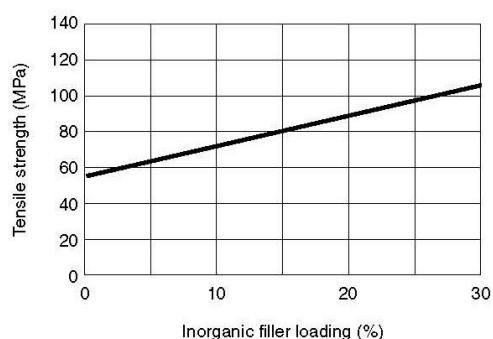


Figure 5-2 Tensile elongation

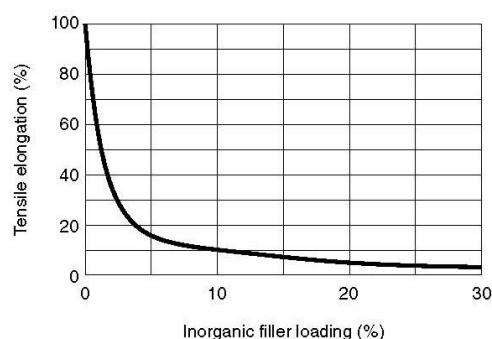


Figure 5-3 Flexural strength

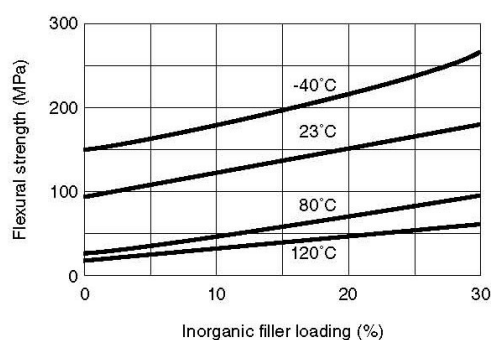


Figure 5-4 Flexural modulus

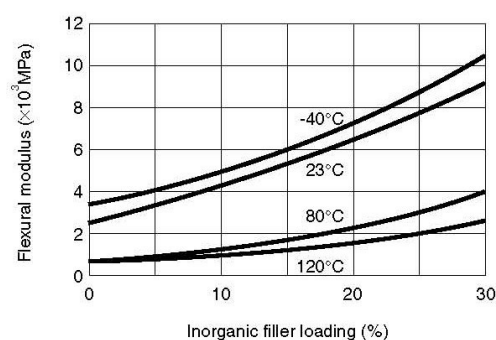


Figure 5-5 Izod impact strength (notched)

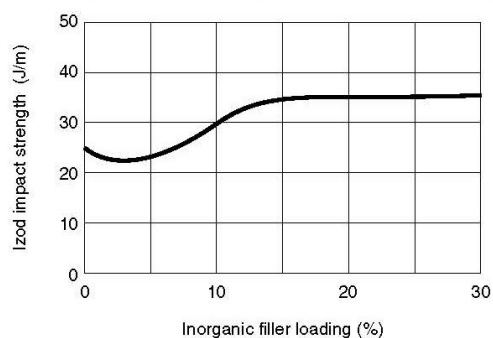
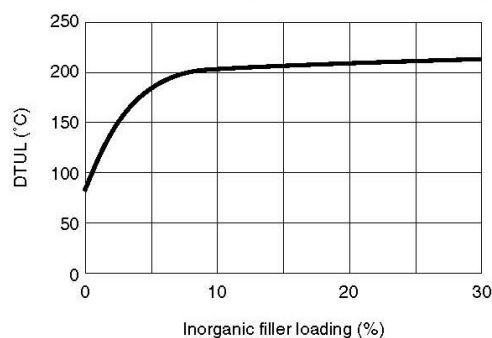


Figure 5-6 Deflection temperature under load DTUL (°C)



NOTES TO USERS

- All property values shown in this brochure are the typical values obtained under varying 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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