**Polybutylene Terephthalate (PBT)**

# DURANEX®

6300T

EF2001/ED9050

(Low Friction, Low Wear grade)

WinTech Polymer Ltd.

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# Introduction

The superior mechanical properties, heat resistance, demensional 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 interation 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 characteristcs.

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, meanig 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 grads, 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 6300T

table1-1 General Properties（ISO）

| Item | Unit | Test Method | Low Friction, Low Wear |
|---|---|---|---|
| | | | 6300T |
| | | | 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 |
| Flexural strength | MPa | ISO 178 | 180 |
| Flexural modulus | MPa | ISO 178 | 9,200 |
| 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 | 6 × 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)

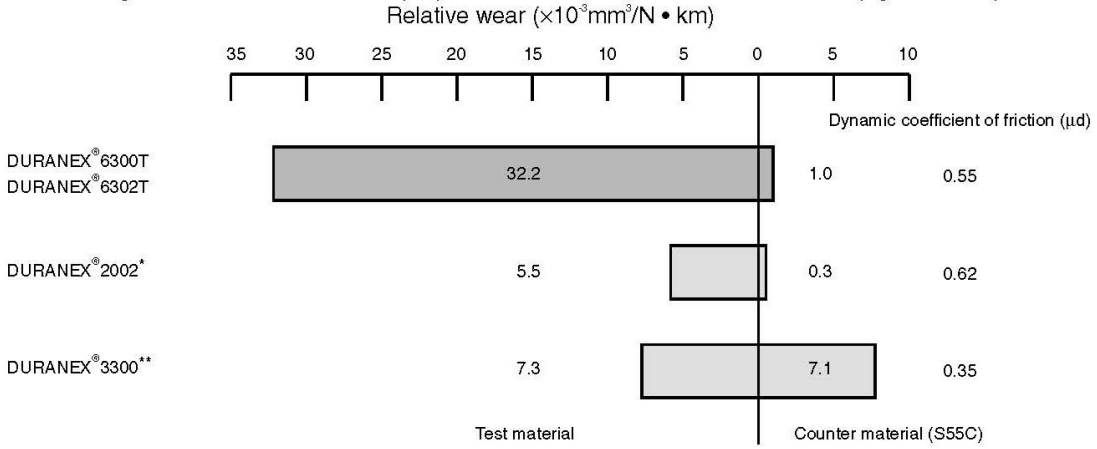
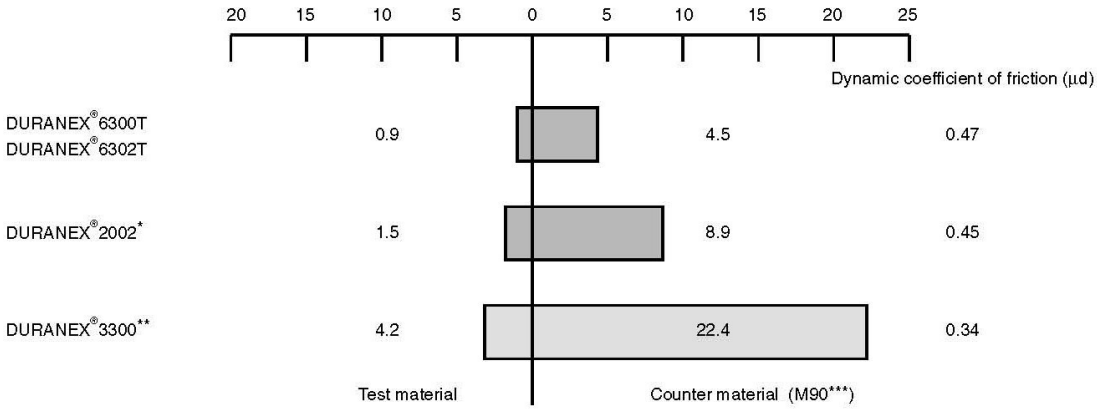



Figure 2-2 Friction and wear properties of DURANEX® 6300T and 6302T (against M90***)




*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

# 3. Flexural properties of DURANEX® 6302T

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

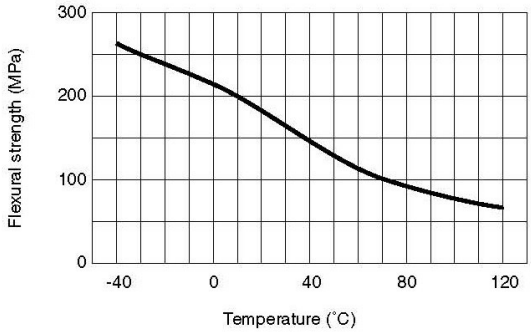
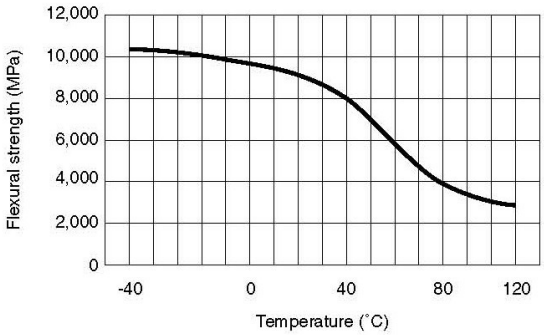
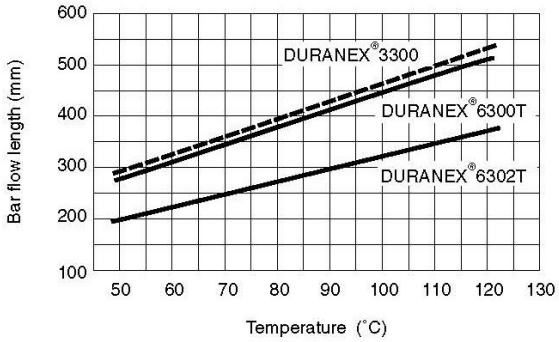



Figure 3-2 Temperature dependence of flexural modulus of DURANEX® 6302T



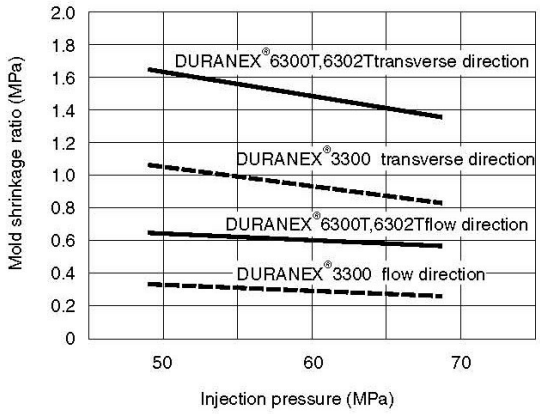
# 4. Processing characteristics of DURANEX® 6300T and 6302T

Figure 4-1 Bar flow lengths (2mm*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*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*t* flat plate

# 5. Properties of DURANEX® 6302T/2002 blends

Figure 5-1 Tensile strength

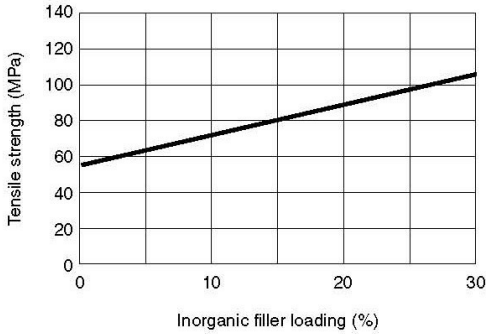



Figure 5-2 Tensile elongation

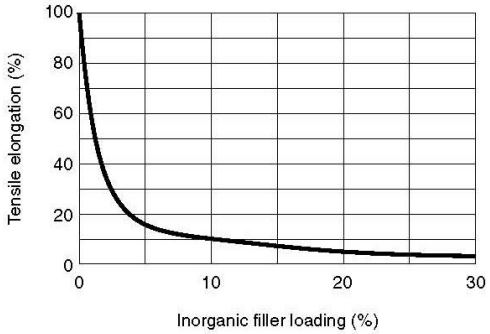



Figure 5-3 Flexural strength

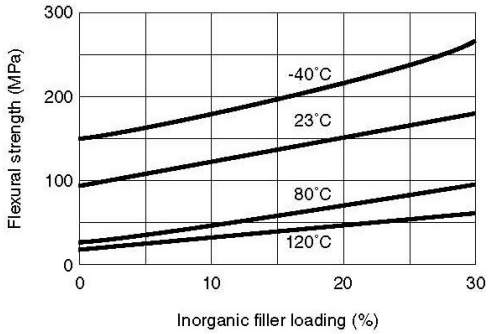



Figure 5-4 Flexural modulus

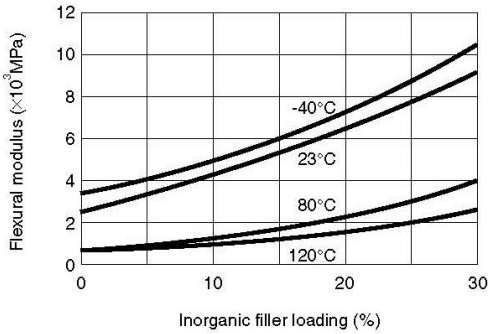



Figure 5-5 Izod impact strength (notched)

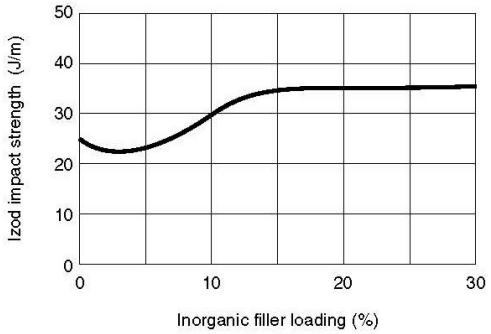
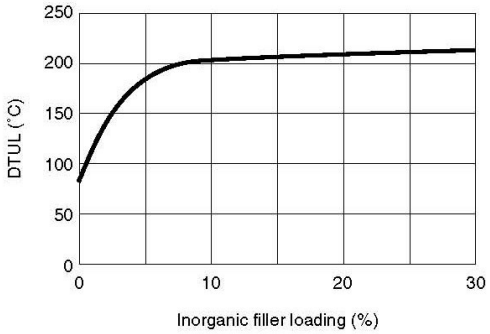



Figure 5-6 Deflection temperature under load DTUL (°C)



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## 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.
- It is the users' responsibility to investigate patent rights, service life and potentiality of applications introduced in this brochure. Materials we supply are not intended for the implant applications in the medical and dental fields, and therefore are not recommended for such uses.
- For all works done properly, it is advised to refer to the appropriate "**Technical Catalog**" for specific material processing.
- 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 literatures, information and data currently available to us. So the contents of this brochure are subject to change without notice due to 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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