Polybutylene Terephthalate (PBT)

DURANEX®

2002U

EF2001/ED3002

weather resistance

POLYPLASTICS CO., LTD.

Introduction

DURANEX® PBT is an engineering plastics that combines excellent physical properties with superior processability. It is utilized in numerous industrial fields, such as electrical and automotive, and its applications are steadily becoming more varied.

At Polyplastics, we offer many grades of **DURANEX** to cater for a diverse variety of applications. These are generally classified into filled reinforced and non-filled grades. Non-filled grades are employed in componenets which do not require high strength or stiffness, but which can leverage upon the high melting point of polybutylene terephthalate resin adn take advantage of the beautiful surface finish of the final part, along with exploiting the resin's inherent chemical resistance and excellent friction and wear characteristics. Grade 2002 is offered a general purpose-type non-filled grade, and it exhibits none of the anisotropy shown by glass fiber-reinforced grades when molding. **DURANEX** is a plastics with superior weatherability in its own right., but in grade **2002U**, we offer a material with further enhanced weatherability, which can be safely employed outdoors or indoors in environments with high incidences of ultraviolet radiation exposure.

General Properties of 2002U

table1-1 General Properties（ISO）

Item	Unit	Test Method	weather resistance
			2002U
			Unfilled
Color			EF2001/ED3002
ISO(JIS)quality-of-the-material display:		ISO11469 (JIS K6999)	>PBT<
Density	g/cm^3	ISO 1183	1.31
Water absorption (23°C,24hrs,1mmt)	%	ISO 62	0.2
Tensile strength	MPa	ISO 527-1,2	60
Strain at break	%	ISO 527-1,2	100*1
Flexural strength	MPa	ISO 178	95
Flexural modulus	MPa	ISO 178	2,630
Charpy notched impact strength (23℃)	kJ/m^2	ISO 179/1eA	3.4
Temperature of deflection under load (1.8MPa)	℃	ISO 75-1,2	70
Coefficient of linear thermal expansion (23 - 55℃、Flow direction)	$x10^{-5}/℃$	Our standard	11
Coefficient of linear thermal expansion (23 - 55℃、Transverse direction)	$x10^{-5}/℃$	Our standard	11
Electric strength (3mmt)	kV/mm	IEC 60243-1	14
Volume resistivity	Ω·cm	IEC 60093	5×10^{16}
Tracking resistance (CTI)	V	IEC 60112	-
Rockwell hardness	M(Scale)	ISO2039-2	90
Flammability		UL94	HB
The yellow card File No.			E213445
Appropriate List number of Ministerial Ordinance for Export Trade Control			Item 16 of Appendix -1

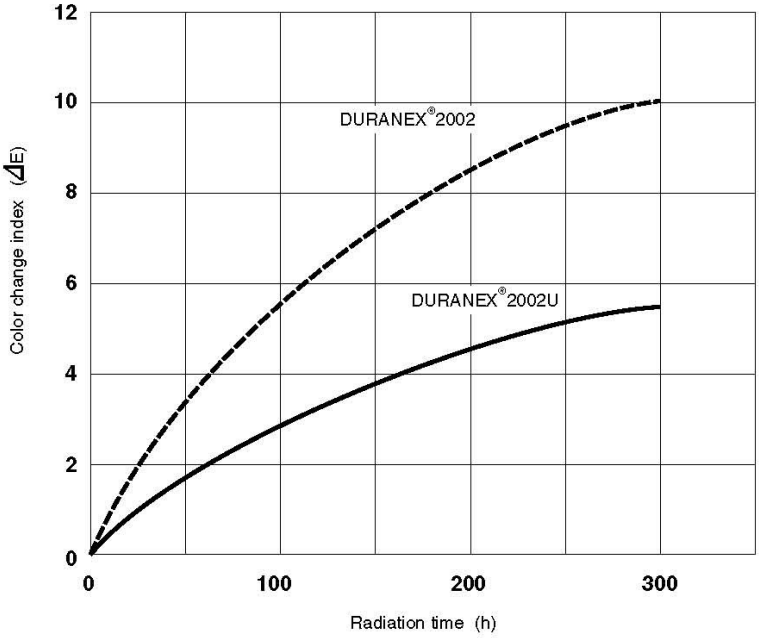
*1) Nominal strain at break

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

2. Light stability of DURANEX® 2002U

The light stability of grade **2002U** is compared with that of grade 2002 in **Figure 2-1.** As can be seen from the figure, on can see that the color change index (ΔE) of **2002U** is vastly improved.

Figure 2-1 Light stability of DURANEX® 2002U



Test parameters
Sunshine carbon fade meter used.
Black panel temperature = 63°C
Up to 300 hours of irradiation

Note : $\Delta E = \sqrt{(\Delta L)^2 + (\Delta a)^2 + (\Delta b)^2}$
where ΔL, Δa, and Δb are the differences in L, a, and b values (i.e., color change values) calculated from measurements before and after irradiation.

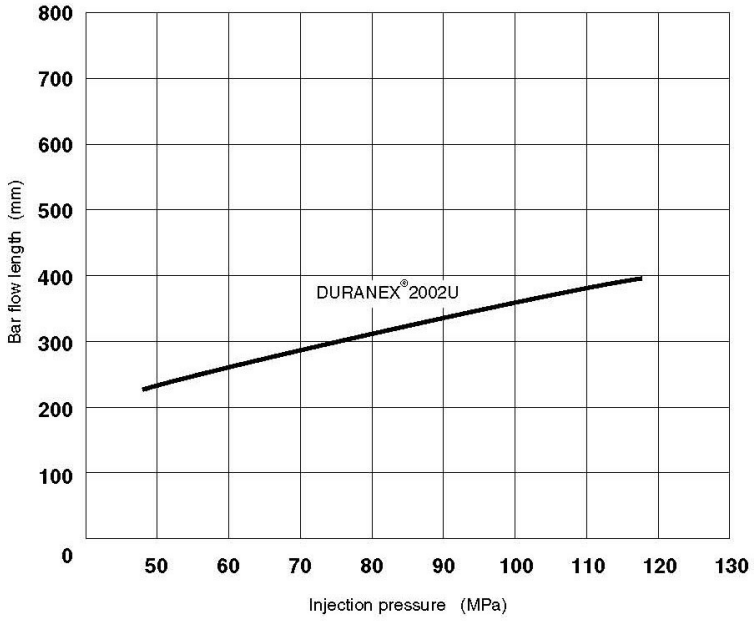
3. Processing characteristics of DURANEX® 2002U

The processability of **2002U** is almost the same as that of 2002.

Flowability of 2002U

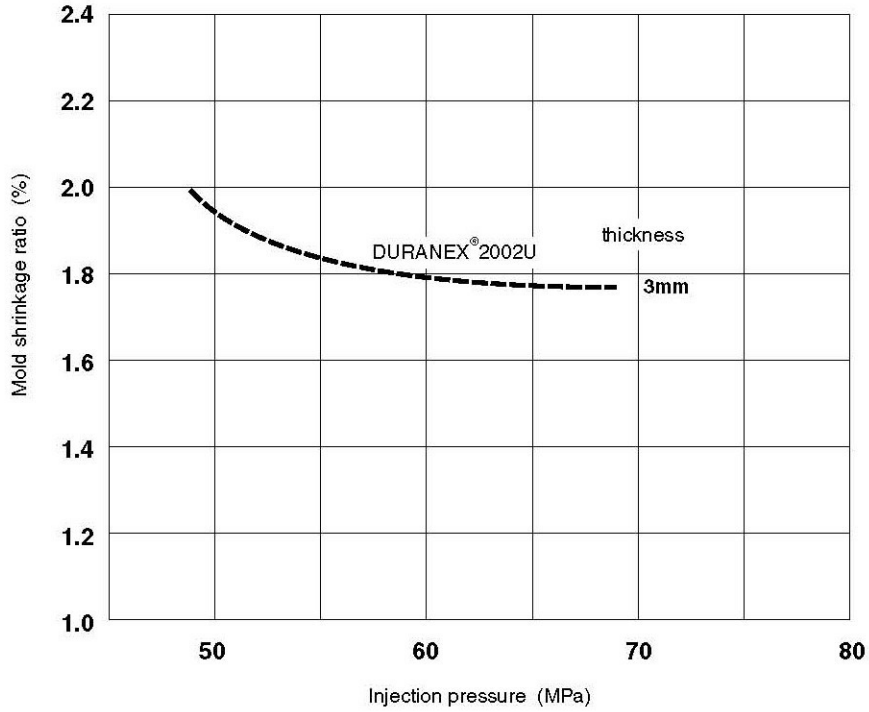
The flowability of **2002U** is shown in Figure 3-1.

Figure 3-1 DURANEX® 2002U bar flow length (2mm*t*)



Processing parameters (nozzle)
Cylinder temperature : 250-240-220-200˚C
Mold temperature : 75˚C
Injection speed : 50mm/sec
Mold : 2mm*t* Bar flow length mold

Figure 3-2 Mold shrinkage ratio of DURANEX® 2002U



Processing parameters (nozzle)
Cylinder temperature : 240-240-220-200˚C
Mold temperature : 65˚C
Injection speed : 33mm/sec
Mold : 120×120×2~4mm*t*
Gate : 4 (*w*) ×2*t*

Figure 3-3, **3-4**, and **3-5** show mold shrinkage ratios in the case of pin gates at various injection pressures. As the mold shrinkage ratio varies depending on the part thickness, the gate size, and the injection pressure, we strongly recommend sufficient consideration prior to mold fabrication.

Mold shrinkage ratio in the case of pingates

Figure 3-3 Injection pressure 49.0MPa

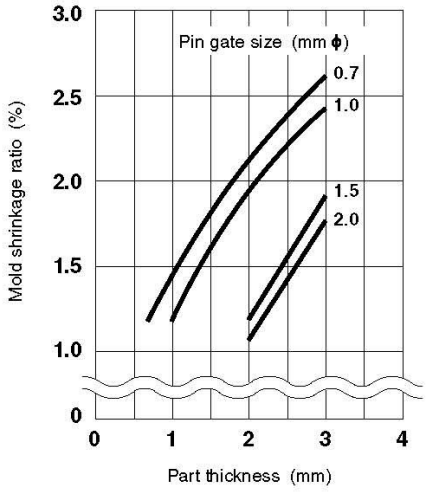


Figure 3-4 Injection pressure 73.5MPa

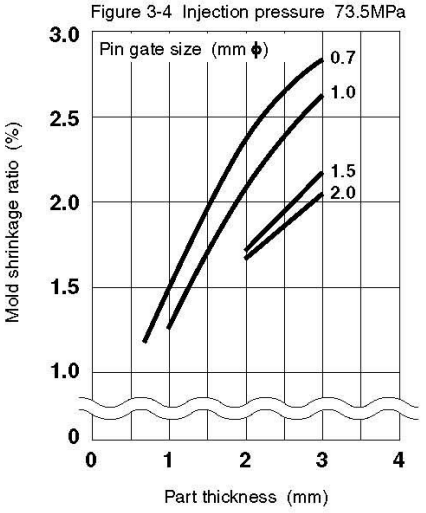
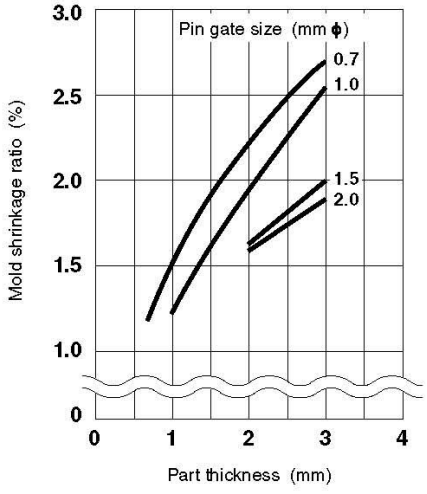


Figure 3-5 Injection pressure 98.1MPa



Processing parameters (nozzle)
Cylinder temperature : 240-240-220-200˚C
Mold temperature : 65˚C
Injection speed : 50mm/sec
Mold : 120×120×2~4mmt
Gate : 4 (*w*)× 2*t*

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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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- For safe handling of materials we supply, it is advised to refer to the Safety Data Sheet "**SDS**" of the proper material.
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- Please contact our office for any questions about products we supply, descriptive literatures or any description in this brochure.

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