

Polyacetal (POM)

**DURACON®**

LU-02

CF2001

Weather Resistant

**POLYPLASTICS CO., LTD.**



# Introduction

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**DURACON<sup>(R)</sup> POM** has excellent mechanical properties and outstanding moldability and is used for making parts in a wide range of fields.

**DURACON** is used mainly in mechanical parts. Generally our superior weather/light resistant grades are widely used for parts having partially exposed surfaces. Moreover, particularly in the automotive field, in addition to superior weather/light resistant grades and equivalently superior performance, there is also demand for an increased sense of luxury in molded products featuring matte finishes.

To meet this demand, our **DURACON** grade **LU-02** suppresses glossiness to give a quiet finish to molded products while having excellent light resistance at the same time.

**LU-02** has the following properties:

## 1. Excellent light resistance property

**LU-02** shows equivalent or superior weather/light resistance among our various grades. It is well suited for use in automotive interior parts requiring an attractive appearance.

## 2. Excellent matte property

Glossy surfaces of molded items are uniformly lowered, producing surface qualities of calm luxury.

In addition, moldability and colorability are excellent. There are no problems of coloring heterogeneity or variation.

## 3. High mold transferability

Mold transferability is high, resulting in excellent matte finish in emboss mold processing.

## 4. Excellent mechanical strength

**LU-02**, despite having matte and light resistance properties, minimizes deterioration of mechanical properties as compared with standard grades.

## 5. Excellent moldability

Like other general **DURACON** grades, **LU-02** moldability property is excellent.



# General Properties of LU-02

table1-1 General Properties (ISO)

Item	Unit	Test Method	Weather Resistant
			LU-02
			Low gloss, weather resistance
Color			CF2001
ISO(JIS)quality-of-the-material display:		ISO11469 (JIS K6999)	>POM<
Density	g/cm <sup>3</sup>	ISO 1183	1.39
Water absorption (23°C,24hrs,1mmt)	%	ISO 62	0.5
MFR (190°C、2.16kg)	g/10min	ISO 1133	22
MVR (190°C、2.16kg)	cm <sup>3</sup> /10min	ISO 1133	19
Tensile strength	MPa	ISO 527-1,2	57
Strain at break	%	ISO 527-1,2	14 <sup>1</sup>
Tensile modulus	MPa	ISO 527-1,2	2,450
Flexural strength	MPa	ISO 178	75
Flexural modulus	MPa	ISO 178	2,250
Charpy notched impact strength (23°C)	kJ/m <sup>2</sup>	ISO 179/1eA	6.8
Temperature of deflection under load (1.8MPa)	°C	ISO 75-1,2	82
Coefficient of linear thermal expansion (23 - 55°C、Flow direction)	x10 <sup>-5</sup> /°C	Our standard	12
Coefficient of linear thermal expansion (23 - 55°C、Transverse direction)	x10 <sup>-5</sup> /°C	Our standard	12
Electric strength (3mmt)	kV/mm	IEC 60243-1	-
Volume resistivity	Ω·cm	IEC 60093	5 × 10 <sup>13</sup>
Surface resistivity	Ω	IEC 60093	6 × 10 <sup>15</sup>
Volume resistivity (Our standard)	Ω·cm		-
Surface resistivity (Our standard)	Ω		-
Mold Shrinkage (60×60×2mmt, Flow direction)	%	ISO 294-4	-
Mold Shrinkage (60×60×2mmt, Transverse direction)	%	ISO 294-4	-
Rockwell hardness	M(Scale)	ISO2039-2	80
Specific wear amount (Thrust, vs C-Steel, material side, pressure 0.49MPa, 30cm/s)	x10 <sup>-3</sup> mm <sup>3</sup> /(N·km)	JIS K7218	2.0
Specific wear amount (Thrust, vs C-Steel, steel side, pressure 0.49MPa, 30cm/s)	x10 <sup>-3</sup> mm <sup>3</sup> /(N·km)	JIS K7218	0.01>
Coefficient of Dynamic Friction (Thrust, vs C-Steel, pressure 0.49MPa, 30cm/s)		JIS K7218	0.8
Specific wear amount (Thrust, vs C-Steel, material side, pressure 0.98MPa, 30cm/s)	x10 <sup>-3</sup> mm <sup>3</sup> /(N·km)	JIS K7218	-



Item	Unit	Test Method	Weather Resistant
			LU-02
			Low gloss, weather resistance
Specific wear amount (Thrust, vs C-Steel, steel side, pressure 0.98MPa, 30cm/s)	$\times 10^{-3} \text{mm}^3/(\text{N} \cdot \text{km})$	JIS K7218	-
Coefficient of Dynamic Friction (Thrust, vs C-Steel, pressure 0.98MPa, 30cm/s)		JIS K7218	-
Specific wear amount (Thrust, vs M90-44, material side, pressure 0.06MPa, 15cm/s)	$\times 10^{-3} \text{mm}^3/(\text{N} \cdot \text{km})$	JIS K7218	10
Specific wear amount (Thrust, vs M90-44, M90-44 side, pressure 0.06MPa, 15cm/s)	$\times 10^{-3} \text{mm}^3/(\text{N} \cdot \text{km})$	JIS K7218	70
Coefficient of Dynamic Friction (Thrust, vs M90-44, pressure 0.06MPa, 15cm/s)		JIS K7218	0.37
Flammability		UL94	HB
The yellow card File No.			E45034
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.



# 1. LU-02 Matte property

Using **DURACON<sup>(R)</sup> LU-02** can uniformly lower surface glossiness of molded parts. Also there is virtually no difference in matte effect due to colors used.

Additionally, when emboss mold processing, part surfaces increase in matte effect, producing a calm, luxurious appearance.

Moreover, glossiness does not increase due to light resistance tests.

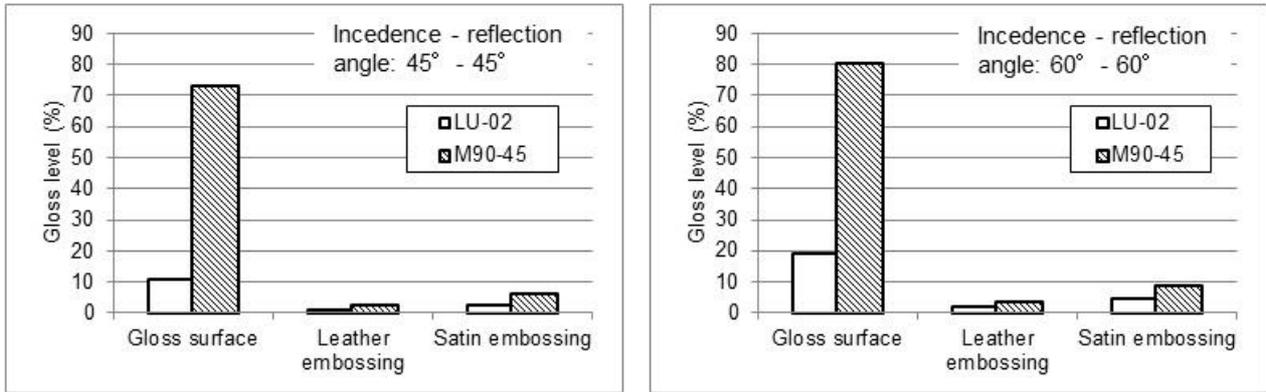
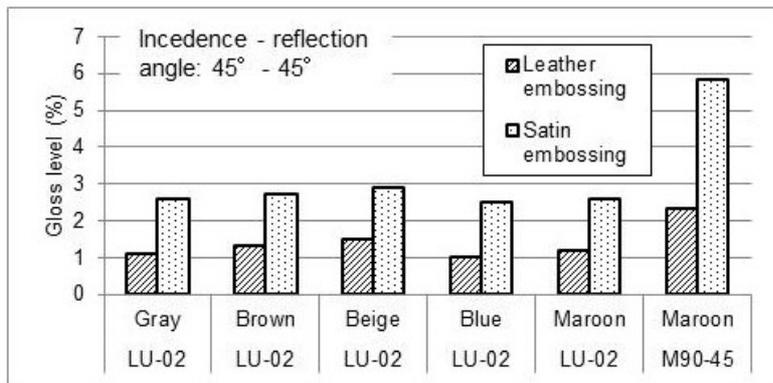


Fig. 1-1 Gloss level of LU-02 and M90-45 (Maroon color)



Apparatus: Digital variable angle type glossmeter  
 Leather embossing: GRAIN-C  
 Satin embossing: GR-003

Fig. 1-2 Gloss level of colored products



## 2. LU-02 Light resistance

LU-02 is generally equal to or superior to our other weather/light resistant grades, though there are some differences in light resistance test results due to test methods and coloration.

In addition, in light resistance tests at the 1,100 hour level, there is almost no change in physical properties.

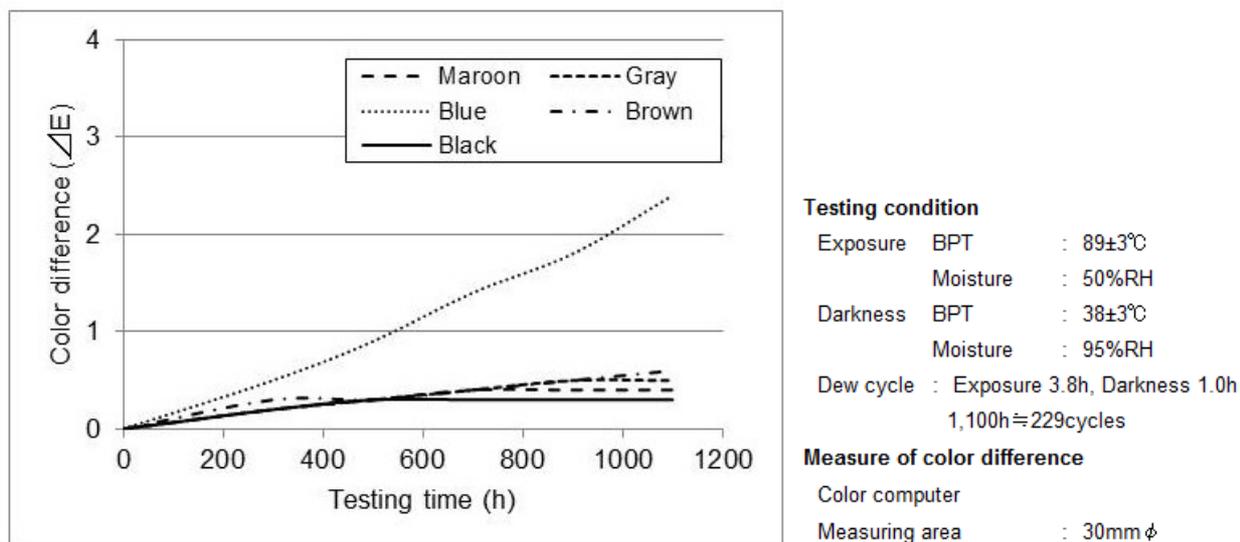


Fig. 2-1 Color difference ( $\Delta E$ ) of LU-02 (Super Xenon Weather Meter)

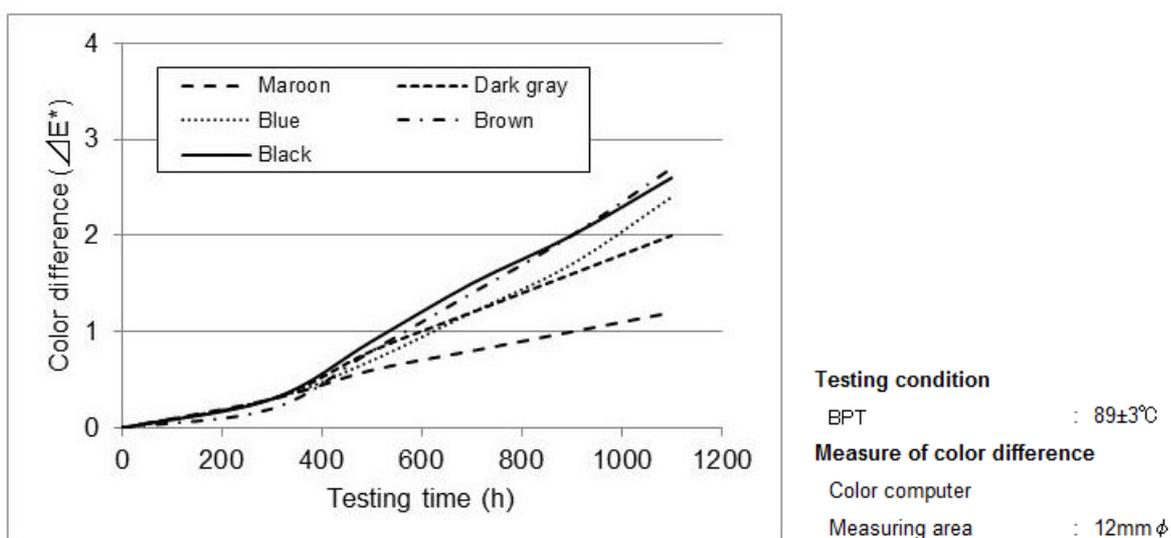


Fig. 2-2 Color difference ( $\Delta E^*$ ) of LU-02 (UV Fade Meter)



### 3. Flammability (FMVSS-No.302)

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Results of flammability testing in accordance with U.S. Federal Motor Vehicle Safety Standards (FMVSS-No.302) are shown below. When test pieces are thin, burn rates increase, but with a thickness of over 1mm, **LU-02** fully satisfies the FMVSS-N0.302 defined burn rate standard of no more than 10cm/min.

**Table 3-1 Burn rate of LU-02**

Material	Thickness of specimen (mm)	Burn rate (mm/min) <sup>(*)</sup>
LU-02	1.2	Maximum: 63 Average: 62

Preparation of specimens: Normal

(\*) Maximum and average values of 5 test specimens



## 4. LU-02 Moldability

Though **LU-02** flowability is slightly shorter compared to M270-45, the difference is small. With some minor adjustments, **LU-02** can be used under virtually the same molding conditions as M270-45.

In addition, the mold shrinkage rate of **LU-02** is almost the same as M270-45.

**Table 4-4 Flowability and Mold shrinkage of LU-02**

Item	Unit	Test Method	LU-02	M270-45
Flowability (Bar-shaped cavities, 2mm thick, Inj. pressure 100MPa)	mm	Our standard	600	650
Mold Shrinkage (120×120×2mmt, Flow direction, Inj. pressure 60MPa)	%	Our standard	1.85	1.73
Mold Shrinkage (120×120×2mmt, Trans direction, Inj. pressure 60MPa)	%	Our standard	1.92	1.78

< Molding conditions >

Resin temp.: 200 deg C

Mold temp.: 80 deg C

## 5. Notes on molding LU-02

### 5.1 Mold maintenance

Compared to our other weather/light resistant grades, **LU-02** is a low mold deposit type. For this reason, **LU-02** shows high mold transferability even in long duration molding.

However, in mass production use, cleaning the mold may be necessary, depending on the amount of mold deposit adhesion to the mold.

### 5.2 Matte property

Because the surface glossiness of **LU-02** molded products changes with molding conditions, maintaining fixed molding conditions is recommended.

Please note that when molding with **LU-02**, like our standard grades, molded product surface glossiness is reduced when lower injection speed, holding pressure and mold temperature conditions are set.

However, with emboss mold processing, improved mold transferability conditions are opposite to those mentioned above; i.e., raised injection speed, holding pressure and mold temperature conditions will reduce molded part surface glossiness.



## **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.
- 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.
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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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