

ETERNALAST® LD4055D

Technical product information: AIR-BOWN – TPU monolayer film properties

ETERNALAST® LD4055D is an **under-development polycarbonate-based TPU** for injection and extrusion providing high mechanical strength, excellent abrasion and high durability.

Physical properties

Properties ⁽¹⁾	Method	Features	Value
Melting point	ISO 11357	°C	178
Crystallization temperature	ISO 11357	°C	130
MFI (215 °C/2.15 kg)	ISO 1133	g/10min	7
Density	DIN 53479	g/cm ³	1.21

Mechanical properties

Properties ⁽²⁾	Method	Unit	Value
Tensile strength at yield	ISO 527-3	MPa	-
Tensile strength at break	ISO 527-3	MPa	87
Tensile elongation at break	ISO 527-3	%	360
Tensile modulus	ISO 527-3	MPa	206
Tear resistance	ASTM D 1922	N	13
Puncture energy	UNE-EN 14477	mJ	36.9
Puncture deformation	UNE-EN 14477	mm	7.8
Spencer impact resistance	ASTM D 3420	mJ	2367
Flex crack (23 °C, 900 cycles)	Mil B-131C	Holes/0.04m ²	2

Optical properties

Properties ⁽²⁾	Method	Unit	Value
Haze	ASTM D 1003	ASTM D 1003	2
Gloss	ASTM D 523	ASTM D 523	141



Gas barrier

Properties ⁽²⁾	Method	Unit	Value
Oxygen ($T=23^{\circ}\text{C}$, $\text{RH}=0\%$)	ASTM D 1003	$\text{ml}/\text{m}^2.\text{day}$	223
Water Vapour ($T=40^{\circ}\text{C}$, $\text{RH}=90\%$)	ASTM D 523	$\text{g}/\text{m}^2.\text{day}$	182

(1) Measured on base resin

(2) All tests carried out with a 5 layers airblown line, Die diameter = 90 mm · Die gap=1,4 mm
 Structure: PE (outer) / PE / TPU (medium) / PE / PE (inner), TPU layer delaminated for the tests
 Layer thickness distribution: PE = 50 μm , TPU = 50 μm , PE = 50 μm (Total film thickness = 150 μm).
 Sample conditioning and testing conditions: $T = 23^{\circ}\text{C}$, $\text{RH} = 50\%$

Recommended processing conditions

Properties	Unit	Hopper	Zone 1	Zone 2	Zone 3	Zone 4	Adaptor	Die
Temperature	°C	40-120	200-220	200-220	205-225	205-225	210-230	210-230

Drying conditions

ETERNALAST® TPU is supplied dry and packed in high barrier films. However, as TPU is a hygroscopic material, the user should take a special care of the possible moisture absorption once the bag or liner box has been opened. In case of moisture absorption, the material should be dried with dehumidified air at 80°C for more than 4 hours.

Standard packaging

25 kg bags

Available commercial samples

