

## ETERNALAST® LD4089A

### Technical product information: AIR-BLOWN – TPU monolayer film properties

**ETERNALAST® LD4089A** is an **under-development polycarbonate-based TPU** for injection and extrusion providing high mechanical strength, excellent abrasion and high durability.

### Physical properties

Properties <sup>(1)</sup>	Method	Features	Value
Melting point	ISO 11357	°C	161
Crystallization temperature	ISO 11357	°C	71
MFI (215 °C/2.15 kg)	ISO 1133	g/10min	8
Density	DIN 53479	g/cm <sup>3</sup>	1.19

### Mechanical properties

Properties <sup>(2)</sup>	Method	Unit	Value
Tensile strength at yield	ISO 527-3	MPa	-
Tensile strength at break	ISO 527-3	MPa	86
Tensile elongation at break	ISO 527-3	%	354
Tensile modulus	ISO 527-3	MPa	57
Tear resistance	ASTM D 1922	N	11
Puncture energy	UNE-EN 14477	mJ	46
Puncture deformation	UNE-EN 14477	mm	10
Spencer impact resistance	ASTM D 3420	mJ	1968
Flex crack (23 °C, 900 cycles)	Mil B-131C	Holes/0.04m <sup>2</sup>	0

### Optical properties

Properties <sup>(2)</sup>	Method	Unit	Value
Haze	ASTM D 1003	ASTM D 1003	3
Gloss	ASTM D 523	ASTM D 523	135

## Gas barrier

Properties <sup>(2)</sup>	Method	Unit	Value
Oxygen (T=23 °C, RH=0%)	ASTM D 1003	ml/m <sup>2</sup> .day	285
Water Vapour (T=40°C, RH=90%)	ASTM D 523	g/m <sup>2</sup> .day	217

(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°C, 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

## Health & environmental data

Please refer to the corresponding **ETERNALAST® series** MSDS.

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