

## MACLINE Geomembranes MACLINE® ATARFIL LLDS

### Raw Material

### Linear Low Density Polyethylene

#### DESCRIPTION

**MACLINE® ATARFIL LLDS** is a two-colour coextruded geomembrane manufactured from maximum quality linear low density polyethylene LLDPE resins to which pigments with a UV stabilizer are added. As a result of its colour, the product obtains a high integration with environment, or enhance the superficial appearance of the geomembrane in ornamental applications. Available colours: Green, Blue, Turquoise, Ochre, Grey and White. Other colours under request for minimum orders, indicating RAL code. Thickness of coextruded layer can be modified.

**MACLINE® ATARFIL LLDS** contains 97.5% of pure polymer, and approximately 2.5% of Carbon Black, antioxidant, thermal stabilizers and signal layer in white colour. The product does not contain plasticizers or fillers that can migrate over time. Atarfil guarantees both UV resistance and colour stability for a variable time limit depending on the selected colour.

The geomembrane **MACLINE® ATARFIL LLDS** is manufactured under rigorous quality controls.

SURFACE	SMOOTH	COLOUR	BLACK + COLOUR				
		RAL Code	Green 6001	Blue 5012	Ochre 1001	Turquoise 5018	Grey 7040

Raw Material Identification	Tested Property	Unit	Test Method	Value
	Density of Raw Material	g/cm <sup>3</sup>	UNE EN ISO 1183-1	>0,932
	Density of Geomembrane	g/cm <sup>3</sup>	UNE EN ISO 1183-1	0.940
	Melt Flow Index	g/10 min	UNE EN ISO 1133-1 (190°C/2,16 Kg)	1.2
			UNE EN ISO 1133-1 (190°C/2,16 Kg)	3.5
	Carbon Black Content	%	ASTM D 4218	2,0 - 2,5
	Carbon Black Dispersion	-	ISO 18553	3

  

Durability	Tested Property	Unit	Test Method	Value
	Oxidative Induction Time (OIT)	min	UNE EN 728 (200°C)	> 100
Oven aging at 85°C (min. ave.)	%	UNE EN 14575	> 55	

Functional Properties	Tested Property	Unit	Test Method	Value
	Low Temperature Brittleness (t <sup>e</sup> : -40°C)	-	UNE EN 495-5	No cracks
	Water Permeability	m <sup>3</sup> /m <sup>2</sup> -day	UNE EN 14150	< 1·10 <sup>-6</sup>
	Coefficient of Linear Thermal Expansion	1/K	ASTM D 696	1,93·10 <sup>-4</sup>
	Water Absorption	%	UNE EN ISO 62 (24h)	0,1
			UNE EN ISO 62 (6 days)	0, 5
	Thickness of Co-extruded Layer	%	UNE EN 1849-2	50
Asperity Height	mm	ASTM D 7466	-	

Strength Characteristics Quality of Final Product	Tested Property	Unit	Test Method	Value					
	Thickness	mm	UNE EN 1849-2	1.00	1.50	2.00	2.50	3.00	
	Medium thickness tolerance	%	-	+ 5					
	Punctual minimum thickness tolerance	%	-	+ 10					
	Tensile Properties <sup>(1)</sup>								
	Tensile strength at Yield	N/mm	UNE-EN ISO 527	13 (26)	45 (39)	62 (52)	77 (65)	93 (78)	
	Elongation at Break	%		800 (750)					
	Tear Resistance	N	ISO 34-1	98	145	195	245	290	
	Puncture Resistance	KN	UNE-EN ISO 12236	2.40	2.90	4.40	4.90	5.90	
	Exploding Resistance	%	pr EN 14151	> 15					
Dimensional Stability	%	UNE EN ISO 14632 (100°C, 1h)	± 1.5						

2506/3	PRESENTATION (Standard Sizes)	Parameter	Units	1,00	1,50	2,00	2,50	3,00
		Roll width	m	6 / 6,30/ 7.50*	6 / 6,30/ 7.50*	6 / 6,30/ 7.50*	6 / 6,30/ 7.50*	6 / 6,30/ 7.50*
		Roll Length	m	210	140	105	84	70
		Surface	m <sup>2</sup>	1260/1323/1575	840/882/1050	630/661/787	504/529/630	420/441/525

(1) Values indicated are medium. In brackets values with 95% confidence level.  
(2) Certificates belonging to the Environmental and Quality Integrated System of Atarfil  
(\*) Geomembrane manufactured in Dubai Plant.