

**MACLINE Geomembranes**  
**MACLINE® ATARFIL LLD**
**Raw Material**
**High Density Polyethylene**
**DESCRIPTION**

**MACLINE® ATARFIL LLD** is a geomembrane manufactured from maximum quality high density polyethylene LLDPE resins, duly contrasted, that comply with the most rigorous requirements established for their use.

**MACLINE® ATARFIL LLD** contains 97,5% of pure polymer, and approximately 2,5% of Carbon Black, antioxidants and thermal stabilizers. The product does not contain plasticizers or fillers that can migrate over time.

The geomembrane **MACLINE® ATARFIL LLD** is manufactured under permanent quality controls.

<b>SURFACE</b>	<b>SMOOTH</b>	<b>COLOUR</b>	<b>BLACK</b>
		<b>RAL Code</b>	-

Raw Material Identification					Functional Properties					
Tested Property	Unit	Test Method	Value		Tested Property	Unit	Test Method	Value		
Density of Raw Material	g/cm <sup>3</sup>	ASTM D 792	>0,932		Low Temperature Brittleness (t <sup>a</sup> : -40°C)	-	UNE EN 495-5	No cracks		
Density of Geomembrane	g/cm <sup>3</sup>	ASTM D 792	0.940			Water Permeability	m <sup>3</sup> /m <sup>2</sup> ·day	UNE EN 14150	< 1·10 <sup>-6</sup>	
Melt Flow Index	g/10 min	ASTM D 1238 (190°C/2, 16 Kg)	1.2			Coefficient of Linear Thermal Expansion	1/K	ASTM D 696	1,93·10 <sup>-4</sup>	
		ASTM D 1238 (190°C/5 Kg)	3.5			Water Absorption	%	ASTM D 570 (24h)	0,1	
Carbon Black Content	%	ASTM D 4218	2,0 - 2,5					ASTM D 570 (6 days)	0,1	
Carbon Black Dispersion	-	ASTM D 5596	10/10 views in cat. 1 or 2			Thickness of Co-extruded Layer	%	ASTM D 5199	-	
Durability	Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C)	> 100		Asperity Height	mm	ASTM D 7466	-	
	Oven aging at 85°C (min. ave.)	%	ASTM D 3895	> 55						

Tested Property		Unit	Test Method	Value					
Strength Characteristics Quality of	Thickness	mm	ASTM D 5199	1.00	1.50	2.00	2.50	3.00	
	Thickness tolerance	%	-	-10					
	Tensile Properties <sup>(1)</sup>								
	Tensile strength at Yield	N/mm	ASTM D 638 (Type IV)	13 (26)	45 (39)	60 (52)	75 (65)	90 (78)	
	Elongation at Break	%		800 (750)					
	Tear Resistance	N	ASTM D 1004	95	143	>190	>238	>285	
	Puncture Resistance	N	ASTM D 4833	>300	>460	>610	>770	>920	
	Exploding Resistance	%	pr EN 14151	> 15					
Dimensional Stability	%	ASTM D 1204 (100°C, 1h)	± 1.5						

		Parameter	Units	1,00	1,50	2,00	2,50	3,00
190713	PRESENTATION (Standard Sizes)	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.

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