

**Raw Material**

**Linear Low Density Polyethylene**

ATARFIL LTM / LTMT is a structured two sides geomembrane manufactured from maximum quality linear low density polyethylene LLDPE resins.

ATARFIL LTM / LTMT 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 ATARFIL LTM / LTMT is manufactured under rigorous quality controls.

<b>Surface</b>	<b>TM Structured 1 side TMT Structured 2 sides</b>	<b>Surface</b>	<b>Black</b>
		<b>RAL Code</b>	-

	Tested Property	Unit	Test Method	Value
<b>Raw Material Identification</b>	Density of Raw Material	g/cm <sup>3</sup>	UNE EN ISO 1183-1	< 0,932
	Density of	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)	12
			UNE EN ISO 1133-1 (190°C/5 Kg)	3,5
	Carbon Black Content	%	ASTM D 4218	2.0 - 2.5
Carbon Black Dispersion	-	ISO 18553	3	
<b>Durability</b>	Oxidative Induction Time (OIT) Standard OIT	min	ASTM D 3895 (200°C)	100
	High Pressure OIT		ASTM D 5885	400
	Oven aging at 85°C HP O.I.T. % retained after 90 days	%	ASTM D 5721 ASTM D 5885	60
	UV Resistance HP OIT. % retained after 1600 hrs	%	ASTM D 7238 ASTM D 5885	35

	Tested Property	Unit	Test Method	Value
<b>Functional Properties</b>	Low Temperature Brittleness (t <sup>a</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/°C	ASTM D 696	1,93·10 <sup>-4</sup>
	Water Absorption	%	UNE EN ISO 62 (24h)	0,2
			UNE EN ISO 62 (6 days)	1
Asperity Height <sup>(3)</sup>	mm	ASTM D 7466	0.70	

<sup>(1)</sup>Is conducted on representative smooth membrane samples

	Tested Property	Unit	Test Method	Value	
<b>Strength Characteristics Quality of Final Product</b>	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	
	<b>Mechanical Properties <sup>(*)</sup></b>				
	Tensile strength at Break <sup>(*)</sup>	N/mm	UNE-EN ISO 527, lo 25mm	31 (26)   46 (39)   62 (52)   77 (65)   93 (78)	
	Elongation at Break <sup>(*)</sup>	%		800 (750)	
	Tear Resistance	N	ISO 34-1	98   145   195   245   290	
	Puncture Resistance <sup>(**)</sup>	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	

	Parameter	Units	1,00		1,50		2,00		2,50		3,00	
			LTM	LTMT	LTM	LTMT	LTM-LTMT	LTM-LTMT	LTM-LTMT	LTM-LTMT		
10716	<b>PRESENTATION (Standard Sizes)</b>											
	Roll width	m	6		6		6		6		6	
	Roll Length	m	200	170	150	145	110	90	60			
	Surface	m <sup>2</sup>	1200	1020	900	870	660	540	360			

<sup>(1)</sup> Values indicated are MEDIUM. In brackets minimum values with 95% confidence level.

<sup>(\*)</sup> Values obtained from the smooth part of geomembrane.

<sup>(2)</sup> Certificates belonging to the Environmental and Quality Integrated System of Atarfil.

<sup>(3)</sup> The value indicated is medium. Minimum value 0.50mm.

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