MACCAFERRI

TECHNICAL DATA SHEET
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MACLINE TMH &TDH

HIGH DENSITY POLYETHYLENE (HDPE) GEOMEMBRANES

MacLine TMH & **TDH** is a textured one or two sides high density polyethylene geomembrane manufactured from maximum quality polyethylene resins.
Geomembrane **MacLine TMH** & **TDH** contains not less than 97% of pure polyethylene polymer and a balance not higher than 3% of carbon black, antioxidants and thermal stabilizers. The product does not contain plasticizers or fillers that could migrate over time.
Geomembranes **MacLine TDH** (both faces textured) and **TMH** (only one face textured) have similar properties to the non textured products.
Geomembranes **MacLine TMH** & **TDH** are manufactured under permanent quality control and comply with national and international standards.

SURFACE: M textured one side - D textured both sides RAW MATERIAL CHARACTERISTICS			
Property	**Unit**	**Test Method**	**Value**
Density in white	g/cm³	EN ISO 1183-1	0.932 - 0.942
Membrane density	g/cm³	EN ISO 1183-1	0.942 - 0.945
Melt flow index	g/10min	EN ISO 1133,190/5.0 EN ISO 1133,190/2.16	Ò1.3 Ò0.4
Carbon black content	%	ASTM D4218	2.0 - 2.5
Carbon black dispersion	- -	ISO 11420	3

COLOUR: BLACK		RAL CODE: -	
FUNCTIONAL PROPERTIES			
Property	Unit	Test Method	**Value**
Low temperature brittleness (-40°)	-	EN 495-5	No cracks
Water absorption	%	EN ISO 62	Ò0.1
Water permeability	m^3/m^2 day	EN 14150	$< 1 \times 10^{-6}$
Linear thermal expansion coefficient	cm/cm/ °C	ASTM D 696	$<2.15 \times 10^{-4}$
Dielectric constant	-	ASTM D1248	2.2 - 2.4
Asperity height(1)	mm	GRI GM 12	0.25
Thickness of the coextruded layer	%	-	-
Fire resistance	-	ISO 11925-2	E

DURABILITY UV RESISTANCE			
UV Resistance	-	-	yes
Oxidative Induction Time (OIT)	min.	ISO 10837	>100
Stress cracking resistance (ESCR)	h	ASTM D 5397 ASTM D1693 - Cond.B	>200 >2000
Ozone resistance	-	ASTM D1149; 7d; 100ppm	No cracks

GEOMEMBRANE PHYSICAL–MECHANICAL PROPERTIES			MACLINE TDH & TMH				
Tested Property	**Unit**	**Test Method**	**100**	**150**	**200**	**250**	**300**
Thickness	mm	ASTM D5199	1.00	1.50	2.00	2.50	3.00
Tolerance	%	-	±6				
Tensile properties (*): • Tensile strength at yield • Elongation at yield (**) • Tensile strength at break • Elongation at break (**)	N/mm % N/mm %	EN ISO 527 V	18(16) 10(9) 32(26) 800(700)	27(24) 10(9) 48(39) 800(700)	36(32) 10(9) 64(52) 800(700)	45(40) 10(9) 80(65) 800(700)	54(48) 10(9) 96(78) 800(700)
Static CBR puncture resistance	kN	EN-ISO 12236	3.0	4.0	5.0	6.0	6.5
Tear Resistance	N/mm	ASTM D1004	>130	>195	>260	>325	>390
Biaxial elongation	%	prEN 14151	< 15				
Dimensional stability (120 °C/hr)	%	EN ISO 14632 (1h, 100°)	±1.5				

(*) Values in brackets are AVERAGE MINIMUM values (95% confidence limit); others are intended as AVERAGE NOMINAL values.
(**)Elongation values indicated are obtained by test done from samples taken from the smooth portion of the membrane.

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Bureau Veritas Certified Quality System Company with SINCERT's and UKAS' s accreditation.