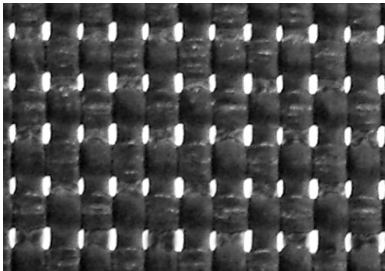




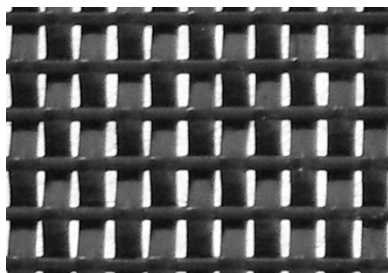
Carthage %™ Open Area Monofilament Geotextiles

LONG-TERM FILTRATION | DRAINAGE | EROSION PROTECTION | SEPARATION

CARTHAGE %™ OPEN AREA SERIES OF WOVEN MONOFILAMENT POLYPROPYLENE GEOTEXTILES



70 AOS / 4-6 Percent Open Area



30-40 AOS / 12-15 Percent Open Area

■ SERIES DESCRIPTION

Only woven monofilament geotextiles can provide 'long-term' solutions for nearly any drainage / filtration application, thus making them the filter fabric of choice for bulkheads, subsurface drainage systems and under hard armor. Effective levels of **Percent Open Area (POA)**, a property found critical to long-term filtration is unique

to woven monofilaments. Values $\geq 4\%$ indicate that a sufficient *quantity* of distinct, measurable, uniform and unidirectional paths through the fabric exist to allow for the *release* of troublesome migrating fines – the nemesis of all other filter fabrics, regardless of where they approach the geotextile.

This allows for the formation of a mini-graded 'filter cake' against the surface of the free-flowing 'filter fabric', and is the designers' only insurance against long-term clogging of their filtration systems.

■ FEATURES AND BENEFITS

Carthage Mills' woven monofilaments were America's first filter fabrics and the only ones that have been used successfully for more than 50 years.

They can be found in literally tens of thousands of projects designed and managed by the US Army Corps of Engineers; all levels of foreign and local governments; and private entities around the world.

- PERCENT OPEN AREA (POA) – LONG-TERM FILTRATION
Special weave patterns and monofilament yarns deliver the high levels of **POA** – a property unique to this product series.

■ DURABILITY

Superior resistance to installation damage assures long-term performance.

■ COST SAVING INSTALLATIONS

Carthage Mills can fabricate custom widths and lengths for your specific project thereby reducing waste and installation times.

■ APPLICATIONS

Individual product selection for each project should be dependent on its primary function, site conditions and the criticality of long-term performance.

However, **Percent Open Area (POA)** is the single most important property to consider when hydraulic gradients are medium to high, long-term filtration is critical, internal migration of fines may occur, and/or even partial clogging of the fabric could result in failure of the project.

- Bulkheads
- Under riprap or concrete revetment systems for channel, shoreline waterway protection
- Subsurface drainage systems in problematic soils
- Drainage/filtration/collection systems in landfills
- Spillways and swales





Carthage %TM Open Area Monofilament Geotextiles

The [Carthage % Open Area Series](#) of woven monofilament geotextiles are made of high-tenacity, polypropylene yarns which are woven into a stable network such that they retain their relative position. The [Carthage % Open Area Series](#) of woven monofilament filtration geotextiles is inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

PROPERTY	METHOD	UNIT	Carthage 6% TM (1)	Carthage 15% TM	Carthage 30% TM (1)	Carthage 4%HD TM	Carthage 10%HD TM	Carthage 12%HD TM
<input type="checkbox"/> Mechanical								
Grab Tensile Strength	ASTM D 4632	lbs	370 x 250	365 x 200	350 x 280	400 x 315	425 x 350	400 x 335
Grab Tensile Elongation		%	15%	24% x 10%	30% x 18%	15%	20%	20 x 13%
Wide Width Tensile	ASTM D 4595	lbs/in	NA	NA	NA	250 x 230	270 x 255	230 x 225
Trapezoidal Tear	ASTM D 4533	lbs	100 x 60	115 x 75	100 x 98	150 x 165	145 x 125	145 x 125
CBR Puncture	ASTM D 6241		950	675	870	1,150	1,340	1,250
<input type="checkbox"/> Endurance								
UV Resistance	ASTM D 4355	% @ 500 hrs	90%	90%	90%	90%	90%	90%
<input type="checkbox"/> Hydraulics/Filtration								
Permittivity	ASTM D 4491	sec ⁻¹	0.28	2.10	4.0	0.90	0.96	1.50
Water Flow Rate		gpm/ft ²	18	145	300	70	70	115
Percent Open Area	CW-02215	%	4-6%	10-15%	20-30%	1-4%	6-10%	8-12%
Apparent Opening Size (AOS)^(a)	ASTM D 4751	US Std Sieve	70	40	30	40	40	30
<input type="checkbox"/> Physical								
Standard Roll Sizes Packaging Weight	Measured (Typical)	ft	6.0 x 300	12.0 x 300	12.0 x 300	15.0 x 300	12.5 x 300	12.5 x 300
		yd ²	200				417	417
		lbs	85	400	400	500	245	228
			12.0 x 300	175	157	290	15 x 300	15 x 300
			400				500	500
			173				320	325

NOTES: Mullen Burst Strength ASTM D 3786 is no longer recognized by ASTM D35 on Geosynthetics. Puncture Strength ASTM D 4833 is not recognized by AASHTO M 288 and has been replaced with CBR Puncture ASTM D 6241.

a) AOS, typically referred to as a MARV, is actually reported as a MAXIMUM allowable opening when in English US Sieve units; or as the SMALLEST allowable opening when in Metric units (mm).

- Unless otherwise stated, all values stated here are Minimum Average Roll Values (MARV).
- The properties reported above are effective 01-01-2024 and are subject to change without notice.

(1) An independent study – [Independent Research on Fabric Clogging](#) – evaluated the hydraulic performance and clogging potential of the four major types of geotextiles including the three highlighted above, and determined that the combined Hydraulic/ Filtration properties of **Percent Open Area (POA)** and **Apparent Opening Size (AOS)**, proved to be the “most critical” in predicting long-term filtration performance. A companion review – [Why Percent Open Area?](#) – explains the *Role, Function and Importance of Percent Open Area* (a property unique to woven monofilaments) in the mechanics of geotextile filtration. Both papers can be viewed by clicking on their links above, or via the home page of the [Monofilament Series](#) of the Carthage Mills website at www.carthagemills.com.

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