



# ■ FX<sup>®</sup>-HSE Series of Nonwoven Geotextiles

Carthage Mills' FX-HSE Series of nonwoven geotextiles is designed specifically for the environmental market, is constructed of 100% polypropylene staple fibers which are formed into a random network, needle-punched and heatset for dimensional stability. The [FX<sup>®</sup>-HSE Series](#) of nonwoven geotextiles delivers high durability; excellent physical and hydraulic properties; is inert to biological degradation; and resistant to naturally encountered chemicals, alkalis, and acids.

The Carthage Mills' FX-HSE Series of environmental nonwoven geotextiles designates "Mass Per Unit Area" or "Weight Per Square Yard" as a true Minimum value.

**Note:** The listing below is a sampling of available products in this Series environmental geotextiles. For more information and/or a complete listing of all the products in this Series, please call or visit our website.

PROPERTY	ASTM TEST	UNIT	FX <sup>®</sup> -40HSE	FX-60HSE	FX-80HSE	FX-100HSE	FX-120HSE	FX-160HSE	FX-600HSE
<input type="checkbox"/> <b>Mechanical</b>									
Grab Tensile Strength	D 4632	lbs	105	160	225	270	305	425	170
Grab Tensile Elongation		%	50%	50	50	50	50	50	50
Trapezoidal Tear	D 4533	lbs	45	65	90	100	110	150	70
CBR Puncture	D 6241		305	450	600	725	830	1200	450
<input type="checkbox"/> <b>Endurance</b>									
UV Resistance	D 4355	% @ 500 hrs	70%	70%	70	70	70	70	80
<input type="checkbox"/> <b>Hydraulics/Filtration</b>									
Permittivity <sup>(1)</sup>	D 4491	sec <sup>-1</sup>	2.00	1.63	1.26	0.94	0.70	0.57	1.50
Water Flow Rate <sup>(1)</sup>		gpm/ft <sup>2</sup>	160	125	100	75	50	45	110
Apparent Opening Size (AOS) <sup>(1)</sup>	D 4751	US Std Sieve	70	70	80	100	100	100	80
<input type="checkbox"/> <b>Physical</b>									
Mass Per Unit Area (Minimum)	D 5261	oz/yd <sup>2</sup>	4.0	6.0	8.0	10.0	12.0	16.0	6.0
Thickness (Typical)	D 5199	mils	70	85	100	110	120	140	80
Standard Roll Sizes / Packaging / Weight			Call for all Roll Sizes, Packaging and Weights						

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.

<sup>(1)</sup> At the time of manufacturing. Handling, storage and shipping may change these properties.

- Unless otherwise stated, all values stated here are Minimum Average Roll Values (MARV); are calculated as the Typical minus two standard deviations; and are based on a 97.7% confidence level.
- The properties reported above are effective 01-01-26 and subject to change without notice.

Carthage Mills assumes no liability for the accuracy or completeness of this information or for the ultimate use by the purchaser. Carthage Mills disclaims any and all express, implied, or statutory standards, warranties or guarantees, including without limitation any implied warranty as to merchantability or fitness for a particular purpose or arising from a course of dealing or usage of trade as to any equipment, materials, or information furnished herewith. This document should not be construed as engineering advice.

Carthage Mills  
4243 Hunt Road  
Cincinnati, OH 45242  
[www.carthagemills.com](http://www.carthagemills.com)

513-794-1600 TELEPHONE  
800-543-4430 TOLL FREE  
513-794-3434 FACSIMILE  
[info@carthagemills.com](mailto:info@carthagemills.com)

*Since 1958: America's First Geotextile Company*



# ■ FX<sup>®</sup>-HSE Series of Nonwoven Geotextiles

Carthage Mills' FX-HSE Series of nonwoven geotextiles is designed specifically for the environmental market, is constructed of 100% polypropylene staple fibers which are formed into a random network, needle-punched and heatset for dimensional stability. The [FX<sup>®</sup>-HSE Series](#) of nonwoven geotextiles delivers high durability; excellent physical and hydraulic properties; is inert to biological degradation; and resistant to naturally encountered chemicals, alkalis, and acids.

The Carthage Mills' FX-HSE Series of environmental nonwoven geotextiles designates "Mass Per Unit Area" or "Weight Per Square Yard" as a true Minimum value.

**Note:** The listing below is a sampling of available products in this Series environmental geotextiles. For more information and/or a complete listing of all the products in this Series, please call or visit our website.

PROPERTY	ASTM TEST	UNIT	FX <sup>®</sup> -800HSE	FX-1000HSE	FX-1200HSE	FX-1600HSE	FX-2000HSE	FX-2400HSE	FX-2800HSE	FX-3200HSE
<input type="checkbox"/> <b>Mechanical</b>										
Grab Tensile Strength	D 4632	lbs	230	270	320	425	450	500	725	830
Grab Tensile Elongation		%	50%	50	50	50	50	50	50	50
Trapezoidal Tear	D 4533	lbs	95	105	125	155	175	200	250	300
CBR Puncture	D 6241		600	725	900	1200	1310	1800	2100	2287
<input type="checkbox"/> <b>Endurance</b>										
UV Resistance	D 4355	% @ 500 hrs	80%	80%	80	80	80	70	80	80
<input type="checkbox"/> <b>Hydraulics/Filtration</b>										
Permittivity <sup>(1)</sup>	D 4491	sec <sup>-1</sup>	1.40	1.20	0.90	0.70	-	-	-	-
Water Flow Rate <sup>(1)</sup>		gpm/ft <sup>2</sup>	110	85	65	50	-	-	-	-
Apparent Opening Size (AOS) <sup>(1)</sup>	D 4751	US Std Sieve	80	100	100	100	100	100	100	100
<input type="checkbox"/> <b>Physical</b>										
Mass Per Unit Area (Minimum)	D 5261	oz/yd <sup>2</sup>	8.0	10.0	12.0	16.0	20.0	24.0	28.0	32.0
Thickness (Typical)	D 5199	mils	90	115	130	175	180	200	275	290
Standard Roll Sizes / Packaging / Weight			Call for all Roll Sizes, Packaging and Weights							

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.

<sup>(1)</sup> At the time of manufacturing. Handling, storage and shipping may change these properties.

- Unless otherwise stated, all values stated here are Minimum Average Roll Values (MARV); are calculated as the Typical minus two standard deviations; and are based on a 97.7% confidence level.
- The properties reported above are effective 01-01-25 and subject to change without notice.

Carthage Mills assumes no liability for the accuracy or completeness of this information or for the ultimate use by the purchaser. Carthage Mills disclaims any and all express, implied, or statutory standards, warranties or guarantees, including without limitation any implied warranty as to merchantability or fitness for a particular purpose or arising from a course of dealing or usage of trade as to any equipment, materials, or information furnished herewith. This document should not be construed as engineering advice.

Carthage Mills  
4243 Hunt Road  
Cincinnati, OH 45242  
[www.carthagemills.com](http://www.carthagemills.com)

513-794-1600 TELEPHONE  
800-543-4430 TOLL FREE  
513-794-3434 FACSIMILE  
[info@carthagemills.com](mailto:info@carthagemills.com)

*Since 1958: America's First Geotextile Company*