

Mirafi[®] 135N



Mirafi[®] 135N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi[®] 135N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

TenCate Geosynthetics Americas Laboratories are accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP).

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	80 (356)	80 (356)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	30 (134)	30 (134)
CBR Puncture Strength	ASTM D6241	lbs (N)	175 (79)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	50 (0.30)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	2.1	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	155 (6315)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Sizes	
Roll Dimensions (width x length)	ft (m)	12.5 x 360 (3.8 x 110)	15 x 360 (4.5 x 110)
Roll Area	yd ² (m ²)	500 (418)	600 (502)

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FGS000358
ETQR43



Mirafi[®] 140NL



Mirafi[®] 140NL is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi[®] 140NL is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	90 (401)	90 (401)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	40 (178)	40 (178)
CBR Puncture Strength	ASTM D6241	lbs (N)	250 (1113)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	50 (0.30)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	2.0	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	145 (5907)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
Physical Properties		Unit	Roll Sizes	
Roll Dimensions (width x length)	ft (m)	12.5 x 360 (3.8 x 110)	15 x 360 (4.57 x 110)	
Roll Area	yd ² (m ²)	500 (418)	600 (502)	

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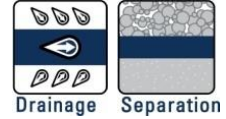
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Mirafi[®] 140NC



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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	100 (445)	100 (445)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	45 (200)	45 (200)
CBR Puncture Strength	ASTM D6241	lbs (N)	250 (1113)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	2.0	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	140 (5704)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
Physical Properties		Unit	Roll Sizes	
Roll Dimensions (width x length)	ft (m)		12.5 x 360 (3.8 x 110)	15 x 360 (4.57 x 110)
Roll Area	yd ² (m ²)		500 (418)	600 (502)

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GAI-LAP-25-97

Mirafi® 140N



Mirafi® 140N is a nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 140N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 140N meets AASHTO M288-15 Class 3 for Elongation > 50%.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	1.7	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	135 (5500)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Sizes	
Roll Dimensions (width x length)	ft (m)	12.5 x 360 (3.8 x 110)	15 x 360 (4.5 x 110)
Roll Area	yd ² (m ²)	500 (418)	600 (502)

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Mirafi® 150N



Mirafi® 150N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 150N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	135 (601)	135 (601)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	55 (245)	55 (245)
CBR Puncture Strength	ASTM D6241	lbs (N)	350 (1558)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	1.4	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	108 (4400)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Sizes
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.57 x 91.4)
Roll Area	yd ² (m ²)	500 (418)

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Mirafi® 160N



Mirafi® 160N is a nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 160N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 160N meets AASHTO M288-15 Class 2 for Elongation > 50%.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	160 (712)	160 (712)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	60 (267)	60 (267)
CBR Puncture Strength	ASTM D6241	lbs (N)	410 (1825)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	1.5	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	110 (4481)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
Physical Properties		Unit	Roll Size	
Roll Dimensions (width x length)		ft (m)	15 x 300 (4.5 x 91)	
Roll Area		yd ² (m ²)	500 (418)	

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GAI-LAP-25-97

Mirafi® 170N



Mirafi® 170N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 170N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	180 (801)	180 (801)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	75 (334)	75 (334)
CBR Puncture Strength	ASTM D6241	lbs (N)	450 (2003)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	1.4	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	105 (4278)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
			Physical Properties	
Roll Dimensions (width x length)		ft (m)	15 x 300 (4.5 x 91)	
Roll Area		yd ² (m ²)	500 (418)	

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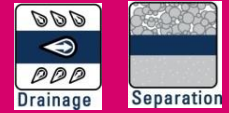
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GAI-LAP-25-97

Mirafi® 180N



Mirafi® 180N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 180N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 180N meets AASHTO M288-15 Class 1 for Elongation > 50%.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	205 (912)	205 (912)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	80 (356)	80 (356)
CBR Puncture Strength	ASTM D6241	lbs (N)	500 (2224)	
Maximum Opening Size				
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	80 (0.18)	
Minimum Roll Value				
Permittivity	ASTM D4491	sec ⁻¹	1.4	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	95 (3870)	
Minimum Test Value				
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
Physical Properties				
Roll Dimensions (width x length)	ft (m)	12.5 x 360 (3.8 x 110) 15 x 300 (4.57 x 91.4)		
Roll Area	yd ² (m ²)	500 (418)		

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Mirafi® 180NC

Mirafi® 180NC is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 180NC is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Weight	ASTM D5261	oz/yd ² (g/m ²)	7.5 (254)	
Grab Tensile Strength	ASTM D4632	lbs (N)	205 (912)	205 (912)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	80 (356)	80 (356)
CBR Puncture Strength	ASTM D6241	lbs (N)	550 (2447)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	1.0	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	70 (2852)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Sizes	
Roll Dimensions (width x length)	ft (m)	12.5 x 360 (3.8 x 110)	15 x 300 (4.57 x 91.4)
Roll Area	yd ² (m ²)	500 (418)	

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Mirafi[®] 1100N



Mirafi[®] 1100N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi[®] 1100N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	250 (1113)	250 (1113)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	100 (445)	100 (445)
CBR Puncture Strength	ASTM D6241	lbs (N)	700 (3115)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	100 (0.15)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	0.8	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	75 (3056)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
Physical Properties	Unit	Roll Size		
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.57 x 91.4)		
Roll Area	yd ² (m ²)	500 (418)		

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Mirafi[®] 1100NC



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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Weight	ASTM D5261	oz/yd ² (g/m ²)	9.5 (322)	
Grab Tensile Strength	ASTM D4632	lbs (N)	250 (1113)	250 (1113)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	90 (401)	90 (401)
CBR Puncture Strength	ASTM D6241	lbs (N)	600 (2670)	
			Maximum Opening Size	
Apparent Opening Size (AOS) ¹	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	0.7	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	65 (2648)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Size
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.57 x 91.4)
Roll Area	yd ² (m ²)	500 (418)
Estimated Roll Weight	lb (kg)	320 (145)

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GAI-LAP-25-97

Mirafi® 1100NPA



Mirafi® 1100NPA (PennDot, Class 4) is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 1100NPA is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	270 (1202)	270 (1202)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	100 (445)	100 (445)
Puncture Strength ¹	ASTM D4833	lbs (N)	100 (445)	
CBR Puncture Strength	ASTM D6241	lbs (N)	700 (3115)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	100 (0.15)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	0.8	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	75 (3056)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

¹ ASTM D4833 has been replaced with ASTM D6241

Physical Properties	Unit	Roll Size
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.5 x 91)
Roll Area	yd ² (m ²)	500 (418)

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Mirafi[®] 1120N



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Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	300 (1335)	300 (1335)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	115 (512)	115 (512)
CBR Puncture Strength	ASTM D6241	lbs (N)	800 (3560)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	100 (0.15)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	0.8	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	65 (2648)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Size
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.57 x 91.4)
Roll Area	yd ² (m ²)	500 (418)

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Mirafi® 1160N



Mirafi® 1160N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 1160N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

TenCate Geosynthetics Americas Laboratories are accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program ([GAI-LAP](#)).

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	380 (1691)	380 (1691)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	140 (623)	140 623)
CBR Puncture Strength	ASTM D6241	lbs (N)	1025 (4561)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec ⁻¹	0.7	
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	50 (2037)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	100 (0.15)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Size	
Roll Dimensions (width x length)	ft (m)	15 x 150 (4.57 x 46)	15 x 300 (4.57 x 91.4)
Roll Area	yd ² (m ²)	250 (209)	500 (418)

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