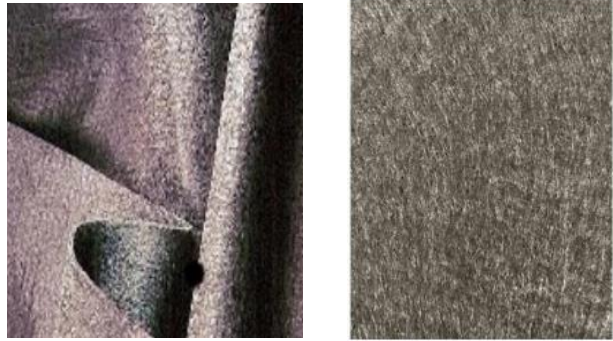




**Equipment Specification**  
**Document No.:** 4350.206  
**Item No.:** 038-83209  
**Asset Suite:** 83209  
**Originating Department:** Distribution Engineering



## **Nonwoven Geotextiles**

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### **1. Introduction**

This is a general specification that covering the nonwoven geotextiles to be use on the distribution system in Puerto Rico. Further information will be provided by LUMA Energy at the time of order placement will provide information on site specific conditions, quantity, and other requirements. This document includes the general characteristics of the material.

### **2. Special Requirements**

Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this material to PREPA/LUMA on previous orders, will not have to furnish samples at bid opening. The material will be received at the LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

### **3. Quantity/Literature**

Descriptive and technical literature must be supplied by vendor at time of bidding. This literature may include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. Failure to submit documents on time will cause bidder disqualification. For products described in this specification as requiring qualification, awards will be made only for such products that, prior to the time for opening of bids, had been tested and/or approved by LUMA. Evidence of PREPA's and/or LUMA Energy's approval of the equipment or material shall be supplied by vendor if requested by LUMA Energy.

### **4. Markings**

- 4.1. Containers shall be marked outside with LUMA Energy's purchase order, item number, name and size, net and gross weight, manufacturer's name, and lot number.
- 4.2. Packaging labels and tags shall be waterproof.

### **5. Equal or Approved Equal to**

- 5.1. Nicolon Corporation – TenCate Geosynthetics Americas - Mirafi S800
- 5.2. Skaps Industries - GT-180

## **Nonwoven Geotextiles**

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### **6. Packaging**

All material and equipment shall be packaged and marked in such a way as to facilitate handling and protection from damage and that the receiving warehouse can readily identify it and send it, in one complete unit, to a field location without opening crates or boxes to sort items and/or parts.

### **7. Number Per Package (Logistics)**

- 7.1. As requested by LUMA Energy.
- 7.2. Standard package: 15 ft (4.57 m) X 300 ft (91.44 m) Roll
- 7.3. Area per roll: 500 yd<sup>2</sup> (418.3 m<sup>2</sup>)
- 7.4. Weight: 8.0 oz/yd<sup>2</sup> (271 g/m<sup>2</sup>)

### **8. Acceptance Criteria**

- 8.1. Test required: certified by external laboratories.
- 8.2. Latest applicable codes, standards, and other regulations:
  - a. For standard test method refer to table in Section 9.5

### **9. Description**

- 9.1. A nonwoven geotextile is a permeable textile material used to increase soil stability, provide erosion control or aid in drainage. This material will be used in the sub-base of switch unit, and pad mounted transformer concrete base.
- 9.2. This material shall be a needle-punched nonwoven geotextile made of polypropylene staple fibers, which are formed into a random network for dimensional stability.
- 9.3. Geotextile must be inert to biological degradation, resist ultraviolet deterioration, and resists naturally encountered chemicals, alkalis, and acids.
- 9.4. The fabric must be high puncture and tear resistance, have high permittivity, provide excellent soil retention, and must be capable to conform the ground surface during installation.

## Nonwoven Geotextiles

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9.5. Nonwoven geotextile must have the following mechanical characteristics:

Mechanical Properties	Test Method	Minimum Average Roll Value
Grab Tensile Strength	ASTM D4632	205 lbs. (911 N)
Grab Tensile Elongation	ASTM D4632	50 %
Trapezoid Tear Strength	ASTM D4533	85 lbs. (378 N)
CBR Puncture Strength	ASTM D6241	535 lbs. (2370 N)
Thickness	ASTM D5199	90 mils. (2.3 mm)
Permittivity	ASTM D4491	1.4 sec <sup>-1</sup>
Permeability	ASTM D4491	0.31 cm/sec
Flow Rate	ASTM D4491	95 gpm/ft <sup>2</sup> (3870 l/min/m <sup>2</sup> )
Apparent Opening Size	ASTM D4751	80 US Sieve (0.18 mm)
UV Resistance (@ 500 hrs)	ASTM D4355	70 % strength retained

## 10. Inspection

The acceptance of any material or equipment shall in no way relieve the vendor from his responsibility to meet all the requirements of this specification, and it would not prevent subsequent rejection if such materials were found later to be defective.

— End of Specification —

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## Nonwoven Geotextiles


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### Document History

Date: 3/16/2022

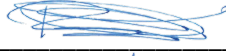
Version: 1

Author: Alex J. Rodriguez




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Reviewer: Rafael Torres



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Approver: Ricardo Castro



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