



TECHNICAL DROP-IN SPECIFICATION

HydraFlex® HT-Series

Textured Linear-Low Density Polyethylene

The following technical drop-in specifications are provided as guidelines to be customized and finalized by the design engineer for preparing specific project specifications. This information is provided for reference purposes only and is not intended as a warranty or guarantee. Viaflex, Inc. assumes no liability in connection with the use of this information. Please visit the Viaflex website at www.viaflex.com for current product specification sheets.

TEXTURED LINEAR POLYETHYLENE GEOMEMBRANE SPECIFICATION

Textured Linear-Low Density Polyethylene Geomembranes serve as liners and covers for the containment of water, leachate or other liquids. As a liner they can contain the liquid to prevent leakage or environmental impact and as a cover to minimize evaporation or contamination. It is of great importance that the Textured Linear-Low Density Polyethylene Geomembrane be free from defects and installed without damage.

A. DESCRIPTION

1. GENERAL:

The purpose of this specification is to provide details of Manufacturing Quality Control (MQC), Manufacturing Quality Assurance (MQA), Construction Quality Control (CQC), and Construction Quality Assurance (CQA) for the manufacture and pre-assembly of geomembrane products. The Contractor shall furnish all labor, material, and equipment to install the Textured Polyethylene Geomembrane including all necessary and incidental items as detailed or required to complete the installation in accordance with the Contract Drawing and these Specifications

2. RELATED WORK:

Related Contract Work is described in the following section of the specification as approved by the CQA Engineer.

3. REFERENCE STANDARDS:

ASTM D5994 Standard Test Method for Measuring Core Thickness of Textured Geomembranes.

ASTM D7466 Standard Test Method for Measuring Asperity Height of Textured Geomembranes.

ASTM D751 Standard Test Methods for Coated Fabrics.

ASTM D6693 Standard Test Method for Non-Reinforced Polyethylene and Non-Reinforced Flexible Polypropylene Geomembranes.

ASTM D7004 Standard Test Method for Grab Tensile Properties of Reinforced Geomembranes.

ASTM D1004 Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.

ASTM D4833 Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.

ASTM D3895 Standard Test Method for Determining Oxidative-Induction Time (OIT) of Polymeric Materials by Standard Differential Scanning Calorimetry.

ASTM D5885 Standard Test Method for Determining Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry.

ASTM D6392 Standard Test Method for Determining the Integrity of Non-Reinforced Geomembrane Seams Produced Using Thermo-Fusion Methods

4. QUALITY ASSURANCE:

Quality Assurance during installation of Textured Polyethylene Geomembrane will be provided by the Owner as described in the accompanying Project CQA Manual.

5. MANUFACTURERS QUALIFICATIONS:

- a. The Manufacturer shall have previously demonstrated his ability to produce the required Textured Polyethylene Geomembrane by having successfully manufactured a minimum of 10,000,000 ft² of Textured Polyethylene Geomembrane.
- b. Manufacturer must be ISO 9001 certified

6. INSTALLER QUALIFICATIONS:

The Textured Polyethylene Geomembrane Installer shall have installed a minimum of 500,000 ft² of Textured Polyethylene Geomembrane (or similar material).

B. MATERIALS

1. GENERAL:

The materials supplied under these Specifications shall consist of first-quality virgin resins designed and manufactured specifically for the purpose of this work, which shall have been satisfactorily demonstrated, by prior use, to be suitable and durable for such purposes.

2. TEXTURED POLYETHYLENE GEOMEMBRANE MATERIALS:

- a. Textured Polyethylene Geomembrane shall be manufactured to meet the following requirements:
 1. Provide finished product free from holes, pin holes, bubbles, blisters, excessive gels, undispersed resins and/or carbon black, or contamination by foreign matter.
 2. Textured Polyethylene Geomembrane shall be a flexible Geomembrane containing carbon black for UV stability and contain no plasticizers.
- b. Approved Textured Polyethylene Geomembrane:
 1. HydraFlex HT30B
HydraFlex HT40B
As manufactured by Viaflex of Sioux Falls, SD.
 2. Equal material, as approved by the Engineer.

3. FACTORY FABRICATION

1. The Textured Polyethylene Geomembrane shall be supplied in panels which shall be of maximum size to provide the largest manageable sheet for the fewest seams.
2. Factory seams are produced by thermal sealing methods and shall have a minimum seam width of 1 ½ inch.
3. Factory seams are 100% visually inspected and destructive testing is done to verify quality compliance.
4. Labels on the panels shall identify the thickness, length, width, lot and panel numbers, and name of Manufacturer.
5. Factory pre-assembled panels are accordion folded and rolled on a cardboard core. Rolled panels are wrapped in a protective layer for shipment.

D. SUBMITTALS

The Contractor shall submit the following to the CQA Engineer:

1. PRE-INSTALLATION REQUIREMENTS:

Prior to Textured Polyethylene Geomembrane installation, the Contractor shall submit the following:

- a. Certificate of Conformance and Sample: Prior to shipping to the site, the Contractor shall submit a certificate or affidavit signed by a legally authorized official of the Manufacturer for the Textured Polyethylene Geomembrane attesting that the Textured Polyethylene Geomembrane meets the physical and manufacturing requirements stated in these Specifications. The Contractor shall also submit a sample of the Textured Polyethylene Geomembrane to be used (sample may be of different color). The sample shall be labeled with the product name and be accompanied by the Manufacturer's specifications.
- b. Shipping, Handling, and Storage Instructions: The Manufacturer's plan for shipping, handling, and storage shall be submitted for review.
- c. Installation Procedures:
Submit installation procedures for carrying out the work. Installation procedures to be addressed shall include but not be limited to material installation, repair, and protection to be provided in the event of rain or strong winds. With regard to protection, the Contractor shall provide a plan of sufficiently anchoring the Textured Polyethylene Geomembrane to satisfy the Contractor's Performance Warranty. This plan shall be approved by the Engineer prior to construction.
Furnish copies of the delivery tickets or other approved receipts as evidence for materials received that will be incorporated into the construction.

2. POST-INSTALLATION REQUIREMENTS:

Upon completion of the Textured Polyethylene Geomembrane installation, the Contractor shall submit the following:

- a. Completed material performance warranty.

E. SITE PREPERATION AND INSTALLATION

1. Installation shall be in done in accordance with the Manufacturers Geomembrane Installation Guidelines.

TABLE 1:

REQUIRED POLYETHYLENE GEOMEMBRANE PROPERTIES 30 MIL TEXTURED ONE-SIDE

PROPERTY	TEST METHOD	IMPERIAL UNITS	METRIC UNITS	IMPERIAL MIN. ROLL AVG.	METRIC MIN. ROLL. AVG.
Thickness	ASTM D5994	mil	mm	27	0.69
Asperity Height	ASTM D7466	mil	mm	10	0.25
Weight	ASTM D751	lbs./msf	g/m ²	146	713
Tensile Strength at Break	ASTM D6693	ppi	N/cm	50	88

Tensile Elongation at Break	ASTM D7004	%		300	
Tear Resistance	ASTM D1004	lbs	N	14	62
Puncture Resistance	ASTM D4833	lbs	N	39	173
Standard OIT	ASTM D3895	min		100	
High Pressure HPOIT	ASTM D5885	min		400	
Bonded Seam Strength	ASTM D6392	lbf/in width	N	45	200
Seam Peel Adhesion	ASTM D6392	lbf/in width	N	38	169

TABLE 2:

REQUIRED POLYETHYLENE GEOMEMBRANE PROPERTIES 40 MIL TEXTURED ONE-SIDE

PROPERTY	TEST METHOD	IMPERIAL UNITS	METRIC UNITS	IMPERIAL MIN. ROLL AVG.	METRIC MIN. ROLL. AVG.
Thickness	ASTM D5994	mil	mm	36	0.91
Asperity Height	ASTM D7466	mil	mm	10	0.25
Weight	ASTM D751	lbs./msf	g/m ²	194	947
Tensile Strength at Break	ASTM D6693	lbf	N	70	123
Tensile Elongation at Break	ASTM D7004	%		300	
Tear Resistance	ASTM D1004	lbs	N	20	89
Puncture Resistance	ASTM D4833	lbf	N	50	222
Standard OIT	ASTM D3895	min		100	
High Pressure HPOIT	ASTM D5885	min		400	
Bonded Seam Strength	ASTM D6392	lbf/in width	N	60	267
Seam Peel Adhesion	ASTM D6392	lbf/in width	N	50	222

Notes:

1. The Engineer may allow alternates to these requirements.