



**MAPP-TC GM-10-005-19
GRI-GM13 Certification**

(Test Methods and Test Properties for High Density Polyethylene (HDPE) Textured Geomembrane)

Issued 12 Aug. 2019

The report is subject to renewal 11 Aug. 2024

TRI-MAPP Listing Report

Megaplast India Ltd.

HDPE Single Sided Textured Geomebrane for GRI GM-13 Certification

Independent sample selected by: Dr. Mansukh Patel, TRI/Environmental, Inc. USA

Sampling Date: April 24 2019

Sample Selected: Roll #: 19835-T, Material used: MDPE Resin: 7525 NT 40%, FB 1370 43.1%, Jet Black: 5.54%, AO: 150 1.36%, RP 10%, production date: April 16 2019.

TRI Certification Testing Job Reference 46276		
Parameter / Procedure	TRI Test Result	GRI GM13 Test Criteria
Thickness (ASTM D 5994)(mm)	1.61	≥ 1.50
Asperity Height (ASTM D 7466) (mm)	0.59	≥ 0.40
Density (ASTM D 1505)(g/cm ³)	0.948	≥ 0.940
Carbon Black Content (ASTM D 4218)(%)	2.46	2.0-3.0
Carbon Black Dispersion (ASTM D 5596)(Rating)	1	1
Tensile Yield Strength (N/mm) (MD/TD)	28.2/32.7	≥ 22/22
Tensile Yield Elongation (%) (MD/TD)	20/16	≥ 12/12
Tensile Break Strength (N/mm) (MD/TD)	40.3/32.0	≥ 16/16
Tensile Break Elongation (%) (MD/TD)	634/438	≥100/100
Puncture Resistance (ASTM D 4833) (N)	630	≥ 400
Tear Resistance (ASTM D 1004)(N)(MD/TD)	242/230	≥ 187/187
Stress Crack Resistance (ASTM D5397)(hours)	> 500	≥ 500
Oxidation Resistance (ASTM D 5721/D 3895/D 5885) OIT (min)(baseline/post exposure/% retained) HP-OIT (min)(baseline/post exposure/% retained)	228/47/21 1737/1554/89	≥ 100/55/55, or ≥ 400/320/80
UV Resistance (ASTM D 7238/D 5885) HP-OIT (min) (baseline/post exposure/% retained)	1737/1487/86	≥400/200/50

TRI Environmental, Inc. (TRI) testifies that Megaplast single-sided textured HDPE geomembrane, independently sampled by TRI, represented singularly by product roll number Roll #: 19835-T, and received and tested under TRI job reference 46276, meets or exceeds the criteria established in GRI GM13, *Test Methods, Test Properties and Testing Frequency for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes.*

The testing herein is based on accepted industry practice as well as test method(s) listed. This TRI Materials and Product Performance (TRI-MAPP) report and the data and evaluations included herein are specific to the materials received and evaluated and may not apply to materials not specifically tested, nor does the report endorse or recommend the product(s) or material(s) use. There is no warranty by TRI, expressed or implied, as to any finding or other matter in this report, or as to any product or material covered by the report. TRI neither accepts nor makes claim as to the final use and purpose of the product(s) or material(s).

