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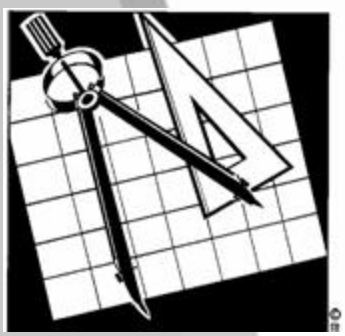
PVC-Geotextile Interface Friction Angle

Dr. Shobha Bhatia and Gautam Kasturi of Syracuse University conducted interface friction angle testing of 3 different types of PVC geomembranes and 2 types of HDPE membranes with sand, sandy loam, silty clay and non-woven geotextile.

The results of their testing with non-woven geotextile are summarized at the right.. The shear stress at 10% strain for the rigid membranes (HDPE & HDT) is less than at the peak. However, for the flexible PVCs , due to their stretching during the tests, the strength at higher strain is greater than at lower strain. This was observed with all PVC interfaces with all the other interface materials, except with fine sand. Further shearing of the PVC causes an increase in strength and not a decrease, whereas further shearing in HDPE causes reduced strength. Therefore, under field conditions, if the PVC membranes are stressed beyond the yield stress for the interface, the material stretches under the load without any loss of strength or material damage.



Smooth PVC had a higher friction angle with the geotextile than textured HDPE. This is believed to be do to reduction in contact area since the rough side of the geotextile and the rough surface of the geomembrane are in contact at texture points only.

Nonwoven Geotextile Interface Friction Angle Values at 10% strain:

30 mil Smooth PVC	21.9
30 mil Textured PVC	19.6
30 mil File Finish PVC	17.3
60 mil Smooth HDPE	14.2
60 mil textured HDPE	17.4

"The stress stain behavior of PVC is much different from that of HDPE. Even after reaching yield stress of the interface, PVC interfaces will not fail but maintain stability by stretching of the membrane material without loss of strength or material damage."

You can obtain a complete copy of this report by contacting EPI at 800-OK-LINER.

Preserving water resources for future generations

To learn more about interface friction angle, visit our Internet web site at www.geomembrane.com