

# PROTUBE® INTERFACE SHEAR STABILITY

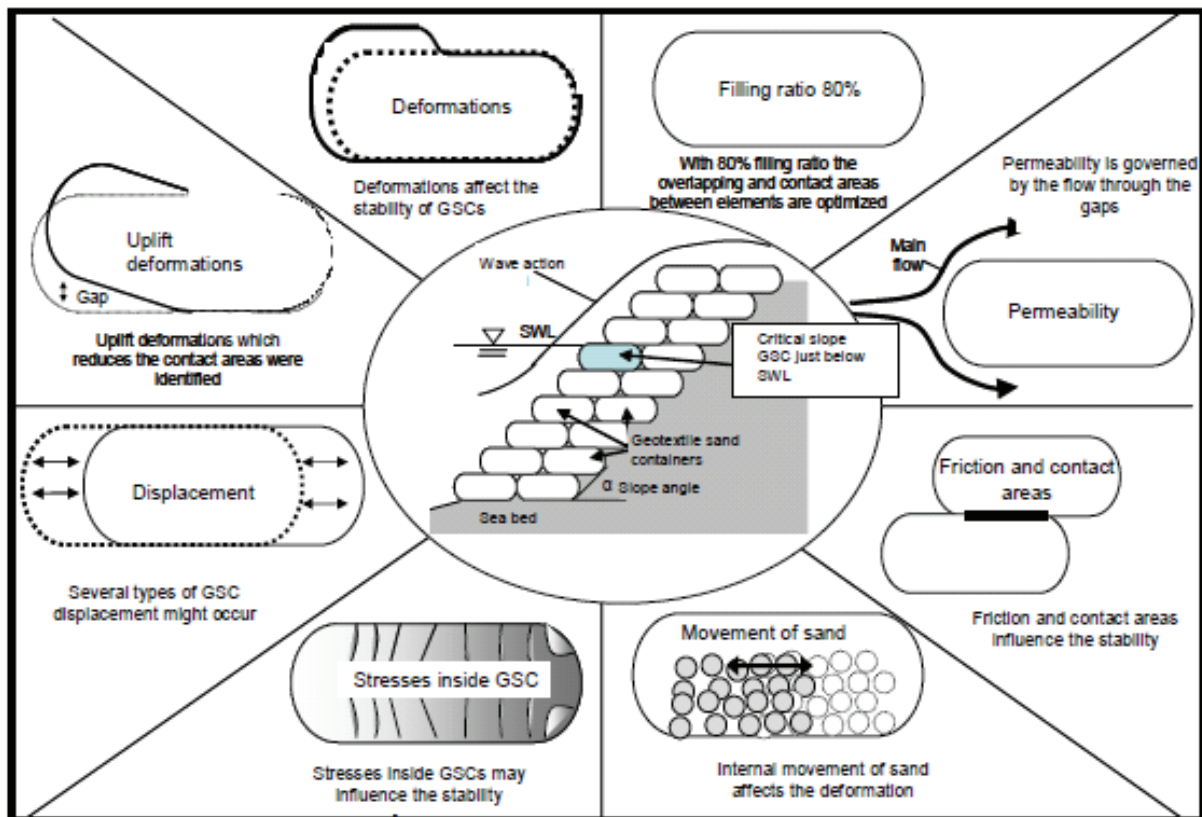
## FRICITION EVALUATION USING ACETEX® GT70/105 WOVEN GEOTEXTILE

### GENERAL

The friction interface between geotextile-to-geotextile is investigated by means of a direct shear box test. The results provide the friction coefficient of the interface between the geotextile-to-geotextile surfaces. This value is required to quantify the effect of the friction between Geosynthetic Sand Containers (GSCs) for structural stability under static and hydraulic loading. A good technical reference paper on designing GSCs is referenced at the end of this Technical Note (Oumeraci et. al. 2007).

### TEST PROCEDURE & RESULTS:

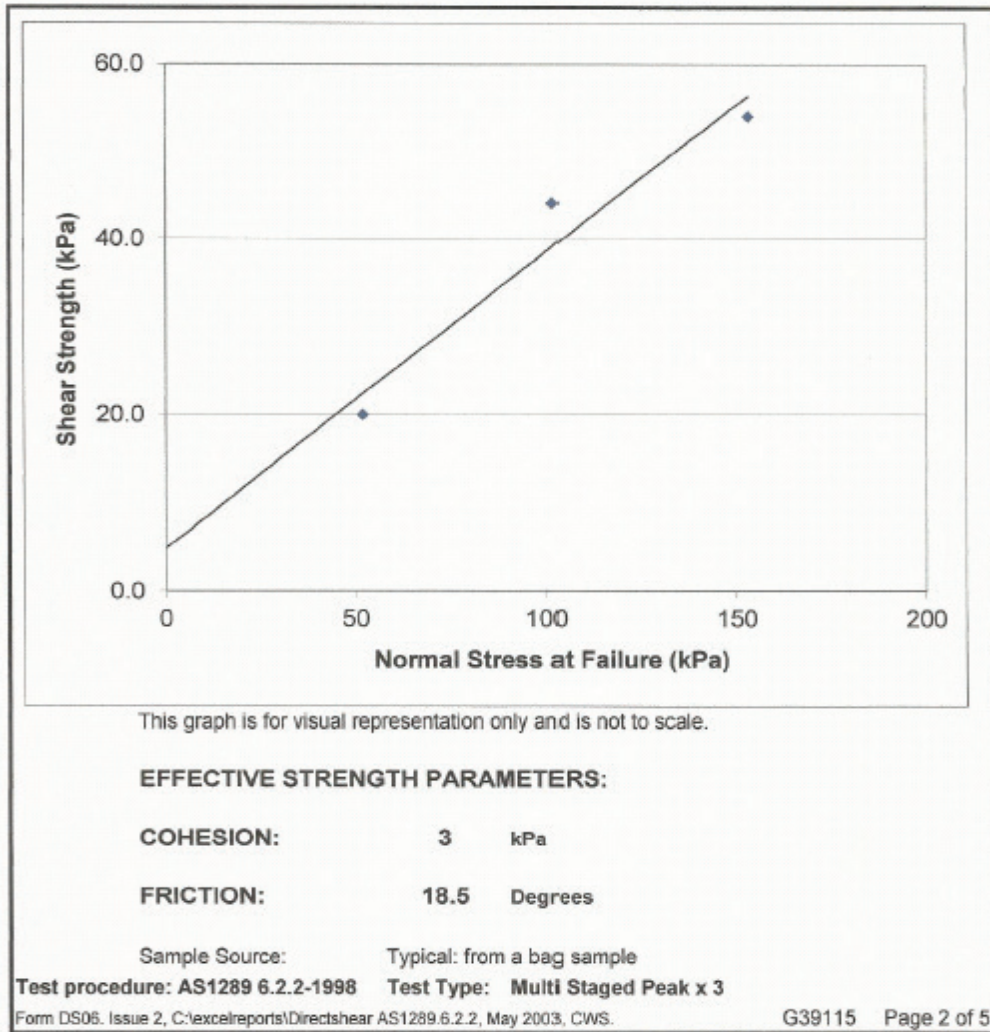
A friction evaluation on ACETex GT70/105 woven geotextile was undertaken at the laboratory of Network Geotechnics (Sydney, NSW) under the supervision of Mr Chris Stabb. In summary, the tests were carried out using AS 1289.6.2.2 – 1998, modified to evaluate the interface friction between the geotextile-to-geotextile surfaces. The samples were tested as a multi-staged test, with the direction of the shear travel in the direction of the “cross machine direction weave” of the geotextile. The tests were performed using a nominal vertical stress of 50 kPa, 100 kPa and 150 kPa. In addition, the tests have shown that the “dry” and “wet” friction angles are similar and an adopted angle of friction of 17 degrees may be made with no cohesion. The limit of confidence for the test results is estimated at 95%.



Source: Oumeraci et. al. 2007.



**PROJECT: Evaluation of Friction Properties**



Source: Stabb, 2014.

**POTENTIAL FAILURE MODES:**

The above summary chart (Oumeraci et. al. 2007) illustrates the potential failure modes that GSCs may exhibit under critical hydraulic loading (eg. wave action). The interface friction and the contact area will influence the GSC’s stability, but this is just one potential failure mode that needs to be checked.

**REFERENCES**

1. Oumeraci, H., Liu, P. and Heerten, G. 2007: Hydraulic Stability of Geotextile Sand Containers for Coastal Structures – Effect of Deformations and Stability Formulae.
2. Stabb, C. 2014. Test Report: Friction Evaluation on ACETex GT70/105 Geotextile.
3. Standards Australia 1998. AS1289.6.2.2 – 1998: Determination of the shear strength of a soil – Direct shear test using a shear box.

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