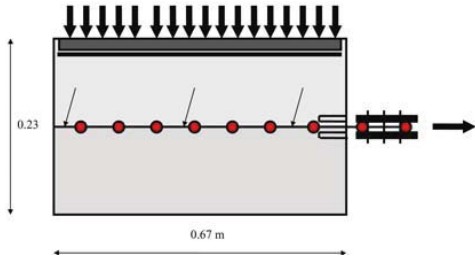


## MS MULTI-LAYER GEOGRIDS IN THE LAB: Pullout Testing



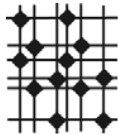
Tenax MS Geogrids have been comprehensively tested in the laboratory. These tests include both index and performance tests which substantiate the field test results that multi-layer geogrids reinforce and stabilize as effectively as single layer biaxial geogrids.

Lab results conclude that...

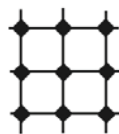
Table 2: Summary table of the pullout test conditions

PRODUCT NAME	TENAX MS220	TENAX MS220	TENAX MS220	TENAX MS220	TENAX MS220	TENSAR BX 1100	TENSAR BX 1100	TENSAR BX 1100	TENSAR BX 1100	
Test Direction	TD	TD	TD	TD	TD	TD	TD	TD	TD	
Normal stress	kPa	40	30	20	20	10	40	30	20	10
test n.		6	14	5	8	7	11	27	10	12
Max. Pullout Strength	kN/m	25.72	23.72	18.27	18.91	9.58	19.50	17.10	13.76	6.70
Max. Pullout Stress	kPa	43.96	40.55	31.24	32.33	16.38	33.30	29.20	23.52	11.40
Failure type		Tension	Tension	Pullout	Pullout	Pullout	Tension	Tension	Pullout	Pullout
$\phi$ soil	deg	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00
Specimen Length, L	m	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
Pullout Interaction Factor	fpo	0.70	0.87	1.00	1.03	1.05	0.53	0.62	0.75	0.73

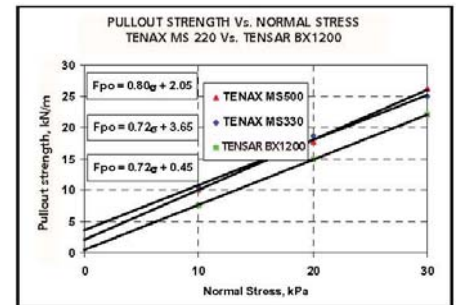
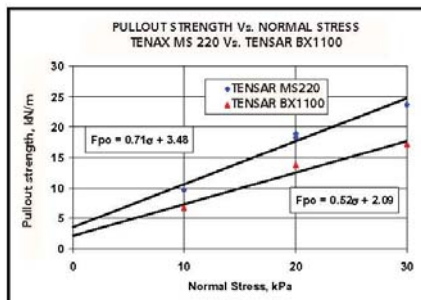
PRODUCT NAME	TENAX MS330	TENAX MS330	TENAX MS330	TENAX MS500	TENAX MS500	TENAX MS500	TENSAR BX 1200	TENSAR BX 1200	TENSAR BX 1200	
Test direction	TD	TD	TD	TD	TD	TD	TD	TD	TD	
Normal stress	kPa	30	20	10	30	20	10	30	20	10
test n.		17	15	16	23	21	22	20	18	19
Max. Pullout Strength	kN/m	24.93	18.71	10.53	26.14	17.70	10.18	22.00	14.90	7.60
Max. Pullout Stress	kPa	42.62	31.99	17.99	44.69	30.26	17.40	28.30	25.50	13.00
Failure type		Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout
$\phi$ soil	deg	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00
Specimen Length, L	m	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
Pullout Interaction Factor	fpo	0.91	1.02	1.15	0.95	0.97	1.11	0.80	0.82	0.83



MS 330



BX 1200



Multilayer Geogrids are manufactured by Tenax Corporation, 4800 E. Monument Street, Baltimore, MD 21205; represented exclusively by Syntec, LLC