

SHEARFORCE 12

SOFT ARMOR PANEL

FOR IMMEDIATE EROSION AND SCOUR PROTECTION

ShearForce12 is a cost-effective, soft armor alternative to rock rip rap and other hard armor materials for protecting areas subject to turbulent water flow. ShearForce12 panels sandwich a weather-resistant, perforated rubber core between simulated turf and engineered geotextile fabric for the highest level of scour protection available from a soft armor product.

BENEFITS

- More user-friendly and cost-effective than rock rip rap
- Simple installation—lay it and pin it
- Malleable; bends easily to fit contours
- Three-in-one product; no underlayment necessary
- Provides immediate protection against erosion and scour
- Facilitates water filtration/infiltration
- Promotes and protects vegetative growth
- Easily transported and installed without machinery
- Aesthetically pleasing

FEATURES

- Simulated vegetation, 1.7" rubber core, lightweight nonwoven fabric
- Highly UV stable (25-year design life) and weather resistant
- High performance/high-flow protection (pre- and post-vegetation)
- Lightweight 3' x 4' panels

APPLICATIONS

- High-flow channels
- Pipe outfalls and downspouts
- Curb cuts
- Areas with slow, sparse vegetation growth
- Drainage swales
- Banks/shorelines (non-tidal and low-wave action)
- Tight-quartered areas



ShearForce12 eliminates soil erosion at flow-induced shear stresses above 12 lbs/sf and **provides permanent erosion protection** that meets or exceeds that of 36" rock rip rap.

Contact your local sales associate:

info@ferguson.com or visit **FERGUSONGSS.COM** to get started.

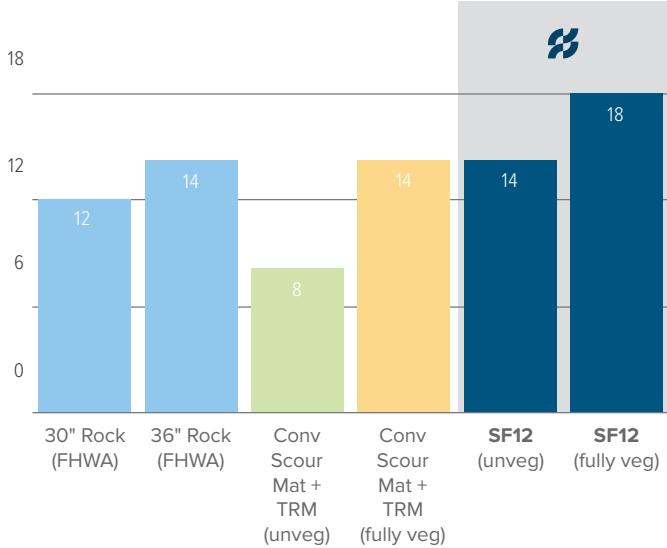


RECOMMENDED DESIGN VALUES

SHEARFORCE™12 HYBRID-TURF INSTANT ARMOR SCOUR MAT	CHANNELS/OUTFALLS/SPILLWAYS/STREAMBANKS*				SLOPES		SHORELINES
	MANNING'S n	DESIGN SHEAR STRESS		DESIGN VELOCITY		MAX GRADIENT (h:v)	MAX WAVE HEIGHT
		COHESIVE SOILS	NON- COHESIVE SOILS	COHESIVE SOILS	NON- COHESIVE SOILS		
SHEARFORCE 12 UNVEGETATED	.025–.040	14 lbs/sf	12 lbs/sf	30 ft/sec	25 ft/sec	>1:1	<=1.5 ft
SHEARFORCE 12 VEGETATED	.025–.4	18 lbs/sf	16 lbs/sf	30 ft/sec	25 ft/sec	>1:1	<=2.0 ft

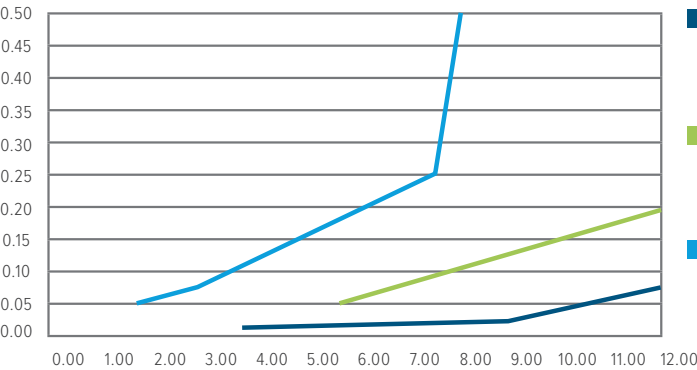
*Design values are derived from ASTM D6460 large-scale channel testing on loam soils under 4 consecutive 30 min flow events in 20% gradient test flumes. A safety factor (SF) of 1.25–2.0 may be applied in channel lining designs for longer flow durations, more erodible soils, and varying side-slope gradients.

PERMANENT SOFT ARMOR MATS PERMISSIBLE SHEAR STRESS RATINGS VS ROCK RIPRAP



SOIL LOSS VS SHEAR STRESS

in ASTM D6460 Large-Scale Channel Testing of Scour Control Mats
(.5 inch Cumulative Soil Loss Failure Criteria)



ShearForce 12 Hybrid-turf
Instant Armor Scour Mat
Unvegetated

Tied Concrete Block Mat
Unvegetated

Rubber Scour/Transition Mat
with Triple Net Poly Fiber
TRM Underlay
Unvegetated

Sources - NOTE All referenced large-scale channel tests conducted at TRI Environmental's Denver Downs Research Facility using ASTM D6460 testing protocol or modified versions thereof.

Grassworx, LLC, 2018. ASTM D6460 Channel Testing of InstaTurf ShearForce10 EC TRM and ShearForce12 Scour Control Mats in 20% Test Flumes, August, October and December 2018.

Motz Enterprises, 2018. Large-Scale Channel Erosion Testing of Flexamat Channel Lining, February 2009

AASHTO-NTPPEP Large-Scale Channel Erosion Testing of North American Green's ShoreMax Mats over P550-TRM, December 2011 (Amended April 2016)

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