TECHNICAL DATA SHEET

VORTEX

I&I Guard®-MSF
BY VORTEX

TYPICAL RESIN PROPERTIES

I&I Guard-MSF - Side A

- **Viscosity: 150 cps**
- **Specific Gravity: 1.18**
- **Weight/gallon: 9.8 lbs**
- **Appearance: clear, light brown liquid**
- **Shelf Life: 6 months**

I&I Guard-MSF - Side B

- **Viscosity: 5 cps**
- **Specific Gravity: 0.9**
- **Weight/gallon: 7.5 lbs.**
- **Appearance: clear, light yellow liquid**
- **Shelf Life: 6 months**

TYPICAL REACTION PROPERTIES

Hand mix at 72°F, 25 grams Stabilizer : 1 grams Water

Weight %Activator	Cream (s)	Rise (s)
0.5	24	250
1.0	21	200
4.0	15	100
10.0	12	60

The above values are average values obtained from laboratory experiments and should serve only as guidelines.

QUADEX® A VORTEX COMPANY | REPAIR MATERIALS

Soil Stabilization Foam

DESCRIPTION

I&I Guard®-MSF (Soil Stabilization Foam) is a low viscosity, polyurethane injection resin, designed to stabilize soil. When mixed with catalyst and injected, it migrates through loose soil and into below-grade voids. As it comes into contact with moisture in the soil, I&I Guard-MSF reacts and expands to form a rigid foam. The foam encapsulates loose soil, fills voids, and forms a solid, water-tight barrier.

DISTINGUISHING CHARACTERISTICS

- **Stabilize soil before excavation**
- **Seawall stabilization and strengthening**
- **Stabilize and remediate water through earthen dams**
- **Seal leaks in sub-grade walls**
- **Soil strengthening for tie back anchors**

UNIQUE ADVANTAGES

- **Contains no solvents**
- **Very low viscosity for good penetration**
- **Cure time controlled by catalyst ratio**
- **Encapsulates and strengthens loosesoil**
- **Forms a water-tight barrier to stopwater migration**
- **Good resistance to chemicals**
- **Contains no TDI**
- **1200 psi compressive strength (ASTM D1621) in sand**

STORAGE AND USE OF CHEMICALS

Store chemicals at 70°F for several days before use. Cold chemicals can cause poor mixing, pump cavitation or other process problems due to higher viscosity at lower temperatures. Absolutely no thinners should be added to this 100% solids system. Viscosity can be reduced by an increase in temperature. The 'A' component is sensitive to exposure to moisture. Keep drums tightly closed when not in use and under nitrogen pressure of 2 - 3 psi after they have been opened. Prolonged exposure to temperatures below 50°F can cause the 'A' component to freeze. Do not store in direct sunlight.

WARRANTY

Quadex, LLC warrants its products to be free of defects in material and workmanship. Unless superseded by project specifications and terms agreed upon in writing between installer and Quadex prior to bid, if within one year from purchase, any Quadex, LLC product is proven defective, the company will replace said product or refund its purchase price at its sole discretion. The company's obligation shall be limited solely to such replacement or refund. There are no other warranties by Quadex, LLC, expressed or implied. There is no warranty if Quadex products are used contrary to Quadex, LLC's written directions.

SAFE HANDLING OF LIQUID COMPONENTS

Use caution in removing bungs from the container. Loosen the small bung first and let any built up gas escape before completely removing. Avoid prolonged breathing of vapors. In case of chemical contact with eyes, flush with water for at least 15 minutes and get medical attention For further information refer to publication AX-205 "Guidance for Working with MDI and PMDI – Things You Should Know" published by The Center For The Polyurethanes Industry, 700 2nd Street, NE, Washington, DC 20002 (www.americanchemistry.com).

ADDITIVE GUIDELINES

Wt % Activator	Oz. Activator Per Gal. Soil Stabilizer
0.5	0.6
1	1.3
4	5.0
10	12.5

NOTES: I&I Guard®-MSF - Side B is a catalyst that causes the soil stabilizer to react with ambient moisture. Once activated, QRM migration SSF - Side A will react with any available water, including humidity in the air. To minimize loss caused by its reaction with ambient moisture, mix and use material in small batches. If a crust forms on the top of the mixed material, it will act as a temporary seal and inhibit curing of the liquid below the crust. If a crust forms, leave it intact until the liquid under the crust has been pumped. Once I&I Guard-MSF - Side A has been activated with I&I Guard-MSF - Side B, it should never be left in pumps or stored for more than a few hours.

MIXING PROCEDURES FOR TWO PART I&I GUARD GROUTS

Directions For Use Mixing Ratio: One 33 oz. bottle per 5 gallons of I&I Guard-MSF equals 5% mix ratio. Two 33 oz. bottles is the maximum dose at 10%. Only mix the amount of material that can be used within 12 hours. Thoroughly mix materials using a low-speed drill with a mixing paddle.

ASTM D732 — SHEAR PUNCHING STRENGTH

PRODUCT	PEAK LOAD (LBF.)	PEAK STRESS (PSI)	MODULUS (PSI)
I&I Guard-MSF with Catalyst	500	901	1533

ASTM D1621 — COMPRESSIVE PROPERTIES

PRODUCT	YIELD LOAD @10% (LBF.)	YIELD LOAD @20% (LBF.)	COMPRESSIVE YIELD STRENGTH @10% (LBF.)	COMPRESSIVE YIELD STRENGTH @20% (LBF.)	COMPRESSIVE MODULUS (PSI)
I&I Guard-MSF with Catalyst	2,490	3,070	910	1,120	11,300
I&I Guard-MSF without Catalyst	2,640	3,610	1,260	1,740	9,500

ASTM D638 — TENSILE PROPERTIES

PRODUCT	PEAK STRESS (PSI)	% ELONGATION
I&I Guard-MSF with Catalyst	450	12.3
I&I Guard-MSF without Catalyst	220	6.4