

Low Viscosity Polyurethane Foam for Soil Stabilization / Water Cutoff

Guardian PUF-SOIL is a new generation phthalate free high performance low viscosity hydrophobic rigid polyurethane injection grout used to increase the load bearing capacity of loose soils, void filling or underpinning. **Guardian PUF-SOIL** reacts into either a hard foam or very hard plastic. Reaction times may be adjusted by varying the **Guardian PUF-SOIL** ratio. **Guardian PUF-SOIL** does not foam on its own, it needs water present to foam.

Complies to EN1504 Part 9 and EN1504 Part 5 Class (S)

Principle 4 : Structural Strengthening (SS).

Method 4.5 – Injecting in Cracks, Voids or Interstices.

Method 4.6 – Filling Cracks, Voids or Interstices.

USES & ADVANTAGES

Guardian PUF-SOIL may be used for soil and rock consolidation, filling of large voids, cracks and crevices, pre injection for waterproofing and consolidation in front of TBM and drill and blast, filling of fissures, gravel layers, in wet and dry conditions.

Advantages Include:-

- Phthalates free resins.
- Solvent free.
- Fast or slow reactions available.
- Easy mixing 1:1 by volume.
- Can be applied in dry or wet conditions.
- Environmentally friendly.
- Expands 20-30 times.
- High strength.
- Non shrink.
- Bonds with soil and concrete.
- Stops repeated water erosion.
- Suitable for long distance injection.

PROPERTIES

	For Part A	For Part B
Appearance:	Yellow	Dark brown
Viscosity: (mPa.s)@25°C	70-120	170-270
SG:	1.04-1.06	1.22-1.25
pH Value:	5.5-6.5	7.0-8.0
Mixed Material		
Appearance:	Light brown	
Viscosity:	100-200	
Density:	1.13-1.16	
pH Value:	6.0-7.0	
Foam Properties		
Pot Life:	5 minutes	
Reaction Time:	20-30 seconds	
Expansion Time:	Approx. 5 minutes	
Compressive Strength:	> 40 N/mm² at 7 days ASTM C579 (with fine sand)	
Tensile Strength:	1.5 MPa ASTM D638	
Young's Strength:	50 MPa ASTM D638	
(Guardian PUF-SOIL) + 1% water : Rigid Foam (Less Expansion)		
(Guardian PUF-SOIL) + 5% water : Less Rigid Foam (More Expansion)		

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MIX RATIO

Guardian PUF-SOIL : Guardian PUF-SOIL = 1:1 by volume .

APPLICATION

- **Guardian PUF-SOIL** is injected using a 2 component injection machine such as GRACO REACTOR E-30 (plural component proportioner) where the two hoses are connected with an injection gun before injecting into the drilled holes.
- Clean and flush all equipment with **Guardian PU Purge** prior to the injection.
- Check the mixing ratio of **Guardian PUF-SOIL** and **Guardian PUF-SOIL** at the GRACO REACTOR by injecting the Part A & Part B under pressure initially, to ensure this is 1:1 mix ratio by volume.
- Fill the machine & hoses with **Guardian PUF-SOIL** Part A and **Guardian PUF-SOIL** Part B and first flush the liquid into waste drums until fresh liquid is observed from the hoses.
- Insert the injection head into the drilled holes.
- Adjust pressure at the GRACO Reactor for Part A and Part B and start the injection, so as to achieve 1:1 mix ratio by volume.
- The injection should be continued until the water flow stops, or until the pre-measured amount of product has been injected in each drilled hole.
- After injecting into the first hole, remove the injection gun & start injecting into adjacent drilled hole situated at 30 cm interval from the previous drilled holes.
- Continue and repeat the injection steps with the adjacent drilled hole.
- When the injection has finished, clean and rinse all equipment with **Guardian PU Purge**.
- All opened drums should be capped when not in use.

STORAGE & SHELF LIFE

Store in the shade in dry conditions. Stored in unopened sealed drums, in a dry area, at temperatures of 5°C-35°C, the shelf life is approximately 12 months.

PACKAGING

400 litres set; available in **Guardian PUF-SOIL** 200 litres & **Guardian PUF-SOIL** 200 litres in 200 litres steel drums. Other packing units are available on request.

HEALTH & SAFETY

Avoid skin and eye contact. Wear rubber gloves and safety goggles. Hands should be cleaned with cleaner, followed by soap and water. Avoid breathing of vapours; use with adequate ventilation. Please consult our MSDS for more information (available upon request).

TECHNICAL SERVICE

The Guardian Coating Service Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

QUALITY ASSURANCE

ISO 9001: 2015 verified by TUV Nord.

All statements and data presented herein are given in good faith and believed to be appropriate and reliable. It is given without express or implied warrant or guarantee. Potential users of Guardian's materials are urged to conduct confirmatory trials to satisfy themselves as to the suitability of the selected product for their particular end use prior to purchase.