



**TECHNICAL DATA SHEET**

**ULTRAFINE VX™**

**CEMENTITIOUS GROUT**

**DESCRIPTION**

Ultrafine cementitious grouts are composed of a finely ground mixture of Portland cement, pumice pozzolan, and dispersant. Avanti's Ultrafine grout has an average particle size of three microns, in stark contrast to typical particle sizes of 60 to 70 microns in conventional cements. **Ultrafine VX** grout is formulated with a polycarboxylate based superplasticizer for minimal bleed and high compressive strengths in soil permeation applications.

**APPLICATION**

- Stabilizing weak soils
- Sealing seepage in mines, dams, and tunnels
- Low permeability grout curtaining
- Hazardous waste containment
- Oil well squeeze cementing

**FEATURES AND BENEFITS**

- Smaller particle size will penetrate smaller fractures and finer soils
- Stable North American source of supply
- Composed of non-hazardous materials
- Lower permeability, means reduced hydraulic conductivity and extended longevity when compared to ordinary Portland cement.

**GROUTING TECHNIQUES**

- Probe Grouting
- Curtain Grouting

**HOW IT WORKS**

The chemical synergy created by combining OPC with highly reactive natural pumice pozzolan and polycarboxylate-based superplasticizer allows for a confident design with minimal bleed and high compressive strengths.

**OPTIONAL ADDITIVES**

- Additional additives may be used based on contractor field tests and project parameters.

**PACKAGING**

- Standard packaging is in 44 lbs. (20 kg) bags or 2,000 lbs. (900 kg) Super Sacks.

**SHIPPING**

- Motor Class 55
- Non-Hazardous
- Air freight is NOT available.

**MIX PROCEDURE**

These precise mixing instructions must be followed for best results:

1. Mixer should be a high-shear "colloidal" mixer.
2. Recommended Water/dry grout ratio is 0.8/1 by weight.
3. Add water to mixer and set unit on high speed.
4. Add pre-determined amount of PC based superplasticizer to water
4. Slowly add dry grout to mixer.
5. Mix at high speed for two to three minutes.

**CLEANING PRODUCTS**

Use water with light detergent.

**PROPERTIES – DRY**

Superplasticizer**:	0.125% by weight	
Color:	Cement gray	Visual
Particle Size:	90% < 8 microns, average 3 microns	SediGraph 5100
Surface Area:	15,110 cm <sup>2</sup> /gram	ASTM C-204
Loose Unit Weight:	0.497 grams/cc	
Specific Gravity:	2.70 grams/cm <sup>3</sup>	Accupyc 1330
Dry Weight/Wet Volume:	1.01 kg/liter	
Blaine Fineness:	1200 – 1400 m <sup>2</sup> /kg	

**PROPERTIES – WET (With Addition of .9% USG Super by Weight)**

Water/Dry Grout**:	0.8/1 by weight	
Specific Gravity*:	1.54 grams/cc	API RP 13B-1
Initial Viscosity*:	35 ~ 60 seconds	API RP 13B-1
Internal Cohesion*:	1.22 Pascals	Lombardi Plate
Initial Gelation*:	2.5 ~ 5.0 hours	Wally Baker
		Shear Vane
Final Gelation*:	4.5 ~ 7.0 hours	Wally Baker
		Shear Vane
Initial Vicat Needle Set*:	9.33 hours	ASTM C-191
Final Vicat Needle Set*:	9.83 hours	ASTM C-191
Period of Workability*:	2.5 ~ 5.0 hours	
Shrinkage*:	-0.0260%	ASTM C-490, C-596, C-157
Bleeding*:	0.50%	ASTM C-940
Hydrational Heat*:	31°C	Adiabatic Chamber
Pressure Filtration*:	0.100 ~ 0.103 min <sup>-1/2</sup>	API Filter Press
Sulfate Resistant:	Resistant to attack	Type V Cement
Permeability*:	1x10E <sup>-14</sup> cm/sec	Custom Equipment of Atomic Energy of Canada

\*Varies with water/cement ratio and superplasticizer content

\*\*Recommended starting mix

**PERFORMANCE**

This grout is thixotropic which means it will become stiff if allowed to remain at rest. This is true of all ultrafine cement grouts. The material will re-liquefy when a pressure slightly in excess of the materials internal cohesion is applied. In practice, the grout is kept in motion through the use of a continuous loop grouting setup.

**STORAGE**

Store in sealed bags only. Partially used, open bags will take on ambient moisture. Product should be stored in a covered, dry area to avoid exposure to moisture. There are no specific ambient temperature restrictions for storage, however, sudden dramatic changes in temperature that may promote moisture condensation should be strictly avoided.

**SAFETY**

Always use OSHA-approved personal protective equipment (PPE). Refer to the SDS for complete safety precautions. The SDS is available by request or via download at [avantigrout.com](http://avantigrout.com).

**NOTICE**

The data, information and statements contained herein are believed to be reliable, but are not construed as a warranty or representation for which Avanti International assumes any legal responsibility. Since field conditions vary widely, users must undertake sufficient verification and testing to determine the suitability of any product or process mentioned in this or any other written material from Avanti for their own particular use. **NO WARRANTY OF SUITABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE.** In no case shall Avanti International be liable for consequential, special, or indirect damages resulting from the use or handling of this product.