



TECHNICAL DATA SHEET

ULTRAFINE ND™

CEMENTITIOUS GROUT

DESCRIPTION

Ultrafine cementitious grouts are composed of a finely ground mixture of Portland cement and pumice pozzolan. Avanti's Ultrafine grout has an average particle size of 3 microns, in stark contrast to typical particle sizes of 60 to 70 microns in conventional cements. **Ultrafine ND** grout is manufactured using a small amount of naphthalene sulfonate based superplasticizer as a lubricant. **Ultrafine ND** can achieve high compressive strengths with minimal bleed for use in both rock fracture and soil stabilization 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
- NSF Potable Water Approved
- 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 finely ground OPC with highly reactive natural pumice pozzolan and the superplasticizer by Avanti allows for a confident design with minimal bleed and high compressive strengths.

OPTIONAL ADDITIVES

- Only use Naphthalene Super Plasticizer provided by Avanti.
- 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 Naphthalene Super Plasticizer by Avanti and mix thoroughly.
4. Slowly add dry grout to mixer.
5. Mix at high speed for desired time limit.

IMPORTANT

Mixing of different Super Plasticizers, i.e. polycarboxylate based superplasticizer can cause adverse effects to the set time and strength of the cement.

CLEANING PRODUCTS

Use water with light detergent.

PROPERTIES – DRY

Superplasticizer**:	0.25% by weight	
Color:	Cement gray	Visual
Particle Size:	90% < 8 microns, average 3 microns	SediGraph 5100
Surface Area:	15,110 cm ² /gram	ASTM C-204
Loose Unit Weight:	0.497 grams/cc	
Specific Gravity:	2.70 grams/cm ³	Accupyc 1330
Dry Weight/Wet Volume:	1.01 kg/liter	

PROPERTIES – WET

Superplasticizer**:	0.65% by weight	
Water/Dry Grout**:	0.8/1 by weight	
Specific Gravity*:	1.54 grams/cc	API RP 13B-1
Initial Viscosity*:	33 ~ 37 seconds	API RP 13B-1
Internal Cohesion*:	1.22 Pascals	Lombardi Plate
Initial Gelation*:	2.5 ~ 5.0 hours	Wally Baker
		Shear Vane
		Wally Baker
		Shear Vane
Final Gelation*:	4.5 ~ 7.0 hours	ASTM C-191
		ASTM C-191
Initial Vicat Needle Set*:	9.33 hours	
Final Vicat Needle Set*:	9.83 hours	
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 ^{-1/2}	API Filter Press
Sulfate Resistant:	Resistant to attack	Type V Cement
Permeability*:	1x10E ⁻¹⁴ 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.

NOTICE

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