



GA-Xtra PLUS™

Technical Data

One-Part Conductive Geothermal Grout

Properties:

GA-Xtra PLUS™ Powder

Appearance: Dark grey/
brown, free-flowing powder

Specific gravity: 2.3

Bulk density: 40-50 lb.ft³

Particle size (max): 200 μm

Moisture: <0.5%

Mixed GA-Xtra PLUS™ Grout

Yield volume range:
6.4 gal/50 lb bag

Grout density:
12.5 ± 0.5 lb/gal

**Thermal conductivity, (k)
(ASTM D5334):** 1.2 BTU/h.ft°F

**Compressive strength
(ASTM C109):** 200-250 psi

**Permeability, 28d (ASTM
D2434):** < 9 x 10⁻¹¹ cm/sec

**Drying shrinkage, 28d
(ASTM C596):** < -0.15%
(no cracking)

**EPA SW-846, Method 1311,
TCLP:** Non-hazardous

Stable to a wide range
of groundwater pH and
salinity conditions

GA-Xtra PLUS™ Description:

GA-Xtra PLUS™ grout is a special one-part pozzolanic cementitious formulation designed for use in grouting boreholes containing ground source heat loops.

GA-Xtra PLUS™ grout powder, when combined with water at the prescribed dosage rate, yields a cohesive grout with superior workability (rheology) for injection using standard equipment and a typical thermal conductivity (*k*) value of 1.2 BTU/h.ft°F. GA-Xtra PLUS™ grout does not contain any organic polymers which can degrade over time.

The one-part formulation provides a significant advantage over competing two-part systems which are subject to substantial errors in weigh batching on the job site.

GA-Xtra PLUS™ grout will provide the contractor, design engineer, and building owner with much greater control and assurance that the borehole is being grouted as intended.

GA-Xtra PLUS™ grout is also a more environmentally sustainable solution for grouting geothermal wells, themselves the most environmentally friendly energy source.

GA-Xtra PLUS™ Applications:

- Sealing/grouting of plastic ground source heat loops;
- Sealing/grouting of annular spaces in wells and boreholes;
- Creation of a low permeability, low shrinkage seals to prevent (i) downhole cross-contamination of aquifers, and (ii) entry of surface run-off water into borehole.

GA-Xtra PLUS™ Advantages:

- Improves heat transfer efficiency by matching the thermal conductivity of the surrounding soil;
- Very low heat of hydration spread over a period of many days;
- Pozzolanic chemistry provides high stability to a wide range of groundwater conditions;
- Sustainable technology to reduce the environmental footprint of the geothermal system;
- Superior handleability, batch control, and QC/QA on the job site.
- NSF Certification pending.



GEO ENERGY ALTERNATIVES

15801 Lockwood Road, Williamsport, MD 21795 • 828-665-2068 • geagrout@gmail.com

GeoEnergyAlternatives.com



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Recommended Mix Proportions:

The recommended mix proportions below are designed based on the target thermal conductivity value (k) of 1.2 BTU/h.ft°F:

Wt of 1 bag of GA-Xtra™ grout powder	50 lb
Water per 50 lb bag	4.0 ± 0.5 gal
Yield	6.4 ± 0.2 gal/50 lb
Grout weight	12.5 ± 0.5 lb/gal
Density of grout	95 ± 1 lb/ft³
Total solids, Cw	60 ± 2%

Availability:

GA-Xtra™ grout can be purchased by contacting Customer Service at:

GeoEnergyAlternatives
15801 Lockwood Road,
Williamsport, MD 21795
Tel: 828-665-2068

Grout Selection:

The subsurface environment of the borehole should always be taken into consideration when selecting the appropriate grouting material for sealing the well.

For technical questions relating to subsurface environments and grout selection, please consult your GA-Xtra PLUS™ representative.

Mixing and Injection Recommendations:

Using a suitable mixing device, blend GA-Xtra PLUS™ grout powder into the measured amount of water. The rate of addition should be about 30-60 seconds per 50 lb bag. High shear mortar mixer recommended.

Inject grout with a positive displacement piston pump through a tremie pipe at a rate of 5-15 gpm. Centrifugal pump not recommended

Grout remains workable for 2 hours or longer depending on the ambient temperature. Clean out mixer, pump and line with fresh water.

Sustainability Statement:

GA-Xtra PLUS™ grout is certified to contain a high proportion of recycled material which provides a significantly reduced environmental footprint compared with competing grouts containing mined and processed industrial minerals.

Packaging:

Standard package: 50 lb multiwall bags, 2,850 lbs/pallet, 40 x 48 pallet, shrinkwrapped. Product also available in supersacks in weight ranges 2,000 – 3,000 lb.

The product is not susceptible to freezing but must be protected from exposure to moisture and physical damage to the packaging.

Disclaimer: The statements in this bulletin are based on data which is believed to be reliable, and is offered in good faith to be applied accordingly to the user's best judgment. Since operating conditions at customer's sites are beyond our control, GeoAlternatives will not assume responsibility for the accuracy of this data, or liability which may result from the use of its products. Likewise, no patent liability is assumed for use of GeoEnergyAlternatives products in any manner which could or would infringe on patent rights of others.

Health Hazard Warning: Prolonged inhalation of dust associated with the unmixed powder described in this data sheet can cause respiratory distress. Avoid creating dust when handling, using or storing. Follow OSHA Safety and Health Standards for fugitive dust. Current Material SafetyData Sheet containing safety information is available and should be consulted before usage.



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