



TECHNICAL BULLETIN

Overview:

EarthLinked Technologies recently discovered that grouts by Geo Energy Alternatives (GA-Xtra and GA-Xtra PLUS grouts) have a curing time of approximately 28 days before they achieve the target thermal conductivity.

Description:

GA-Xtra grout is a cement-based product, in the same classification as neat (Portland) cement, mason's mortar, or concrete. It is fundamentally different from bentonite grouts and must be understood and handled as such.

GA-Xtra grout has an open (a.k.a. working) time of approximately 1-2 hours depending on the temperature. After this, the grout becomes too thick to pump; at this point, it begins what is conventionally described as the "setting process." "Set" is a condition the grout achieves at the end of the open time period and is a physical condition of the grout which occurs early in the curing process. It is relevant to the issue of pumpability vs. loss to formation.

The "curing process" is the chemical reactions that begin with the addition of water to the dry grout powder. The duration of the process will somewhat vary depending on ambient conditions. These variables can include mix water and air temperature at the time of grouting; ground temperature variations related to depth, location, and seasonal change; the presence and temperature of moving groundwater; and circulating fluid or refrigerant temperatures, to name a few.

The standard reference point for curing cementitious compounds – including Ga-Xtra grout - is **28 days**. This is the standard time it takes for the chemical reactions ("curing") to reach target thermal conductivity. It is important to note that GA-Xtra grout is thermally conductive throughout the curing process, just not at the nominal level. **This means that if the system is started-up while the curing process is not completed, the loop capacity will be throttled and the system will not reach the nominal level displayed in the performances tables.**

If you have questions or want more information, contact GEA at +1-828-665-2068 or geagrout@gmail.com

Grout Tables:

THERMAL CONDUCTIVITY (BTUH/ft.°F)	GROUT (50 lb BAG)	WATER (US gal)	YIELD (US gal)	SETTING TIME	CURING TIME
1.0	1	4.0 ± 0.5	6.4 ± 0.2	1-2 hours	28 days
GA-Xtra Grout is available from GEA (www.geoenergyalternatives.com)					

GA-XTRA

THERMAL CONDUCTIVITY (BTUH/ft.°F)	GROUT (50 lb BAG)	WATER (US gal)	YIELD (US gal)	SETTING TIME	CURING TIME
1.2	1	4.0 ± 0.5	6.4 ± 0.2	1-2 hours	28 days
GA-Xtra PLUS Grout is available from GEA (www.geoenergyalternatives.com)					

GA-XTRA PLUS

Contact: For further assistance, call ETI Technical Service at 1-863-701-0096 and refer to Tech Bulletin #012317.