

4725.7050 VERTICAL HEAT EXCHANGERS.

Subpart 1. **Construction.** A vertical heat exchanger must be constructed according to the general construction standards in parts 4725.2010 to 4725.3875 and the provisions in this part.

A. Vertical heat exchanger piping must be a minimum 160 psi pressure-rated, SDR 11 high density polyethylene, meeting ASTM Standard D3035-03a.

B. Connections to vertical heat exchanger piping must use socket fusion or butt fusion joining methods.

C. Vertical heat exchanger piping must be pressure tested with air or potable water for 15 minutes at a pressure of 1.5 times the system operating pressure or 75 pounds per square inch, whichever is greater, after installation in the bore hole.

D. The annular space between the vertical heat exchanger piping and the bore hole must be grouted with neat-cement grout or cement-sand grout in bedrock, and neat-cement grout, cement-sand grout, thermally enhanced bentonite grout, or bentonite grout in unconsolidated materials according to the procedures in part 4725.3050, subpart 2. Thermally enhanced bentonite grout must consist of a fluid mixture of not more than 17.5 gallons of water, not more than 200 pounds of sand with 80 percent or more of the sand smaller than 0.0117 inch (passing U.S. Sieve #50), and a minimum of 50 pounds of bentonite.

E. Only food-grade or USP-grade propylene glycol must be used as heat transfer fluid. No other materials or additives must be used except for potable water. A permanent sign must be attached to the heat pump specifying that only approved heat transfer fluids must be used.

F. Water make-up lines to the vertical heat exchanger must be protected with backflow prevention according to parts 4715.2010 to 4715.2170.

G. A vertical heat exchanger constructed according to this part must be no less than 35 feet from a water-supply well. The horizontal piping must be no less than ten feet from a water-supply well.

Subp. 2. **Notice of loss or leak.** The owner of the vertical heat exchanger must notify the commissioner of heat loop leakage or loss of pressure within 24 hours after the owner becomes aware of the loss or leak.

Statutory Authority: *MS s 103I.101; 103I.111; 103I.205; 103I.221; 103I.301; 103I.401; 103I.451; 103I.501; 103I.525; 103I.531; 103I.535; 103I.541; 103I.621; 144.05; 144.12; 144.383; 157.04; 157.08; 157.09; 157.13*

History: *17 SR 2773; 33 SR 211*

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