

**13 NCAC 13 .0412            EXPANSION TANKS**

- (a) Hot water heating systems shall allow for thermal expansion and contraction of the piping to prevent excessive stress from being introduced into the pipe or connected equipment.
- (b) When new equipment is installed and a backflow prevention system is installed or already exists on a potable water supply line for a hot water supply boiler or water heater, expansion tanks shall be installed. For water heaters, backflow preventers or check valves may be installed at the meter in water systems.
- (c) When expansion tanks are used they shall be constructed and stamped in accordance with the requirements of this Chapter for pressure vessels, unless exempted due to the vessel size or operating limits.
- (d) For a closed type system the expansion tank shall be not less than that determined as follows:
  - $V_t = [(0.00041T - 0.0466)V_s] / [(P_a/P_f) - (P_a/P_o)]$  where:
  - $V_t$  = minimum volume of tank(s), gal
  - $V_s$  = volume of system, not including tanks, gal
  - $T$  = average operating temperature, deg F
  - $P_a$  = atmospheric pressure, psi
  - $P_f$  = fill pressure, psi
  - $P_o$  = maximum operating pressure, psi.

*History Note:    Authority G.S. 95-69.11; 95-69.14;  
                      Eff. May 29, 1981;  
                      Recodified from 13 NCAC 13 .0410 Eff. January 1, 1995;  
                      Amended Eff. July 1, 2011; January 1, 2009; January 1, 1995;  
                      Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22,  
                      2018.*