

# THE INDUSTRIAL COMMISSION OF ARIZONA



## DIVISION OF OCCUPATIONAL SAFETY & HEALTH

BRIAN C. DELFS, CHAIRMAN  
MARCIA WEEKS, VICE CHAIRMAN  
LOUIS W. LUJANO, SR., MEMBER  
JOHN A MCCARTHY, JR., MEMBER  
DAVID PARKER, MEMBER

P.O. BOX 19070  
PHOENIX, ARIZONA 85005-9070

DARIN PERKINS, ADOSH DIRECTOR  
(602) 542-5795  
FAX (602) 542-1614

LAURA L. MCGRORY, DIRECTOR  
TERESA HILTON, SECRETARY

### ARIZONA BOILER SAFETY POLICY MEMORANDUM

<b>Hot Water Storage Tanks: ASME Construction Requirements</b>	<b>Effective date</b>	<b>09-01-2009</b>

To: State & Special Inspectors, Owners, Users, Responsible Parties, Contractors, Installers, Suppliers  
From: Randall Austin, Chief Boiler Inspector  
Date: August 07, 2009

This memo serves to clarify the requirements for American Society of Mechanical Engineers (ASME) construction of hot water storage tanks used only for storage of hot water generated by other equipment, such as heating boilers, hot water supply boilers, water heaters and any other direct or indirect means.

ASME Section VIII, Division 1, (pressure vessels) U-1 (g) requires hot water supply storage tanks heated by steam or any other indirect means, be ASME Code constructed if any of the following is exceeded:

- 1) a heat input of 200,000 Btu/hr (58.6 kW),
- 2) a water temperature of 210°F (99°C), or
- 3) a nominal water containing capacity of 120 gallons (450 L).

The ASME Committee for Section VIII issued the following interpretation on 09/24/86 (File: BC86-301):

**Question:** *U-1(g) exempts hot water supply tanks from the requirements of Section VIII, Division 1, provided the limitation in that paragraph is not exceeded. For the purpose of satisfying U-1(g)(1), must the heat exchange take place inside the vessel?*

**Reply:** *No.*

Considering these ASME guidelines and interpretation, the following State Jurisdictional requirements apply to the construction of hot water storage tanks:

Storage tanks with internal coils (heat exchangers) having a capacity greater than 200,000 Btu/hr output (this is input to the tank) shall be constructed to ASME Code, Section VIII, Division 1 or ASME Code, Section IV, Part HLW. Storage tanks with direct circulation from a hot water supply boiler(s) or water heater(s) having a combined manufacturer rated output greater than 200,000 Btu/hr shall be constructed to ASME Code, Section VIII, Division 1 or ASME Code, Section IV, Part HLW.

Storage tanks with a water temperature greater than 210°F (99°C) shall be constructed to ASME Code, Section VIII, Division 1. Storage tanks exceeding a nominal water containing capacity of 120 gallons shall be constructed to ASME Code, Section VIII, Division 1 or ASME Code, Section IV, Part HLW.

When multiple storage tanks without internal coils are piped in parallel without intervening valves and without any means of isolating one from another, divide Btu input equally among these storage tanks.

For further questions regarding ASME construction of hot water storage tanks, please contact the state at [raustin@ica.state.az.us](mailto:raustin@ica.state.az.us) or (602) 542-1648.

Note: contracts signed for storage tank installation prior to the effective date will be honored by this office.