**02 DEPARTMENT OF PROFESSIONAL AND FINANCIAL REGULATION**

**41 OFFICE OF PROFESSIONAL AND OCCUPATIONAL REGULATION**

**BOILER AND PRESSURE VESSEL SAFETY PROGRAM**

**Chapter 76: PRESSURE VESSELS**

**Summary**: This Chapter establishes requirements for the design, construction, installation, inspection, and operation of pressure vessels.

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**SECTION 1. New Installations**

1. **Registration and Certification**

Before any pressure vessel is operated in the State of Maine, the owner of the pressure vessel must register the pressure vessel with the director and must obtain a current, valid inspection certificate for the pressure vessel.

2. **Installation Inspections**

A. **Notice**. Before placing a new pressure vessel in service, the owner of a pressure vessel must notify the State, and, when applicable, the owner’s insurance company.

B. **Inspection**. An Inspector must conduct the initial inspection of a pressure vessel in accordance with the applicable code adopted in Chapter 73 of these rules. The initial inspection must consist of an external inspection. The Inspector must report the results of the inspection to the director on a form approved by the director.

3. **Relocation**

Before a relocated pressure vessel is installed, the owner must petition the chief inspector for a variance in accordance with Chapter 71 of these rules for approval of the installation. The chief inspector must perform the initial inspection of a relocated pressure vessel. Regardless of the type of inspection completed, the chief inspector must determine that the pressure vessel’s material thickness and conditions are appropriate for the design and intended operating conditions.

**SECTION 2. Existing Pressure Vessels**

1. If an existing pressure vessel has not yet been registered, an Inspector must perform an initial inspection to determine the vessel’s external condition and the adequacy of the safety relieving devices. The Inspector must ensure the material thickness of the shell and/or head is adequate to safely operate at the MAWP of the pressure vessel. The Inspector must submit a report of inspection to the chief inspector on a form approved by the director.
2. Any pressure vessel installed on or before June 30, 1974, must be adequately designed for its intended use. An owner seeking to register such a pressure vessel must provide the chief inspector with a copy of the manufacturer’s data report relating to the vessel, a copy of the construction details with material specifications, and any other information or materials requested by the chief inspector.
3. Any pressure vessel installed after June 30, 1974 must be constructed in accordance with ASME Code in effect at the time of construction.
4. Any pressure vessel installed after July 1, 1998 must be stamped and registered with the National Board.

**SECTION 3. Registration Numbers**

1. **Display; Not Transferable**. The assigned State of Maine registration number must appear on each pressure vessel at all times. The registration number assigned to a pressure vessel may not be transferred to another pressure vessel.

2. **Registration Number**. The Inspector must place the assigned State of Maine registration number, preceded by the letters “PV,” on a self-locking tag issued by the director and must affix the tag in the vicinity of the manufacturer’s name plate.

3. **Group of Pressure Vessels**. For purposes of assignment of a registration number, the director may consider a group of pressure vessels, such as the rolls of a paper machine or a dryer operating as a single machine or unit, to be one pressure vessel. In that event, the group of pressure vessels must be assigned a single master registration number and the individual pressure vessels must be assigned separate registration numbers related to the master registration number. The owner must pay a certificate fee for only a single pressure vessel.

**SECTION 4. Periodic Inspections of Pressure Vessels**

1. **Inspection Methods and Frequency**.
2. **Pressure Vessels Generally**. Before the initial inspection certificate expires, and every three (3) years thereafter, pressure vessels in the State must be inspected as follows:
3. An Inspector must perform a certificate inspection of the pressure vessel;

and

1. When construction permits, the triennial certificate inspection must be internal. In the event that an internal inspection is not feasible due to construction features, the Inspector must use an alternative method of determining material thickness of the shell and/or head.
2. **Water Heaters Located in Schoolhouses**. Before the initial inspection certificate expires, and every twelve (12) months thereafter, water heaters located in schoolhouses in the State must be inspected as follows:
3. An Inspector must perform a certificate inspection of the water

heater located in the schoolhouse; and

1. The annual certificate inspection must be internal whenever

construction permits. In the event that an internal inspection is not feasible due to construction features, the Inspector must use an alternative method of determining material thickness of the shell and/or head.

“Water heaters located in schoolhouses” mean fired storage water heaters located in schoolhouses that are not exempt pursuant to 32 M.R.S. § 15102(2)(I).

1. **Report**. The Inspector must submit to the director a report of each inspection performed pursuant to Section 4, Subsection 1 of this Chapter on a form approved by the director.
2. **Exception**. Those companies that are participating in the TAPPI Paper Machine Dryer Can Inspection Program may request permission to be issued an inspection certificate from the director upon verification by the Inspector that the company is adhering to the TAPPI standards.

**SECTION 5. MAWP of Existing Pressure Vessels Not Constructed to Code**

1. The MAWP on the shell of a pressure vessel or drum shall be determined by the strength of the weakest course computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint, the inside diameter of the course, and the factor of safety allowed by Paragraph A of Section 5, Subsection 1 of this Chapter. The formula for determining MAWP is as follows:

**TStE** = MAWP, PSIG

RFS

**Where**:

TS = Ultimate tensile strength of shell plates, PSI

R = Inside radius of the weakest course of the shell or drum, inches.

T = Minimum thickness of shell plates in weakest course, inches.

E = Efficiency of longitudinal joint, as calculated in the ASME Boiler and Pressure Vessel Code adopted in Chapter 73 of the Program’s rules.

FS = Factor of Safety allowed by subsection A.

A. **Factor of Safety**. The factor of safety must be at least five (5).

B. **Tensile Strength**. When the tensile strength of steel or wrought-iron shell plates is not known, it must be assumed to be 55,000 PSI for steel and 45,000 PSI for wrought iron.

C. **Strength of Rivets**. Calculations concerning riveted joints must be those established by the ASME Boiler and Pressure Vessel Code as adopted in Chapter 73 of these rules, or as approved by the director.

**SECTION 6. Pressure Vessel Point of Contact**

Whenever a pressure vessel is installed at a plant, the owner must comply with Chapter 78, Section 10 of these rules.

**SECTION 7. Modified Pressure Vessels**

When any major pressure retaining item is changed on an existing pressure vessel, the change must be considered an alteration as set forth in Chapter 77.

AUTHORITY: 32 M.R.S. §§ 15102, 15103-A, 15105

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