

Chapter Ind 41

BOILER AND UNFIRED PRESSURE VESSEL CODE

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Ind 41.50
Ind 41.001 Definitions as used in chapters Ind 41 and 42. (1) The term ADVISORY BOARD shall mean a group of persons appointed to advise the Industrial Commission of Wisconsin which is designated by law to administer the regulations.

(2) The term A.S.M.E. BOILER AND UNFIRED PRESSURE VESSEL CODES shall mean the Boiler and Unfired pressure Vessel Codes of the American Society of Mechanical Engineers.

(3) The terms AUTHORIZED INSPECTOR or QUALIFIED INSPECTOR shall mean:

(a) *For shop inspectors.* Any individual who has been commissioned by the National Board of Boiler and Pressure Vessel Inspectors and holds a certificate of competency issued by the Wisconsin Industrial Commission.

(b) *For field inspectors.* Any individual who holds a certificate of competency issued by the Wisconsin Industrial Commission.

(4) The term BOILER AND UNFIRED PRESSURE VESSEL CODE is used to designate the accepted reference for construction, installation, operation, and inspection of boilers and unfired pressure vessels.

(5) The term CERTIFICATE OF COMPETENCY shall mean a certificate issued to a person who has passed an examination prescribed by the industrial commission.

(6) The term EXISTING INSTALLATIONS insofar as the application of these rules and regulations are concerned, shall mean and include all boilers and unfired pressure vessels constructed, installed, placed in operation or "Contracted for" before January 1, 1957.

(7) The term EXTERNAL INSPECTION shall mean an inspection made when a boiler or unfired pressure vessel is in operation.

(8) The term FUSION WELDING shall mean a process of welding metals in a molten, or molten and vaporous state, without the application of mechanical pressure or blows. Such welding may be accomplished by gas flame or by the electric arc.

(9) The term HOT WATER HEATING AND HOT WATER SUPPLY BOILER shall mean a boiler completely filled with water which furnishes hot water to be used externally to itself, at pressures not exceeding 160 pounds per square inch gage and at temperatures not exceeding 250°

Fahrenheit. If the boiler exceeds these limits, it shall be considered a Power Boiler.

(10) The term INTERNAL INSPECTION shall mean an inspection made when a boiler or unfired pressure vessel is shut down and handholes and manholes, or other inspection openings are opened or removed for inspection of the interior.

(11) The term LOW PRESSURE STEAM BOILER shall mean a boiler on which the safety valves are set at pressures not exceeding 15 pounds per square inch gage.

(12) The term MAJOR REPAIR used herein shall be considered as one upon which the strength of a boiler or unfired pressure vessel would depend.

(13) The term MINIATURE BOILER as used herein shall mean any boiler which generates steam or other vapor on which the safety valve is set at over 15 psi pressure, which does not exceed any of the following limits: 16 inches inside diameter of the shell, 42 inches over-all length of outside to outside of heads at center, 20 square feet of water heating surface, 100 pounds per square inch maximum allowable working pressure.

(14) The term NEW BOILER OR UNFIRED PRESSURE VESSEL INSTALLATIONS insofar as the application of these rules and regulations are concerned, shall mean and include all boilers and unfired pressure vessels constructed, installed, placed in operation or "Contracted for" after January 1, 1957.

(15) The term NON-STANDARD BOILER OR UNFIRED PRESSURE VESSEL shall mean a boiler or unfired pressure vessel that does not bear the Wisconsin state stamp, the A.S.M.E. stamp, the National Board stamp, the A.P.I.-A.S.M.E. stamp, the Interstate Commerce Commission stamp as accepted in section Ind 41.51⁽⁸⁾, or the stamp authorized by other recognized codes.

(16) The term OWNER OR USER as used herein shall mean any person, firm or corporation owning or operating any boiler or unfired pressure vessel within this state.

(17) The term PORTABLE BOILER shall mean an internally fired boiler which is primarily intended for temporary location and the construction and usage is obviously portable.

(18) The term POWER BOILER shall mean a closed vessel in which steam or other vapor (to be used externally to itself) is generated by the direct application of heat and has a safety valve set at a pressure of more than 15 pounds per square inch gage and which exceeds the dimensions for miniature boilers.

(19) The term PRESSURE VESSEL when used collectively shall include power boilers, low pressure heating boilers, high pressure steam boilers, miniature boilers, hot water heating and supply boilers, and unfired pressure vessels.

(20) The term SECOND HAND BOILERS OR UNFIRED PRESSURE VESSELS shall mean a boiler or unfired pressure vessel of which both the location and ownership have been changed after primary use.

(21) The term UNFIRED PRESSURE VESSEL shall mean a vessel in which pressure is obtained from an external source, or from an indirect application of heat. Vessels used for the storage and transport-

tation of liquid petroleum* gases or anhydrous ammonia* and all the refrigerant* containing vessels are also defined as unfired pressure vessels but shall not be covered by sections Ind 41.01 to 41.09 and sections Ind 41.001 to 42.40 of this code since they are covered by other state codes. The term UNFIRED PRESSURE VESSEL shall not include such vessels as air eliminators, scraper traps, and similar devices on the pumping and dispensing equipment or systems used in the transportation, storage or distribution of flammable liquids.

*Note: For the installation, operation, and field inspection of vessels used for the storage and transportation of liquid petroleum gas, anhydrous ammonia, and all the refrigerant containing vessels, see the state code which governs. The construction, shop inspection, and repair of these vessels shall be governed by sections Ind 41.50 and Ind 41.51 and sections Ind 42.50 to Ind 42.80 of this code.

(22) The term WISCONSIN SPECIAL BOILER AND UNFIRED PRESSURE VESSEL shall mean a boiler or unfired pressure vessel which bears the stamp "Wisconsin Special or Wisconsin Standard."

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

GENERAL REQUIREMENTS FOR THE INSTALLATION, OPERATION AND FIELD INSPECTION OF BOILERS AND UNFIRED PRESSURE VESSELS

Ind 41.01 Safety regulations. (1) No boiler or unfired pressure vessel shall be operated at a pressure in excess of the maximum allowable working pressure allowed by the inspection certificate (see section Ind 41.07) which pressure is to be ascertained by means of these orders.

(2) Boilers and unfired pressure vessels shall be equipped with such appliances as to insure safety of operation as hereinafter ordered.

(3) No unauthorized person shall remove or tamper with any safety appliances prescribed by the hereinafter orders, and no unauthorized person shall in any manner load the safety valve to a greater pressure than that allowed by the certificate of inspection.

(4) In all cases, boilers and unfired pressure vessels shall be so placed as to give ample room between any ceiling, wall or partition to connect and operate any valves or pipes or other fittings or connections used in any such boilers and unfired pressure vessels.

(5) Whoever owns, uses, or causes to be used a boiler or unfired pressure vessel, except those covered in section Ind 41.03, unless the same is under the periodically guaranteed inspection of cities or insurance companies allowed by the industrial commission to conduct their own inspections, shall report to the industrial commission on January 1 of each year the location of such boilers and on January 1 of each even numbered year the location of such unfired pressure vessels.

(6) The owner or user of any boiler or any unfired pressure vessel shall immediately notify the industrial commission in case a defect is discovered affecting the safety of the boiler or the unfired pressure vessel. The owner or user of a boiler or an unfired pressure vessel shall notify the industrial commission when an accident occurs which serves to render a boiler or an unfired pressure vessel inoperative. In case of a serious accident, such as an explosion, notice shall be given immediately to the industrial commission and neither the boiler

or the unfired pressure vessel or any of the parts thereof shall be removed or disturbed before an inspection has been made by the industrial commission.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.02 Inspection. (1) **INSPECTION OF STEAM BOILERS.** All steam boilers operated in the state of Wisconsin, except those included in section Ind 41.03, shall be subject to regular internal and external inspection once each 12 months. Should operating conditions require longer periods than 12 months, an extension of time may be granted on application to the commission.

(2) **INSPECTION OF UNFIRED PRESSURE VESSELS.** All unfired pressure vessels operated in the state of Wisconsin, except those included in section Ind 41.03, shall be subjected to internal or external inspections once each 24 months.

(3) **PREPARATION.** The owner or user of a boiler or an unfired pressure vessel subject to inspection shall prepare the vessel for inspection. To prepare a vessel for an internal inspection, all hand-hole, manhole plates and washout plugs shall be removed. The shell and heads shall be thoroughly cleaned and exposed when so ordered. Each steam boiler shall be relieved of steam pressure, opened up, thoroughly drained of hot water and the combustion chamber and furnace cleaned out before any internal inspection or repairs are made.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.03 Non-periodic inspections. The following boilers and unfired pressure vessels will not be subject to periodic inspection, but in individual cases any such vessel will be subject to inspection by or on order of the commission upon complaint of any person or upon initiative of the commission when there is reasonable cause to suspect that its construction, installation, maintenance or operation is not in keeping with the general purpose and intent of the applicable provisions of this code.

(1) Boilers or unfired pressure vessels which receive regular inspections by United States government inspectors.

(2) Steam boilers or unfired pressure vessels having an internal or external operating pressure not exceeding 15 psi with no limitations to size. Hot water boilers having an internal operating pressure not exceeding 30 psi with no limitations to size.

(3) Boilers of steam fire engines.

(4) Boilers used exclusively for agricultural purposes.

(5) Boilers or water heaters of less than 100 square feet of water heating surface.

(6) Unfired pressure vessels having an inside diameter not exceeding 6 inches with no limitation to pressure.

(7) Unfired pressure vessels having a volume of less than 5 cubic ft. and an operating pressure of less than 250 psi.

(8) Unfired pressure vessels with a volume of less than 1½ cubic ft. with no limit on pressure.

(9) Unfired pressure vessels which are used in accordance with the regulations of the interstate commerce commission.

(10) Air receivers having a volume not to exceed 12 cubic feet and an operating pressure of less than 225 psi.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.04 Insurance inspections. All boilers and unfired pressure vessels subject to periodic inspections of insurance companies authorized to insure pressure vessels in this state, shall not be subject to regular inspections by the industrial commission on the following conditions:

(1) The insurance companies' regulations shall conform with the applicable orders in this code.

(2) The insurance companies' inspectors who inspect boilers and unfired pressure vessels operated in the state shall hold certificates of competency issued by the industrial commission.

(3) Reports of all inspections shall conform to the requirements of the industrial commission.

(4) A copy of all reports shall be forwarded to this industrial commission within 30 days after the inspection is made.

(5) Insurance companies shall report to the industrial commission the name of the owner or operator, and the location of every boiler and unfired pressure vessel on which insurance has been refused, cancelled or discontinued, giving the reasons thereof.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.05 Inspection by certain cities. Boilers and unfired pressure vessels within the regular corporate limits of cities of the first, second and third class which are regularly inspected by a qualified inspector of the city will not be subject to regular inspections by the industrial commission, provided such vessels are properly installed, equipped with fittings necessary to safety, and are not operated at pressures in excess of those determined pursuant to this code.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.06 Exemptions. Boilers and unfired pressure vessels owned or operated by companies or corporations may be exempt from inspections by the industrial commission provided a regular inspection service is maintained or provided by the owners or operators under the following conditions:

(1) The inspection service shall be subject to the approval of the industrial commission.

(2) The boiler or unfired pressure vessel shall be properly installed and not operated at pressures in excess of that determined by the hereinafter orders.

(3) Reports of inspections of all boilers and unfired pressure vessels shall be made to the industrial commission on approved forms. A copy of all reports shall be forwarded to the industrial commission within 30 days after the inspection is made.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.07 Inspection certificates. (1) An inspection certificate shall be issued by a city, corporation, or company employing the inspector, stating the maximum allowable working pressure after an inspection has been made. This certificate shall be kept on file at all times and made available when called for by a deputy of the industrial commission.

(2) The maximum allowable working pressure, as stated in the certificate of inspection shall not be in excess of that determined by the orders in sections Ind 42.001 to Ind 42.40, inclusive, of this code for boilers and unfired pressure vessels installed prior to January 1, 1957. The maximum allowable working pressure, as indicated by the certificate of inspection or badge plate shall not be in excess of that determined by the orders in sections Ind 41.50 to Ind 41.51 of this code for boilers and unfired pressure vessels built and installed on or after January 1, 1957. All boilers and unfired pressure vessels built for use in Wisconsin on or after January 1, 1957 shall be inspected and stamped in accordance with the orders contained in sections Ind 41.50 to Ind 41.51 of this code.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.08 Certificate of competency for inspectors. (1) Certificates of competency as boiler and pressure vessel inspectors shall be issued to persons who pass an examination which shall be prescribed and conducted by the industrial commission and which shall determine the fitness and competency of candidates for such certificates of competency. Such certificates shall be renewed annually on application without re-examination.

(2) A certificate of competency issued to an employee of any city, corporation or company shall be annulled upon the termination of his employment with that city, corporation or company by which he was employed at the time of the issuance of the certificate of competency; such certificate of competency may, however, be renewed without a re-examination upon reemployment by a city, corporation or company.

(3) A certificate of competency may be revoked at any time, but the holder of such certificate of competency shall be entitled upon demand, to a hearing before the industrial commission before the revocation of the certificate of competency.

(4) Holders of certificate of competency shall comply with the provisions of this chapter and copies of their reports of inspections shall be forwarded to the industrial commission within 30 days after each inspection.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.09 Stamps and numbers on boilers and unfired pressure vessels. (1) The owners or operators of a boiler or an unfired pressure vessel, except those covered in section Ind 41.03, shall number each vessel in some convenient and permanent manner.

(2) Boilers and unfired pressure vessels built for use in Wisconsin and installed on or after January 1, 1957 shall comply with the orders in sections Ind 41.50 and Ind 41.51 of this code, and each such boiler or unfired pressure vessel shall be inspected, stamped and a data or report sheet furnished to the industrial commission by the builder, the installer, or the user.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.10 Special type of boilers or unfired pressure vessels. Builders of special types of boilers or unfired pressure vessels subject to inspection, but not covered by the hereinafter orders shall forward to

the industrial commission blue prints and specifications of the type for approval.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.11 Boiler blow-down equipment. (1) The blow-down from a boiler or boilers that enters a sewer system or blow-down which is considered a hazard to life or property shall pass through some form of blow-off equipment that will reduce pressure and temperature as required hereinafter.

(2) The temperature of the water leaving the blow-off equipment shall not exceed 140° Fahrenheit.

(3) The pressure of the blow-down leaving any type of blow-off equipment shall not exceed 5 psi.

(4) The blow-off piping and fittings between the boiler and the blow-off tank shall comply with sections Ind 41.50 and Ind 41.51 of this code.

(5) The tank shall be designed in accordance with sections Ind 41.50 and Ind 41.51 of this code for a working pressure of at least one-fourth the maximum working pressure of the boiler to which it is connected.

(6) All blow-off equipment shall be fitted with openings to facilitate cleaning and inspection.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

NEW CONSTRUCTION

Ind 41.50 Requirements. All boilers and unfired pressure vessels hereafter installed shall be constructed and installed in accordance with the following sections of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

(1) Section I	Power Boilers	1956 Edition*	As amended to January 1, 1957
(2) Section II	Material Specifications	" " *	As amended to January 1, 1957
(3) Section IV	Low Pressure Heating Boilers	" " *	As amended to January 1, 1957
(4) Section V	Miniature Boilers	1952 " *	As amended to January 1, 1957
(5) Section VIII	Unfired Pressure Vessels	1956 " *	As amended to January 1, 1957
(6) Section IX	Welding Qualifications	" " *	As amended to January 1, 1957

* Note: Copies of the above publications are available for inspection at the office of the Industrial Commission and the Secretary of State's office and the office of the Revisor of Statutes or they may be procured for personal use from the American Society of Mechanical Engineers, 29 West 39th Street, New York 18, N. Y.

It shall further be the policy of the industrial commission to revise and amend this part (Section Ind 41.50 and Ind 41.51 New Construction) from time to time. Anyone using this code is cautioned to check with the industrial commission for the latest releases.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57.

Ind 41.51 Exceptions to Ind 41.50. (1) Boilers and pressure vessels not meeting the standard of section Ind 41.50 may be approved by the industrial commission provided the following conditions are met:

(a) The design, material, and workmanship shall be such that they will be operated with an accepted factor of safety.

(b) Complete plans and specifications shall be submitted to, and approved by, the industrial commission before any construction is started.

(c) Vessels constructed under these conditions shall be inspected during construction by an authorized inspector and upon completion, shall be stamped "Wisconsin Special".

(2) The use of a vessel constructed under these conditions shall be limited to the operation and use set forth in the approved application unless additional approval is obtained from the industrial commission.

(3) It is the intent of this code that unfired pressure vessels which have been constructed, inspected, and stamped according to the Interstate Commerce Commission, Regulations Tariff No. 9 effective May 12, 1954 as amended to December 31, 1955, will be considered to meet the requirements of section Ind 41.51 (1) (a), (b), and (c) above, unless stated to the contrary. When such vessels are used in the state of Wisconsin, it shall be the responsibility of the owner of the vessels to have the construction records of the vessels available for inspection by the industrial commission.

(4) **OTHER EXCEPTIONS.** (a) Water heating apparatus, such as range boilers or tanks having a self-contained gas, oil, or electric heating unit used exclusively for hot water service provided such apparatus carries a seal of approval from a testing agency recognized nationally and by the commission. The term "hot water service" shall be construed to mean a system in which the hot water is used for general cleaning purposes as in the bath, the laundry, and in the kitchen. This exception shall not apply when the apparatus is used to produce hot water for heating purposes.

(b) Vessels for containing water under pressure for domestic supply including those having an air space for expansion.

(c) Hot water storage tanks, when heated indirectly by circulating either steam at or below 15 psig, or by hot water at or below 30 psig through a coil or heat exchanger, and the storage water temperature does not exceed 200° Fahrenheit.

(d) Pressure vessels used for water conditioning and filtration.

(5) **CONSTRUCTION AND IDENTIFICATION.** The apparatus, tanks and vessels described in section Ind 41.51 (4) shall be:

(a) Equipped with a water relief valve not less than one inch in diameter installed according to the applicable provisions of section Ind 42.19.

1. Pressure vessels used for water conditioning and filtration are exempt from relief valve requirements when connected to municipal water mains and when there is no check valve between such vessels and the water main.

(b) Constructed by qualified welders employed by a manufacturer registered with the commission, and designed with a safety factor of four and an allowable working pressure of at least 100 psig.

(c) Identified by a stamp showing the manufacturer's name, a serial number, the allowable working pressure, and the year fabricated.

History: Cr. Register, December, 1956, No. 12, eff. 1-1-57; cr. (4) and (5), Register, May, 1958, No. 29, eff. 6-1-58; cr. (5) (a) 1, Register, July, 1959, No. 43, eff. 8-1-59.

Ind 41.52 Forms. The following forms are listed in accordance with Sec. 227.013, Wis. Stats. They are issued by the Safety & Building Division and may be obtained from the Industrial Commission, 1 West Wilson Street, Madison.

(1) SB-14 Insurance Company Boiler Inspector (Ind 41.08).

(2) SB-37 Application For A Certificate Of Competency (Ind 41.08).

(3) SB-39 Manufacturer's Data Report of Boiler or Pressure Vessel (Ind 41.09).

History: Cr. Register, October, 1957, No. 22, eff. 11-1-57.