

TABLE 63.22  
MINIMUM PIPE INSULATION

(The thicknesses specified in this table are based on insulation having thermal resistance in the range of 4.0 H-Ft<sup>2</sup>·F<sup>2</sup>/Btu to 4.6 H-Ft<sup>2</sup>·F<sup>2</sup>/Btu per inch of thickness on a flat surface at a mean temperature of 75°F)

Piping System Types	Fluid Temperature Range °F	Insulation Thickness in Inches for Pipe Sizes†					
		Run Outs†† up to 2"	1" and less	1½" to 2"	2¼" to 4"	5" to 6"	8" and larger
<b>Heating Systems:</b>							
<b>Steam and Hot Water</b>							
High Pressure/Temp	306-450	1½	2¼	2½	3	3½	3½
Med. Pressure/Temp	251-305	1½	2	2¼	2½	3	3
Low Pressure/Temp	201-250	1	1½	1½	2	2	2
Low Temperature	120-200	¾	1	1	1½	1½	1½
Steam Condensate (for feed water)	Any	1	1	1½	2	2	2
<b>Cooling Systems:</b>							
Chilled Water	40-55	¾	¾	1	1	1 ½	1½
Refrigerant	Below 40	1	1	1½	1½	1 ½	1½

† For piping exposed to outdoor ambient temperatures, increase thickness by ¼ inch.

†† Run-outs not exceeding 12 feet in length to individual terminal units.  
Note: Also see s. ILHR 64.37 for additional requirements.

**History:** Cr. Register, May, 1978, No. 269, eff. 7-1-78; am. Register, January, 1980, No. 289, eff. 2-1-80; am. (1) (a), Register, December, 1981, No. 312, eff. 1-1-82; r. and recr. table, Register, December, 1983, No. 336, eff. 1-1-84.

**ILHR 63.23 Cooling with outdoor air in conjunction with mechanical cooling systems (economizer cycle) (1) OUTDOOR AIR.** Each fan system shall be designed to use up to and including 100% of the fan system capacity for cooling with outdoor air automatically whenever its use will result in lower usage of new energy. Activation of economizer cycle shall be controlled by sensing outdoor air enthalpy and dry bulb temperature jointly, or outdoor air dry bulb temperature alone.

**(2) EXCEPTION.** Cooling with outdoor air is not required when the cooling capacity of the fan system is less than 55,000 Btu per hour.

**History:** Cr. Register, May, 1978, No. 269, eff. 7-1-78; am. (1) (a), Register, January, 1980, No. 289, eff. 2-1-80; renum. (1) (a) to be (2) and am. Register, January, 1994, No. 457, eff. 2-1-94.

**ILHR 63.24 Maintenance.** Equipment shall be labeled to clearly state the required regular maintenance. Such label may be limited to identifying, by title or publication number, the operation and maintenance manual for that particular model and type of product. Maintenance instructions shall be furnished for any equipment which requires preventive maintenance for efficient operation.

**History:** Cr. Register, May, 1978, No. 269, eff. 7-1-78.

**Subchapter V — Water Heating**

**ILHR 63.30 Purpose.** The purpose of this part is to provide energy conservation criteria for the design and equipment selection for service water heating.

**History:** Cr. Register, May, 1978, No. 269, eff. 7-1-78.

**ILHR 63.31 Water heaters, storage tanks and boilers. (1) COMBINATION SERVICE WATER HEATING/SPACE HEATING BOILERS.** Space heating boilers shall not be used for service water heating from May 1 to September 30 unless the service water heating load equals or exceeds 30% of the net boiler load.

**(2) TEMPERATURE CONTROLS.** Service water heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use.

**Note:** The department recognizes the values specified in Table 1, ASHRAE Handbook and Product Directory, Systems Volume, Chapter 37.

**(3) SHUT DOWN.** A separate means shall be provided to permit turning off the energy supplied to service water heating systems.

**History:** Cr. Register, May, 1978, No. 269, eff. 7-1-78.

**ILHR 63.32 Conservation of hot water. (1) SHOWERS.** Showers shall be equipped to limit the flow of water to not more than 3 gallons per minute per shower head.

**(2) LAVATORIES.** Lavatory faucets in toilet rooms shall be equipped to limit the flow to not more than 3 gallons per minute.

**(3) HEATED SWIMMING POOLS.** Heated swimming pools shall comply with the following:

(a) Heated swimming pools shall be equipped with controls to limit heating water temperatures to no more than 80° F, except for pools used for therapeutic purposes.

(b) Unenclosed heated pools shall be controlled so that the electric resistance or fossil-fueled pool water heating systems are inoperative from September 15 to May 15.

**Note:** The requirements of sub. (3) will be enforced by the department of health and social services. The same rules will be included in Wis. Adm. Code ch. HSS 172 — Safety, Maintenance and Operation of Public Swimming Pools.

**History:** Cr. Register, May, 1978, No. 269, eff. 7-1-78; am. (1) and (2), Register, January, 1980, No. 289, eff. 2-1-80; am. (2), Register, October, 1994, No. 466, eff. 11-1-94.

**ILHR 63.33 Insulation. (1) STORAGE TANKS.** Heat loss from unfired hot water storage tanks shall be limited to 15 Btu per hour per square foot of external tank surface area. The design ambient temperature shall be no higher than 65° F.

ILHR 63.33

(2) PIPING. (a) Except as provided in par. (b), piping heat loss for recirculation systems shall be limited to a maximum of 25 Btu per hour per square foot of external pipe insulation surface for aboveground piping and a maximum of 35 Btu per hour per square foot of external pipe insulation surface for underground piping. Maximum heat loss shall be determined at a  $\Delta T$  equal to the maximum water temperature minus a design ambient temperature no higher than 65° F.

(b) Conformance to the minimum pipe insulation requirements specified in Table 63.22 shall be deemed as complying with the requirements of this subsection.

History: Cr. Register, May, 1978, No. 269, eff. 7-1-78; cr. (2) (a), Register, May, 1980, No. 293, eff. 6-1-80; am. (2), Register, December, 1983, No. 336, eff. 1-1-84.

**Subchapter VI — Illumination and Electrical Systems**

Note: Section 101.08, Stats., and the National Appliance Energy Conservation Amendments of 1988, P.L. 100-357, establish energy efficiency standards for fluorescent lamp ballasts. For a list of ballasts certified as conforming to a. 101.08, Stats., contact the office of division codes and application at 608/266-1542.

**ILHR 63.41 Lighting.** The building lighting shall be designed in accordance with one of the following methods:

(1) LIGHTING POWER BUDGET. (a) Except as provided in par. (b), for purposes of establishing a budget, the power allowed for the lighting load shall not exceed the value for the space use as indicated in Table 63.41. Each area of space shall be multiplied by its maximum lighting load

respective value as indicated in Table 63.41. This calculation shall be made for all areas of the building and these values shall be summed to yield a total allowable lighting wattage. This total allowable lighting wattage is the maximum amount of lighting power for the building, which may then be allocated as desired provided this value is not exceeded.

(b) The following areas or classes of lighting equipment are exempt from the criteria of par. (a):

1. Local task lighting fixtures applied to an individual location with switching under the user's immediate control, such as, but not limited to, a portable desk lamp, a work light on a machine, or a hospital examination light; or
2. Lighting for special applications where the lighting is an essential technical element for the function performed, such as theatrical performances.

(2) ILLUMINATION BUDGET. If the total allowable lighting wattage value determined by the calculations outlined in sub. (1) is exceeded, then the illumination shall be determined by a method acceptable to the department.

Note 1: The material in this section is not intended to be used as a lighting design procedure. The purpose of this section is solely to outline a procedure for determining the maximum power limit for the lighting.

Note 2: See s. PSC 113.315, Wis. Adm. Code, for individual electric metering requirements for nontransient multi-dwelling unit residential buildings.

**TABLE 63.41  
LIGHTING POWER VALUES**

Area/Use	Maximum Connected Lighting Load (Watts/Sq. Ft.)
<b>General</b>	
Conference Room .....	2.0
Corridor .....	1.0
Employee Cafeteria .....	2.0
Janitor Closet .....	0.5
Lobby .....	1.0
Locker Room .....	2.0
Lunch Room .....	2.0
Mechanical Room .....	0.5
Parking, Indoor .....	0.25
Parking, Outdoor .....	0.05
Office .....	3.0
Perimeter Facade .....	5.0/linear ft.
Reception or Waiting Room .....	3.0
Shower Room .....	2.0
Stairway .....	1.0
Storage .....	0.5
Toilet .....	2.0
<b>Assembly (Chs. ILHR 54 and ILHR 55)</b>	
Auditorium .....	2.0
Church Nave and Sanctuary .....	2.0
Dining Area .....	2.0
Gymnasium .....	2.0
Kitchen, Commercial .....	2.5
Natatorium .....	2.0
Racquet Court .....	2.0
Recreation Area .....	2.0
Tavern .....	2.0
Theatre .....	2.0
<b>Educational (Chs. ILHR 56 and ILHR 60)</b>	
Auditorium .....	2.0
Classroom .....	2.5
Day Care/Nursery .....	2.5