TABLE 5-4
Minimum Pipe Insulation

Fluid Temperature Range in °C	Pipe Diameter in mm				
	25 and Less	32 – 50	65 – 100	130 – 150	200 and Larger
	Insulation Thickness[1] in mm				
152 – 238	65	65	80	100	100
122 – 152	50	65	65	80	80
94 – 121	40	40	50	50	50
41 – 93	25	25	40	40	40

SI: 1.8°C + 32 = °F; 1mm = 0.04 in.

[1] Insulation thickness in Table 5-4 is based on materials having thermal resistance in the range of R = 4.0 to 4.6 per 2.5cm. For materials with thermal resistance less than R = 4.0 per 2.5cm, the minimum insulation thickness shall be determined as follows:

$$\frac{\text{4.0 x Table 5-5 thickness}}{\text{actual R}} = \text{new minimum thickness}$$

For materials with thermal resistance more than R = 4.6 per 2.5cm, the minimum insulation thickness shall be permitted to be reduced as follows:

$$\frac{\text{4.6 x Table 5-5 thickness}}{\text{actual R}} = \text{new minimum thickness}$$

TABLE 5-5
Minimum Tank Insulation

Temperature Difference °C	Minimum Thickness mm
10	38
38	76
66	114
93	152
121	190.5

SI: 1.8°C + 32 = °F; 1mm = 0.04 in.

Insulation or equivalent International Standard(s) approved by the Authority Having Jurisdiction. Insulation coverings and linings shall not flame, glow, smolder, or smoke when tested in accordance with ASTM C 411, *Hot-Surface Performance of High Temperature Thermal Insulation* or equivalent International Standard(s) approved by the Authority Having Jurisdiction, at the temperature to which they are exposed in service. In no case shall the test temperature be below 121°C (250°F).

PART III
Chillers.

510.0 General.

This section shall govern the installation, design, and construction of industrial chillers, including location, refrigerants, evaporators, condensers, and efficiency rating.

510.1 Disconnects. Motor starters and electrical disconnects shall be provided for the chiller's factory wiring, and shall be located inside of the control enclosure.

510.2 Testing. The testing and rating of the chiller shall comply with ARI Standard 590, *Standard for Reciprocating Water-Chilling Packages* or equivalent International Standard(s) approved by the Authority Having Jurisdiction. The chiller shall be pressure tested, and the pressure for the refrigerant side shall be not less than 16bar (225 psi) and the water side shall be not less than 10bar (150 psi).

510.3 Construction. The construction of reciprocating air-cooled liquid chillers shall be in accordance with the *ASME Boiler and Pressure Vessel Code*, Section 8 and ASHRAE Standard 15, *Safety Code for Mechanical Refrigeration* or equivalent International Standard(s) approved by the Authority Having Jurisdiction.

510.4 Installation. Chillers shall be installed in accordance with the manufacturer's installation instructions. The Energy Efficiency Ratio (EER) for reciprocating chillers stated on the stamp shall be not less than the value shown in specification or drawing schedule.

510.5 Clearances. The installation of chillers shall comply with the following requirements:

(A) Listed chillers installed in rooms that are large in comparison with the size of the equipment shall