

CHAPTER 13

ENERGY CONSERVATION

(This Chapter is entirely unique to Massachusetts)

780 CMR 1300.0 GENERAL

1300.1 Scope: 780 CMR 13 sets forth requirements for the effective use of energy in structures.

780 CMR 1301.0 ADMINISTRATIVE

1301.1 Compliance: Buildings shall be deemed to be in compliance with 780 CMR 13 when complying with the general requirements of 780 CMR 13 or the general requirements of Appendix J, as applicable, and built to the provisions of the following:

1. New construction *commercial buildings* built to the applicable provisions of:
 - (a) component design (780 CMR 1308.0 through 1314), or;
 - (b) building design by systems analysis (780 CMR 1315.0), or;
 - (c) buildings utilizing renewable energy sources (780 CMR 1316.0).
2. New construction *low-rise residential buildings* built to the applicable provisions of that version of Appendix J in effect no earlier than March 1, 1998.
3. *Existing buildings* reconstructed in accordance with the applicable requirements of 780 CMR 3407.

1301.1.1 Heating, Pumping, Process Piping and Refrigeration Systems: Heating, pumping, process piping and refrigeration systems shall be installed by contractors and personnel appropriately licensed in the Commonwealth of Massachusetts (Installing Contractor). Engineered designs and specifications prepared by Registered Professional Engineers shall identify systems requiring compliance with appropriate sections of M.G.L. c. 146 and 528 CMR. Shop drawings and design layout prepared by licensed installing contractors shall note the name(s), license number(s) and license expiration date(s) of the contractor(s) installing the heating, pumping, process piping and refrigeration systems. (See Installing Contractor Definition 780 CMR 202.0).

1301.2 Other regulations: 780 CMR 13 is not intended to abridge any safety or health provisions required under any other applicable codes or ordinances.

1301.3 Existing buildings: Nothing in 780 CMR 13 shall require the removal, alteration, or abandonment, or prevent the continuance of the use and occupancy of, a lawfully existing building, unless provided otherwise specifically by 780 CMR 13.

1301.4 Exempt buildings: The following buildings are exempt from the provisions of 780 CMR 13, with the exception of 780 CMR 1313.0 dealing with lighting requirements:

1. Buildings and structures or portions thereof whose peak design rate of energy usage is less than one watt per square foot or three and four tenths (3.4) Btu/h per square foot of floor area for all purposes;
2. Buildings which are neither heated nor cooled;
3. Greenhouses that are free-standing, or attached to a building and separated by a wall having the same thermal value as an exterior wall, and provided with a separate temperature control system;
4. Buildings with less than 100 square feet of gross floor area.

780 CMR 1302.0 EXISTING BUILDINGS

1302.1 Additions to existing buildings: Additions to existing buildings or structures shall be made without making the entire building or structure comply. The new construction shall conform to the provisions of 780 CMR 13 as they relate to the addition only.

1302.2 Alterations to existing buildings: See 780 CMR 34.

780 CMR 1303.0 PLANS AND SPECIFICATIONS

1303.1 Scope: 780 CMR 1303.0 applies to all buildings.

1303.2 General: Plans, specifications and necessary computations shall be submitted to indicate conformance with 780 CMR 1303.0 and other applicable sections of 780 CMR.

1303.3 Details: The data submitted shall show all pertinent information and features to be incorporated into the building, including but not limited to: the exterior envelope component materials; the R values of the respective elements; the U values of the overall assembly; calculations of overall U_o of the walls, roof/ceiling, and floors; the size and type of apparatus and equipment; controls; lighting requirements; and other pertinent data to indicate conformance to 780 CMR 13. Where required by the Board of Building Regulations and Standards or the local enforcement official, such data shall be submitted on forms specified.

THE MASSACHUSETTS STATE BUILDING CODE

1303.4 Calculation procedures: Calculation procedures shall be in accordance with data in the ASHRAE Handbook, 1993 Fundamentals Volume or as otherwise specified in 780 CMR 13.

1305.5 Ventilation: Ventilation air shall conform to the requirements specified in the mechanical code listed in *Appendix A*.

780 CMR 1304.0 MATERIALS AND EQUIPMENT

1304.1 Identification: Where practicable, all materials and equipment referenced in 780 CMR 1303.0 shall be marked in order to show compliance with 780 CMR 13.

1304.2 Maintenance information: Service systems which require preventive maintenance to maintain efficient operation shall be furnished with complete necessary maintenance information. Required routine maintenance actions, as specified by the manufacturer, shall be stated clearly and incorporated on a readily accessible label on the equipment. 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.

780 CMR 1305.0 DESIGN CONDITIONS

1305.1 Scope: 780 CMR 1305.0 applies to all buildings.

1305.2 General: The criteria of 780 CMR 1305.0 establishes the minimum requirements for the thermal design of the exterior envelope of buildings and for HVAC systems and equipment.

1305.3 Thermal performance: A building that is designed to be both heated and cooled shall meet the more stringent of the heating or cooling requirements as provided in 780 CMR 13 when requirements differ.

1305.4 Design parameters: The design parameters listed in Tables 1305.1 and 1305.2 shall be used for calculations required under 780 CMR 13.

1305.4.1 Indoor design temperature: Indoor design temperature shall be 72°F for heating and 78°F for cooling.

1305.4.2 Design humidity: Indoor design relative humidity for heating shall not exceed 30%. For cooling, the actual design relative humidity within the comfort envelope as defined in ASHRAE Standard 55-92 listed in *Appendix A* shall be selected for minimum total HVAC system energy use in accordance with accepted practice.

**Table 1305.1
DESIGN TEMPERATURES
HEATING DEGREE DAYS BASE 65
HDD₆₅**

Location	Outside Ambient				Heating Degree Days Base 65
	Heating Degrees (°F)	Cooling Degrees (°F)	Cooling Degrees (°F)	Heating Degree Days	
	Winter	Dry Bulb Summer	Wet Bulb Summer		
Boston	9	88	74		5634
Clinton	2	87	73		6517
Fall River	9	84	73		5774
Framingham	6	86	73		6144
Gloucester	5	86	74		-
Greenfield	-2	85	73		-
Lawrence	0	87	74		6195
Lowell	1	88	74		6056
New Bedford	9	82	73		5395
Pittsfield	-3	84	72		7578
Springfield	0	87	73		5844
Taunton	9	86	74		6184
Worcester	4	84	72		6989

**Table 1305.2¹
HEATING DEGREE DAYS BASE 50
HDD₅₀**

Location	Heating Degree Days Base 50
Amherst	3171
Birch Hill Dam	3733
Blue Hill	2926
Boston	2383
Chatham	2377
Chestnut Hill	2658
Clinton	3107
East Wareham	2780
Edgartown	2499
Fitchburg	3156
Framingham	2855
Haverhill	2734
Hyannis	2478
Knightville Dam	3693
Lawrence	2867
Middleton	2676
Nantucket	2347
New Bedford	2107
Plymouth	2619
Rochester	2807
Rockport	2726
Springfield	2706
Stockbridge	3551
Taunton	2800
Tulley Lake	3786
Worcester	3364

1. This Table is only utilized to support the ACP Tables, Tables 1314.4.1, 1314.4.2 and 1314.4.3

780 CMR 1306.0 BUILDING INSULATION SPECIFICATIONS

1306.1 Scope: 780 CMR 1306.0 applies to all buildings.

1306.2 General: Insulating materials must conform to the Federal Specifications (F.S.), the American Society for Testing Materials (ASTM) Test Standards, or the Code of Federal Regulations (CFR) as listed in Table 1306.2.

**Table 1306.2
INSULATION MATERIALS STANDARDS**

Material	Standard
Mineral Fiber blanket/batt loose-fill	ASTM C665-91 ASTM C-764-94
Mineral Cellular perlite vermiculite perlite board cellular glass block	ASTM C549-81/R1986 ASTM C516-80/R1990 ASTM C728-91 ASTM C552-91
Organic Fiber cellulose fiber board cellulose loose fill	ASTM C208-94 16 CFR Part 1209
Organic Cellular polystyrene board urethane board flexible unicellular polyurethane or polyiso- cyanurate with foil face polyurethane or polyiso- cyanurate with felt face	ASTM C578-92 ASTM C591-85 ASTM C534-94 ASTM C-1289-95 ASTM C-1289-95

1306.3 Moisture control: The design of buildings for energy conservation shall not create conditions of accelerated deterioration from moisture condensation (additionally, see 780 CMR 12 for attic and under-floor space ventilation).

1306.4 Installation:

1306.4.1 Recessed light fixtures: Only IC labeled recessed lights allowing direct contact with insulating materials shall be used in areas separating conditioned and unconditioned spaces.

1306.4.2 High heat sources: A clearance of three inches from any high heat source, including but not limited to chimneys, flues and vents, shall be maintained for combustible insulating materials.

1306.4.3 Urea formaldehyde foams: Urea formaldehyde foams shall not be used in any building.

1306.4.4 Walls: Batt/blanket insulation with a vapor barrier attached shall be stapled to the winter warm sides or faces of wall studs at intervals of eight inches on center vertically. Where batt/blanket insulation is of a "friction fit" design and a poly vapor barrier is employed, the vapor barrier shall be affixed to the interior face of the wall studs (winter warm side) in accordance

with the insulation manufacturer's recommendations.

1306.4.5 Cavities: All cavities between rough framing and door and window heads, jambs, and sills shall be filled with insulation and covered with a vapor barrier meeting the criteria of 780 CMR 1307.

1306.4.6:

1306.4.6.1 Low rise residential buildings/perimeter insulation: Perimeter insulation for slab on grade construction in buildings of Use Group R of three stories or less shall be installed so that the concrete to concrete contact between the foundation wall and the floor slab is broken and the insulation extends downward the thickness of the slab and then extends four feet vertically down from, or four feet horizontally beneath, the floor slab. Perimeter insulation may be installed in alternative locations if installed in a manner to thermally isolate the floor from the exterior.

1306.4.6.2 Commercial and high rise residential buildings/perimeter insulation: Perimeter Insulation for slab on grade construction in buildings of Use Group R of more than three stories or in buildings of other Use Groups shall be installed in a manner consistent with that specified in 780 CMR 1306.4.6.1, except that alternate locations and dimensions may be permitted by the provisions of 780 CMR 1314.

1306.4.7 Foundation wall insulation:

1. For interior foundation wall insulation, the entire gross wall area extending from the top of the band joist to the floor shall be insulated in accordance with Table 1309.1 for low rise residential buildings or in accordance with the requirements of 780 CMR 1314.0, for other than low rise residential buildings.

2. For exterior foundation wall insulation, the insulation shall extend from the top of the foundation to a minimum of eight feet below grade or to foundation footing, whichever is less. All exterior basement and foundation wall insulation shall be suitably protected so as to prevent deterioration caused by ultra-violet light or insect damage in accordance with manufacturer's instructions.

1306.5 Fire safety relating to insulation: See 780 CMR 722 and 2603.

1306.6: Labeling

1306.6.1 Batt and blanket and rigid board: Insulation of this type shall be labeled according to type, manufacturer or distributor, R value of the insulation at the labeled thickness, and material specification as listed in Table 1306.2.

GENERAL LAWS OF MASSACHUSETTS

TITLE XV. REGULATION OF TRADE.

CHAPTER 94B. HAZARDOUS SUBSTANCES.

Chapter 94B: Section 3. Prohibited acts.

Section 3. (a) No person shall sell, expose for sale, deliver, give away, have in his possession, introduce or deliver for introduction into commerce any misbranded hazardous substance or banned hazardous substance.

(b) No person shall alter, mutilate, destroy, obliterate or remove the whole or any part of the label of, or do any other act with respect to, any hazardous substance if such act is done while the substance is in commerce or held for sale, whether or not the first sale, and such act results in the hazardous substance being a misbranded hazardous substance or a banned hazardous substance.

(c) No person shall receive in commerce any misbranded hazardous substance or banned hazardous substance and deliver or proffer delivery thereof for pay or otherwise.

(d) No person shall give a guarantee or undertaking referred to in section four which guarantee or undertaking is false, except in reliance upon a guarantee or undertaking to the same effect signed by, and containing the name and address of, the person residing in the United States from whom he received in good faith the hazardous substance.

(e) No person shall sell, expose for sale, deliver, give away, have in his possession, introduce or deliver for introduction into commerce, or receive in commerce and subsequently deliver or proffer delivery for pay or otherwise, any hazardous substance in a reused food, drug or cosmetic container or in a container which though not a reused container, is identifiable as a food, drug, or cosmetic container by its labeling or by other identification. The reuse of a food, drug or cosmetic container as a container for a hazardous substance shall be deemed to be an act which results in the hazardous substance being a misbranded hazardous substance. As used in this paragraph, the terms "food", "drug", and "cosmetic" shall have the same meaning as in section one of chapter ninety-four.

(f) No person shall manufacture any hazardous substance that is misbranded with the intent that the same be distributed or sold in violation of this chapter.

(g) No person shall use to his own advantage, or reveal other than to the commissioner or officers or employees of the department or to the courts when relevant in any judicial proceeding under this chapter or to a physician treating a patient for potential poisoning any information acquired under authority of sections six and seven concerning any method or process which as a trade secret is entitled to protection.

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