



City of Philadelphia

City Council
Chief Clerk's Office
402 City Hall
Philadelphia, PA 19107

BILL NO. 070555

Introduced June 14, 2007

Councilmember Kenney

**Referred to the
Committee on the Environment**

AN ORDINANCE

Amending Title 4 of The Philadelphia Code, entitled "Philadelphia Building Construction and Occupancy Code," to require that certain buildings have cool roofs, all under certain terms and conditions.

THE COUNCIL OF THE CITY OF PHILADELPHIA HEREBY ORDAINS:

SECTION 1. Title 4 of The Philadelphia Code, entitled "Philadelphia Building Construction and Occupancy Code," is hereby amended to read as follows:

TITLE 4. THE PHILADELPHIA BUILDING CONSTRUCTION AND OCCUPANCY CODE.

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CHAPTER 4-200.0. TEXT OF SUBCODES.

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SUBCODE "B" (THE PHILADELPHIA BUILDING CODE)

Article B-1.0 Adoption of the "2006 International Building Code" with additions, deletions and amendments.

§ B-1.1 The "2006 International Building Code" as published by the International Code Council is hereby adopted as the Building Code of the City of Philadelphia, with such additions, deletions and amendments as set forth in § B-1.2.

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§ B-1.2 The 2006 International Building Code, copies of which are on file with the Department of Licenses and Inspections, is incorporated as if fully set forth herein, subject to the following additions, deletions and amendments.

§ B-1.2.1 [Brackets] indicate matter deleted. Italics indicate matter added.

§ B-1.2.2 The numbers of all Sections and subsections shall be preceded with the prefix "B-".

§ B-1.2.3 Throughout the code, references to "International" codes or "ICC" codes shall be deemed to refer to the "Philadelphia" codes of the same name.

§ B-1.2.4 *To the extent that the provisions of §B-1.3 entitled "Sustainable Building Standards" conflict with the provisions of the 2006 International Building Code, §B-1.3 shall supersede the provisions of the 2006 International Building Code to the extent that they are inconsistent or in conflict with §B-1.3.*

§B-1.3 SUSTAINABLE BUILDING STANDARDS.

§B-1.3.1 Definitions

1. *"ASTM C55". The American Society of Testing and Materials document entitled, "Standard Specification for Concrete Brick."*
2. *"ASTM C836". The American Society of Testing and Materials document entitled, "Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course."*
3. *"ASTM C1167". The American Society of Testing and Materials document entitled "Standard Specification for Clay Roof Tiles."*
4. *"ASTM C1583". The American Society of Testing and Materials document entitled "Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)."*
5. *"ASTM D522". The American Society of Testing and Materials document entitled "Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings."*
6. *"ASTM D822". The American Society of Testing and Materials document entitled "Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings."*

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7. *“ASTM D1653”. The American Society of Testing and Materials document entitled “Standard Test Methods for Water Vapor Transmission of Organic Coating Films.”*
8. *“ASTM D2370”. The American Society of Testing and Materials document entitled “Standard Test Method for Tensile Properties of Organic Coatings.”*
9. *“ASTM D2824”. The American Society of Testing and Materials document entitled “Standard Specification for Aluminum-Pigmented Asphalt Roof Coatings, Nonfibered, Asbestos Fibered, and Fibered Without Asbestos.”*
10. *“ASTM D3468”. The American Society of Testing and Materials document entitled “Standard Specification for Liquid-Applied Neoprene and Chlorosulfonated Polyethylene Used in Roofing and Waterproofing.”*
11. *“ASTM D3805”. The American Society of Testing and Materials document entitled “Standard Guide for Application of Aluminum-Pigmented Asphalt Roof Coatings.”*
12. *“ASTM D4798”. The American Society of Testing and Materials document entitled “Standard Test Method for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Xenon-Arc Method).”*
13. *“ASTM D5870”. The American Society of Testing and Materials document entitled “Standard Practice for Calculating Property Retention Index of Plastics.”*
14. *“ASTM D6083”. The American Society of Testing and Materials document entitled “Standard Specification for Liquid Applied Acrylic Coating Used in Roofing.”*
15. *“ASTM D6694”. The American Society of Testing and Materials document entitled “Standard Specification for Liquid Applied Silicone Coating Used in Spray Polyurethane Foam Roofing.”*
16. *“ASTM D6848”. The American Society of Testing and Materials document entitled “Standard Specification for Aluminum-Pigmented Emulsified Asphalt Used as a Protective Coating for Roofing.”*
17. *“Cool Roof”. An outer layer or exterior surface of a roof that has high thermal emittance and high solar reflectance, or low thermal emittance and exceptionally*

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high solar reflectance as specified in section xxx that reduces heat gain into a building through the roof.

18. *“Cool Roof Rating Council”. A not-for-profit organization whose mission is to implement and communicate fair, accurate, and credible radiative properties for roof surfaces.*

19. *“CRRC-1”. The Cool Roof Rating Council Product Rating Program Manual. The latest version of the Product Rating Program Manual is available at www.coolroofs.org.*

20. *“Emittance, Thermal”. The ratio of the radiant heat flux emitted by a sample to that emitted by a blackbody radiator at the same temperature.*

21. *“Flux”. The rate of energy flow per unit area.*

22. *“Low-Rise Residential Building”. A residential building, other than a hotel/motel, that is three stories or less in height.*

23. *“Low-Sloped Roof”. Surfaces with a slope of 2:12 inches or less.*

24. *“Minor Repair”. Any repair, reconstruction, improvement or addition to less than twenty percent (20%) of the surface area of the structure before improvement or repair commences.*

25. *“Reflectance, Solar”. The ratio of the reflected solar flux to the incident solar flux.*

26. *“Steep-Sloped Roof”. Roof surfaces with a slope of greater than 2:12 inches.*

§B-1.3.2 Cool Roof Requirements:

All buildings with low-sloped roofs, other than those exempt pursuant to subsection B-1.3.3, shall have cool roofs which meet conditions 1 or 2 and in addition, for liquid applied roofing products, condition 3 below.

1. *Any roofing product with an initial thermal emittance greater than or equal to 0.75 when tested in accordance with the Cool Roof Rating Council’s Product Rating Program Manual (CRRC-1) shall have a minimum initial solar reflectance of 0.70 when tested in accordance with CRRC-1. Provided that for low-rise residential buildings, concrete tile (as defined in ASTM C55) and clay tile (as defined in ASTM C1167) roofing*

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products shall have a minimum initial thermal emittance of 0.75 and a minimum initial solar reflectance of 0.40 when tested in accordance with CRRC-1.

2. *Any roofing product with a minimum initial thermal emittance $\epsilon_{initial}$ less than 0.75 when tested in accordance with the CRRC-1, including but not limited to roof products with metallic surfaces, shall have a minimum initial solar reflectance of $0.70 + 0.34 * (0.75 - \epsilon_{initial})$ when tested in accordance with CRRC-1.*

3. *Liquid applied roof coatings applied to low-sloped roofs in the field as the top surface of a roof covering shall*

A. *be applied across the entire roof surface to meet the dry mil thickness or coverage recommended by the coating manufacturer, taking into consideration the substrate on which the coating is applied, and*

B. *meet the minimum performance requirements listed in TABLE A or the minimum performance requirements of ASTM C836, D3468, D6083 or D6694, whichever are appropriate to the coating material. Provided that aluminum-pigmented asphalt roof coatings shall meet the requirements of ASTM D2824 or ASTM D6848 and be installed as specified by ASTM D3805 and that cement-based roof coatings shall contain a minimum of 20% cement and shall meet the requirements of ASTM C1583, ASTM D822, and ASTM D5870.*

§B-1.3.3 Exemptions:

1. *The following shall be exempt from the requirements of this Section:*

A. *That portion of the roof that is covered by a rooftop deck covering 1/3 or less of the aggregate area of the roof, or a rooftop garden, or a green roof.*

B. *Any minor repair to an existing roof.*

C. *Any steep-sloped portion of a roof.*

2. *The following may be exempt from the requirements of this Section:*

A. *An area including and adjacent to rooftop photovoltaic and solar thermal equipment, totaling not more than three times the area that is covered with such equipment.*

TABLE A. MINIMUM PERFORMANCE REQUIREMENTS FOR LIQUID APPLIED ROOF COATINGS FOR LOW-SLOPED ROOFS

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Physical Property	ASTM Test Procedure	Requirement
<i>Initial percent elongation (break)</i>	D 2370	Minimum 200% 73 °F (23 °C)
<i>Initial percent elongation (break) OR Initial flexibility</i>	D2370 D522, Test B	Minimum 60% 0°F (-18°C) Minimum pass 1" mandrel 0°F (-18°C)
<i>Initial tensile strength (maximum stress)</i>	D 2370	Minimum 100 psi (1.38 Mpa) 73 °F (23 °C)
<i>Initial tensile strength (maximum stress) OR Initial flexibility</i>	D2370 D522, Test B	Minimum 200 psi (2.76 Mpa) 0°F (-18°C) Minimum pass 1" mandrel 0°F (-18°C)
<i>Final percent elongation (break) after accelerated weathering 1000 h</i>	D 2370	Minimum 100% 73 °F (23 °C)
<i>Final percent elongation (break) after accelerated weathering 1000 h OR Flexibility after accelerated weathering 1000 h</i>	D2370 D522, Test B	Minimum 40% 0°F (-18°C) Minimum pass 1" mandrel 0°F (-18°C)
<i>Permeance</i>	D 1653	Maximum 50 perms
<i>Accelerated weathering 1000 h</i>	D 4798	No cracking or checking ¹

¹ Any cracking or checking visible to the eye fails the test procedure

[§ B-1.2.4] §B-1.4 THE 2006 INTERNATIONAL BUILDING CODE:

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SECTION 2. Effective Date. This Ordinance shall take effect immediately upon final approval.

Explanation:

[Brackets] indicate matter deleted.
Italics indicate new matter added.