



Code Approval Guide Table of Contents

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VERSICO ROOFING SYSTEMS CODE APPROVAL GUIDE

May 2011

INTRODUCTION

This Code Approval Guide addresses both general information pertaining to Underwriters Laboratories (UL) and Factory Mutual (FM) test criteria as well as specific UL and FM code approvals achieved with Versico's VersiWeld® Adhered and Mechanically Attached Roofing Systems. Various independent test laboratory results along with national building code approvals are also identified in this guide. Code approvals available with Versico's VersiFleece®, Hot Mopped and VersiGard® Roofing Systems are identified in separately published Code Approval Guides.

Code ratings are categorized by roof system type and are separated into 2 sections; UL Approvals and FM Approvals. Underwriters Laboratories rated roof assemblies are grouped according to deck type (non-combustible or combustible) and are further categorized by the severity of fire exposure (Class A, B or C). Factory Mutual approved assemblies are categorized according to deck type and the specific type of construction (new, tear-off or retrofit). In addition to the standard requirements needed to obtain specific FM ratings, various enhancements, which are also required for strict FM compliance are also included in this guide (i.e., additional perimeter membrane securement for Mechanically-Fastened Systems and additional perimeter insulation securement for Adhered Roofing Systems).

The listed assemblies contained in this guide are grouped generically based on deck classification. Specific substrate requirements for each Versico Roofing System can be identified in the respective Versico Specifications.

In the UL and FM Approvals throughout this guide, when multiple layers of insulation are referenced, the product listed first identifies the insulation directly below the membrane. For example; a listing of Recovery Board/Polyisocyanurate indicates the Recovery Board is installed directly under the membrane. A listing of Gypsum Board/Polystyrene indicates the Gypsum Board is installed directly under the membrane.

General Guidelines for Underwriters Laboratories and Factory Mutual Code Compliance

These guidelines are intended to focus on the essential criteria to be followed when an Underwriters Laboratories (UL) and/or Factory Mutual (FM) approved assembly is specified. Generally, the Versico published specifications reflect the minimum requirements necessary to obtain the applicable Versico warranty. **Code requirements are not specifically covered in the Versico specifications and are considered to be above and beyond the provisions of the Versico warranty.**

Individuals specifying an approved assembly or selecting various products to achieve a specific UL/FM rating must recognize the importance of ensuring proper component selection to fully comply with the most current listings published. **All materials used in the roofing system must be UL and/or FM approved and must have been tested together as part of a complete roofing assembly.**

Individual components may be UL and/or FM approved but may not have been tested together as part of a rated roofing assembly. As an example, not all FM approved fasteners are approved with all FM approved insulations on fully adhered roofing systems. Only those components which have been tested together, in conjunction with a specific roofing assembly, can be used to obtain a UL and/or FM rating.

In addition to the code approval listings in this guide, information pertaining to approved assemblies can also be referenced in the following directories:

1. *Underwriters Laboratories Roofing Materials and Systems Directory* (for external Class A, B and C fire ratings)
2. *Underwriters Laboratories Fire Resistance Directory* (for internal hourly fire ratings - P Numbers)
3. *Factory Mutual Approval Guide* (Class 1-60, 75, 90, 105, 120, 135, 150, 165, 180, etc.)

Note: If Factory Mutual is the insurance underwriter for a project, the local FM office must be contacted for specific system requirements.

Underwriters Laboratories and Factory Mutual Clarifications/Enhancements:

A. Underwriters Laboratories

1. The criteria required to obtain **UL external fire ratings** (Class A, B or C) can be identified in this guide and/or the current published *UL Roofing Materials and Systems Directory*. UL ratings approved for use on combustible decks are also acceptable on non-combustible decks. For UL external fire test criteria/procedures, refer to page 49.
2. For **UL internal fire ratings** (hourly constructions - P Numbers), the current published UL Fire Resistance Directory **must be referenced for specific criteria on insulation types, thermal barrier requirements, ceiling protection, etc.** For UL internal fire test criteria/procedures, refer to page 50. The P Series Construction Numbers that the individual Versico Roofing Systems are eligible for are listed on page 51 in this guide.

B. Factory Mutual

Prior to the purchase of any component, consult the respective manufacturer to verify their current approval status with FM. Some manufacturers rely on multiple sources to supply a specific product and all of their sources may not carry FM approval. To ensure FM compliance, the product must have been supplied by an FM approved source or manufacturer and must be approved by FM as part of the assembly.

Specific information concerning **structural deck requirements** (brand name, span capacity, securement criteria, etc.) **must be referenced in the current Factory Mutual Approval Guide and FM Loss Prevention Data Sheet 1-29.** In general, all fasteners used for the securement of roof insulation and membrane must penetrate the top flutes of the steel deck. On Mechanically-Fastened Roofing Systems, field sheets shall be oriented perpendicular to the steel roof deck flutes. Standard steel decks cannot be less than 22-gauge. Other insulated assemblies which are less than 22 gauge are identified in the current published FM Approval Guide.

SUMMARY

Due to complexity of the code documents and the variety of information that must be reviewed, it is important to consult with Versico and other respective manufacturers concerning the most current available approvals.

- **Prior to project bid** - Products specified by the architect must be thoroughly investigated to determine if the specified rating can be achieved and local building codes must be consulted regarding any additional requirements.
- **Prior to installation** - Project managers should review the code requirements with field construction personnel to ensure compliance with project requirements.

Upon completion of the roofing installation, each project is inspected by a Versico Technical Representative to ensure compliance with Versico's current specification requirements for the issuance of the applicable warranty. However, this inspection is not for the purpose of verifying code compliance.

VersiWeld QA TPO Roofing System Underwriters Laboratories Approvals

Membrane Type: .060" VersiWeld QA TPO Membrane (White)

UL Class "A"			
Deck Type	Insulation (1)(2)	Thickness	Maximum Slope
			VersiWeld QA TPO
Non-Combustible and Combustible (For combustible decks, gypsum board must be installed beneath the insulations listed) (3)(4)(5)	Versico Polyiso MP-H or SecurShield	Any	1/2"
	APA Rated Oriented Strand Board (OSB)	7/16"	1-1/2"
	APA Rated Oriented Strand Board (OSB)/Polyiso APA Rated Oriented Strand Board (OSB)/Polystyrene (8)	7/16" Min/Any 7/16" Min/Any	
Combustible (5)(7)	Dens-Deck Prime (6) Dens-Deck Prime/Polyiso Dens-Deck Prime/Polystyrene	1/4" (6) 1/4"/Any 1/4"/Any	4"
	Versico SecurShield Polyiso (5)	3" Min.	1/2"
	Polyiso listed above over 2 layers of Versico FR Base Sheet 2S	Any / 2-layers	1/2"
	Securock Securock/Polyiso Securock/Polystyrene	1/2" 1/4"/Any 1/4"/Any	3"
Structural Concrete or Approved Ltwt. Ins. Conc.	N/A	N/A	4"

Notes:

- (1) When multiple insulation layers are listed (i.e., APA Rated Oriented Strand Board (OSB)/Polyisocyanurate), the insulation listed first (APA Rated Oriented Strand Board (OSB)) is directly under the membrane.
- (2) Insulation may be mechanically fastened, attached with DASH or FAST Adhesive, Type III or IV asphalt or UL approved cold adhesive.
- (3) Minimum 1/2" thick gypsum board can be a classified or unclassified material with a minimum weight of 1.84 pounds per square foot. 1/4" thick Versico/Georgia Pacific Dens-Deck or Georgia Pacific Sound Deadening Board with a minimum weight of 1.09 pounds per square foot may be substituted for 1/2" thick gypsum board.
- (4) On **Retrofit/No Tearoff projects**, where the **existing roof is Class A** rated, the **gypsum board may be eliminated**. Existing Class B or C rated roofs will require the use of gypsum board to achieve a Class A rating, otherwise, the new roofing system will retain existing UL rating.
- (5) Insulation joints (bottom layer) are to be staggered a minimum of 6" from joints in wood deck.
- (6) Dens-Deck Prime cannot be installed directly over an existing roofing membrane.
- (7) Combustible deck ratings can be used on non-combustible decks.
- (8) Assembly not permitted on combustible decks, even with gypsum board underneath. Dens-Deck Prime glass faced gypsum board must be installed over insulation as identified in combustible deck listing.

VersiWeld QA TPO Roofing System Underwriters Laboratories Approvals

Membrane Type: .060" VersiWeld QA TPO Membrane (White)

UL Class "B"			
Deck Type	Insulation (1)(2)	Thickness	Maximum Slope
			VersiWeld QA TPO
Combustible (3)(5)	Versico SecurShield Polyiso (3)	1.9" Min.	1/2"
	Polyiso listed on previous page (6)/G2 Base Sheet (4)	1-1/2" Min./ G2 Base	1/2"
	Polyiso listed on previous page (5) over 2 layers Versico FR Base Sheet 2S	Any/2 layers of Base Sheet	1/2"
UL Class "C"			
Non-Combustible	Polyiso listed on previous page (5)	Any	Unlimited
Combustible	Polyiso listed on previous page (5)	2" Min.	Unlimited

Notes:

- (1) When multiple insulation layers are listed (i.e., APA Rated Oriented Strand Board (OSB)/Polyisocyanurate), the insulation listed first (APA Rated Oriented Strand Board (OSB)) is directly under the membrane.
- (2) Insulation may be mechanically fastened, attached with DASH or FAST Adhesive, Type III or IV asphalt or UL approved cold adhesive.
- (3) Insulation joints (bottom layer) are to be staggered a minimum of 6" from joints in wood deck.
- (4) **Acceptable G2 base sheets** can be one of the following; Celotex Type G2 Vaporbar GB, GAF Gafglas No. 75 Base Sheet, Manville Glasbase, Owens Corning Perma Ply No. 28 or Tamko Glass Base. Versico FR Base Sheet 2S may also be used.
- (5) Combustible deck ratings can be used on non-combustible decks.

VersiWeld QA TPO Roofing System Factory Mutual (FM) Approvals

Membrane Type: .060" VersiWeld QA TPO Membrane (White)

FM Class 1A-90 Ratings Mechanically Fastened Insulation			
Deck Type (1)	Insulation (2)	FM Class 1A-90 Thickness	Maximum Slope
			VersiWeld QA TPO
New Construction/Tearoff: Steel (Min. 22 gauge) Structural Concrete (3) Wood (4) Tectum (5) Gypsum (Tearoff only) (6)	Versico Polyisocyanurate MP-H or SecurShield	1.5" – 12"	1/2"
Retrofit (No Tearoff) (7) Structural Concrete Gypsum (6)			

Notes:

- (1) Specific information concerning structural deck requirements (brand names, span capacity, securement criteria, etc.) must be referenced in the current FM Approval Guide and FM Loss Prevention Data Sheet 1-28.
- (2) For Versico insulation fastening criteria, refer to "FM Membrane and Insulation Enhancement Requirements." Additional insulation fastening is required at perimeters and corners in accordance with FM Loss Prevention Data Bulletin 1-28 and 1-29.
- (3) In lieu of mechanical securement on concrete decks, insulation may be attached with **DASH or FAST Adhesive**, Olybond 500 BA, One-Step or Hot Asphalt to new/tearoff structural concrete. Insulations may also be attached with DASH or FAST Adhesive to existing FM approved built-up roof coverings over FM Approved concrete decks to retain the existing wind uplift classification (maximum FM 1-90 rated). Multiple layers of approved insulation are acceptable.
- (4) On FM approved wood decks, minimum 1/4" thick gypsum board must be installed beneath the insulation listed.
- (5) FM approved Tectum decks must be minimum 2" thick. Insulation fasteners must penetrate the deck a minimum of 1-1/2" for Class 1-60 and 2" for Class 1-90.
- (6) Existing gypsum decks must be FM approved. Insulation fasteners must penetrate the deck a minimum of 1-1/2" for Class 1-60 and 1-90.
- (7) Existing roof must be FM Class 1 rated.

VersiWeld QA TPO Roofing System

Factory Mutual (FM) Approvals

Membrane Type: .060" VersiWeld QA TPO Membrane (White)

FM Class 1A-90 Ratings			
Mechanically Fastened Insulation			
Deck Type (1)	Insulation (2)(4)(5)	Insulation Thickness	Maximum Slope VersiWeld QA TPO
New Construction/Tearoff: Steel (Min. 22 gauge) Structural Concrete (3) Wood (6) Tectum (7) Gypsum (8) (Tearoff only) Retrofit (No Tearoff): (9) Structural Concrete Gypsum (8)	APA Rated OSB (7/16" Min.), SecurShield HD Plus (1/2") or Securock (1/4" Min.) Over: Polyisocyanurate FM Approved XPS (4) FM Approved EPS (4)(5)	7/16" Min./1/2"/1/4" Min. See Page 7 See FM RoofNAV See FM RoofNAV	1-1/2"
Retrofit (No Tearoff) (9): Steel (Min. 22 gauge) Wood (6) Tectum (7)	Versico Polyiso MP-H, SecurShield Versico SecurShield HD Plus	1" Max. 1/2"	1/2"

Notes:

- (1) Specific information concerning structural deck requirements (brand names, span capacity, securement criteria, etc.) must be referenced in the current FM Approval Guide and FM Loss Prevention Data Sheet 1-28.
- (2) Additional insulation fastening is required at perimeters and corners in accordance with FM Loss Prevention Data Bulletin 1-28 and 1-29.
- (3) In lieu of mechanical securement on concrete decks, insulation may be attached with **DASH or FAST Adhesive**, Olybond 500 BA, One-Step or Hot Asphalt to new/tearoff structural concrete. Insulations may also be attached with FAST Adhesive to existing FM approved built-up roof coverings over FM Approved concrete decks to retain the existing wind uplift classification (maximum FM 1-90 rated). Multiple layers of approved insulation are acceptable.
- (4) On steel decks, a thermal barrier of FM approved gypsum board (Type X or Type C) is required under these insulations. For specific thermal barrier requirements, consult the respective insulation manufacturer or refer to the current published FM Approval Guide.
- (5) EPS insulation must be supplied by FM approved AFM, ARCO, BASF or Huntsman bead manufacturer.
- (6) On FM Approved wood decks, minimum 1/4" thick gypsum board must be installed beneath the insulation listed. Polystyrene insulations must incorporate 1/4" gypsum board in addition to standard thermal barrier requirements.
- (7) FM approved Tectum decks must be minimum 2" thick. Insulation fasteners must penetrate the deck a minimum of 1-1/2" for Class 1-60 rating.
- (8) Existing gypsum decks must be FM approved. Insulation fasteners must penetrate deck a minimum of 1-1/2" for Class 1-60 rating.
- (9) Existing roof must be FM Class 1 rated.
- (10) Minimum 1/2" thick Dens-Deck must be installed over steel decks beneath the Pactiv insulation.

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