5 MB - SECTION 5 - INSULATION

5.1 General

5.1.1 Insulation is the system component that provides the major portion of the thermal performance of the roofing system. The location of the insulation can vary, depending on the roofing system design type.

5.1.2 For ARCA Warranty Ltd. acceptance, insulation products must be tested by a certified testing agency approved by the Standards Council of Canada for a Canadian Construction Materials Centre (CCMC) evaluation listing to verify compliance to an existing standard such as the Underwriters' Laboratories of Canada (ULC) insulation standard. Third party certified thermal insulation products are accepted by specific manufacturer and product name and are not accepted generically for inclusion under the Warranty Certificate Program.

5.1.3 To eliminate confusion during the tendering process, it is recommended that the design authority specify roof insulation by the type and thickness of insulation to be used. Specifying insulation by thermal resistance values may lead to confusion during the construction process as insulation thickness affects the design heights of other building components, such as perimeters, curbs and junctions.

5.1.4 Insulation shall be protected during shipping and site storage to prevent moisture infiltration and damage. No insulation material is to be installed when its moisture content exceeds the CAN/ULC standard values. Wet or damp insulation must be removed. Surface moisture should be allowed to dry.

5.1.5 When specifying plastic foam insulation, the design authority must ensure compliance with Alberta Building Standards relative to the use of thermal barriers, as this falls outside the expertise of the roofing contractor.

5.1.6 Only new insulation shall be installed in new conventional insulated roofing assemblies.

5.2 Insulation Blocking for Sloped Decks

5.2.1 To prevent membrane movement or insulation displacement, when deck slopes exceed 1:8 (12.5%), continuous wood nailers or insulation blocking shall be mechanically fastened to the decking. The design of the insulation blocking system is the responsibility of the design authority and is not covered by the Warranty Certificate.

5.2.2 When insulation blocking is required, it is recommended that all roofing system components should be uniformly adhered to each other and to their supporting substrate. The upper nailers should be oriented perpendicular to the direction of the membrane.

5.2.3 The size and spacing of the blocking should match the insulation board dimensions and should provide for the mechanical fastening of the membrane. The maximum spacing permitted between the blocking shall be determined by the membrane manufacturer.

5.3 Insulation

5.3.1 Insulation shall be uniformly adhered to the vapour retarder in a full application of hot bitumen, with an approved adhesive or mechanically fastened through the vapour retarder to the structural deck.

5.3.2 Insulation boards shall be tightly butted together and may be installed in a soldier or staggered pattern. Gaps at board joints greater than 6.4mm (1/4") in width shall be filled the full depth of the insulation gap with polyurethane spray foam (SPF) or the same insulation as used in the assembly insulation.[15][16][17]

5.3.3 When multi-layers of insulation are specified, offset board joints by a minimum distance of 150mm (6") from the joints of the preceding insulation layer.

5.3.4 For proper adhesion when insulation is adhered with adhesive or hot bitumen restrict board size to maximum 1200mm x 1200mm (4' x 4') dimensions.

5.3.5 For mechanically fastened modified bituminous membranes applied over accepted polyisocyanurate insulation, without a cover board, presecurement of the insulation is recommended to prevent movement of insulation.

5.3.6 To provide a preferred substrate for the adhesion of the base sheet membrane, the insulation shall be uniformly covered with an approved coverboard.[18]

5.3.7 To qualify for an ARCA 15 Year Warranty Certificate, each roof assembly shall consist of a minimum of two layers of insulation with a minimum thickness of 38mm (1 1⁄2") for each layer. Additional layers of insulation shall be either mechanically fastened, adhered using asphalt or adhered with an ARCA approved adhesive. [19][20]

5.3.8 To qualify for an ARCA 15 Year Warranty Certificate, the top layer of insulation shall be a minimum 38mm (1 1⁄2") ARCA approved polyisocyanurate insulation meeting CAN/ULC S-704 Type 2, Class 2.[21]

5.4 Coverboards

5.4.1 **General**

5.4.1.1 The insulation shall be covered with an approved coverboard.

5.4.1.2 The coverboard shall be uniformly adhered to the insulation in a full mopping of bitumen, an adhesive approved by the membrane manufacturer or mechanically fastened to the structural deck.

5.4.1.3 Coverboard shall be installed in a staggered pattern with coverboard joints supported and staggered a minimum distance of 150mm (6") from the joints of the underlying insulation.[22]

5.4.1.4 The top surface of standard fiberboard or stone wool insulation shall be manufactured with an asphalt coating for hot applied membranes. Asphalt impregnated fiberboard need not be asphalt coated.

5.4.1.5 Combination base sheet membranes incorporating asphalt coreboard and asphalt

[15] MB 5.3.2 Revised December 1, 2020 (TB-2020-09 revised)
[16] MB 5.3.2 Revised February 5, 2021 (TB-2021-02)
[17] MB 5.3.2 Revised October 23, 2023 (TB-2023-04)
[18] MB 5.3.6 Revised October 23, 2023 (TB-2023-05)
[19] MB 5.3.7 Revised June 23, 2020 (TB-2020-04)
[20] MB 5.3.7 Revised May 8, 2023 (TB-2023-02), February 26, 2024 (TB-2024-01)
[21] MB 5.3.8 Revised October 23, 2023 (TB-2023-04)
[22] MB 5.4.1.3 Revised December 1, 2020 (TB-2020-09 revised)

coreboard are not accepted coverboards directly over polystyrene insulation.[23]

5.4.1.6 For proper adhesion when using hot bitumen, the coverboard boards shall not exceed 1200mm x 2400mm (4' x 8') in size.

5.4.1.7 Coverboard boards exceeding 1200mm x 2400mm (4' x 8') in size shall be mechanically fastened to the decking.

5.4.2 **Asphalt Core Boards**

5.4.2.1 Asphalt core board may be used for the coverboard layer over selected roof insulation.

5.4.2.2 Polyisocyanurate roof insulation may be covered with a single layer of minimum 3.2mm (1/8") thick accepted asphalt core board adhered with hot bitumen, a membrane manufacturer's approved polyurethane foam insulation adhesive or mechanically attached to the structural decking using the manufacturer's accepted roof insulation screws and metal plates.

5.4.2.3 For application over accepted roof insulation other than polyisocyanurate or stone wool roof insulation, two (2) layers of asphalt core board with joints offset a minimum distance of 150mm (6") from the underlying core board and insulation layer joints shall be mechanically fastened to the structural decking or adhered with the membrane manufacturer's accepted polyurethane foam insulation adhesive.[24]

5.4.3 **Gypsum Fibre Roof Boards**

5.4.3.1 Minimum 6.4mm (1/4") thick gypsum fibre roof board may be substituted for the coverboard layer for membrane attachment when approved by the membrane manufacturer. Paper-faced gypsum fibre roof board is not permitted for W.C. issuance.

5.4.3.2 Gypsum fibre roof board surface may be coated or uncoated. For proper membrane adhesion confirm priming requirements with the membrane manufacturer.

5.4.3.3 Gypsum fibre roof board may be adhered to accepted substrates with membrane manufacturer's approved insulation adhesive, hot bitumen, or mechanically attached to the roof decking following the membrane manufacturer's written securement requirements. Attachment in a full mopping of hot bitumen is permitted only over faced insulations that are not heat sensitive.

5.4.3.4 When torching membranes directly to gypsum fibre roof board, direct the majority of torch flame towards the modified bituminous rolls rather than the surface of the gypsum fibre roof board.

5.4.3.5 Gypsum fibre roof board joints shall be supported and staggered a minimum distance of 150mm (6") from the joints of the underlying substrate or insulation. When torching over heat sensitive substrates or insulation, all joints must be covered with 150mm (6") 1.5mm (60mil) self-adhesive fire tape.

5.4.3.6 Do not leave gypsum fibre roof board exposed to the weather for extended periods of time. At all times protect from moisture accumulation and mechanical damage. Keep the gypsum

[23] MB 5.4.1.5 Revised Oct. 23, 2023 (TB-2023-05), Dec. 14, 2023 (TB-2023-06), Feb. 26, 2024 (TB-2024-01)

[24] MB 5.4.2.3 Revised October 23, 2023 (TB-2023-05), December 14, 2023 (TB-2023-06)

fibre roof board dry prior to, during and after application. Apply only as many boards as can be waterproofed within the same work day.

5.4.4 **Fibreglass Faced Gypsum Roof Boards**

5.4.4.1 Minimum 6.4mm (1/4”) thick fiberglass faced gypsum roof board may be substituted for the coverboard layer for membrane attachment when approved by the membrane manufacturer. Paper-faced gypsum board is not permitted for W.C. issuance.

5.4.4.2 Fiberglass faced gypsum roof board surface may be coated or uncoated. For proper membrane adhesion confirm priming requirements with the membrane manufacturer.

5.4.4.3 Gypsum roof boards may be adhered to accepted substrates with membrane manufacturer’s approved insulation adhesive, hot bitumen, or mechanically attached to the roof decking following the membrane manufacturer’s written securement requirements. Attachment in a full mopping of hot bitumen is permitted only over faced insulations that are not heat sensitive.

5.4.4.4 When torching membranes directly to glass faced gypsum board, direct the majority of torch flame towards the modified bituminous rolls rather than the surface of the gypsum roof board.

5.4.4.5 Gypsum board joints shall be supported and staggered a minimum distance of 150mm (6”) from the joints of the underlying substrate or insulation. When torching over heat sensitive substrates or insulation, all joints must be covered with 150mm (6”) 1.5mm (60mil) self-adhesive fire tape.

5.4.4.6 Do not leave gypsum roof board exposed to the weather for extended periods of time. At all times protect from moisture accumulation and mechanical damage. Keep the gypsum roof board dry prior to, during and after application. Apply only as many boards as can be waterproofed within the same work day.

5.4.5 **High Density Polyisocyanurate Coverboard**

5.4.5.1 For mechanically fastened SBS modified bituminous membrane systems, a mechanically fastened 12.7mm thick high density (HD) polyisocyanurate roof insulation cover board may be installed over accepted roof insulation when approved by the membrane manufacturer.

5.5 Accepted Roof Insulation

5.5.1 Each listed insulation manufacturer has confirmed third party product certification by an accredited independent testing agency by submission of a C.C.M.C. evaluation listing or equivalent, in accordance with the ARCA Warranty Ltd. insulation acceptance criteria.

5.5.2 The design authority shall obtain long term thermal resistance (LTTR) values from the insulation manufacturer and shall specify insulation by thickness.

5.5.3 **Accepted Polyisocyanurate Roof Insulation**[25][26]

5.5.3.1 ATLAS ROOFING CORPORATION

5.5.3.1.1 AC Foam-II

5.5.3.2 CARLISLE

5.5.3.2.1 Insulbase

5.5.3.2.2 Securshield[27]

5.5.3.3 ELEVATE[28]

5.5.3.3.1 ISOGARD GL

5.5.3.3.2 ISOGARD CG

5.5.3.4 IKO INDUSTRIES LTD.

5.5.3.4.1 IKOtherm

5.5.3.5 HUNTER PANELS LLC

5.5.3.5.1 H-Shield

5.5.3.5.2 H-Shield CG[29]

5.5.3.6 POLYGLASS[30]

5.5.3.7 Polytherm

5.5.3.8 Polytherm G

5.5.3.9 SOPREMA INC.

5.5.3.9.1 Sopra-ISO (e)

5.5.3.9.2 Sopra-ISO (s)

5.5.3.9.3 Sopra-ISO (r)

5.5.3.9.4 Sopra-ISO

5.5.3.9.5 Sopra-ISO Plus

5.5.3.10 TREMCO

5.5.3.10.1 Trisotech[31]

[25] MB 5.5.3 Revised June 16, 2022 (TB-2022-03)
[26] MB 5.5.3 Revised June 10, 2025 (TB-2025-04)
[27] MB 5.5.3.2 Revised December 10, 2019 (TB-2019-06)
[28] MB 5.5.3.3 Revised July 4, 2023 (TB-2023-03)
[29] MB 5.5.3.5 Revised December 10, 2019 (TB-2019-06)
[30] MB 5.5.3.6 Added October 13, 2021 (TB-2021-06)
[31] MB 5.5.3.9 Revised October 10, 2019 (TB-2019-05)

5.5.4 **Accepted Polystyrene Roof Insulation**

5.5.4.1 ALLEGUARD[32]

5.5.4.1.1 Envirosheet Type 1

5.5.4.1.2 Envirosheet Type 2

5.5.4.1.3 Envirosheet Type 3

5.5.4.2 BEAVER PLASTICS LTD.

5.5.4.2.1 Terrafoam Type 1

5.5.4.2.2 Terrafoam Type 2

5.5.4.3 FOAM MODS[33]

5.5.4.3.1 Foam Mods Type 1

5.5.4.3.2 Foam Mods Type 2

5.5.4.4 PLASTI-FAB LTD.[34]

5.5.4.4.1 Plasti-Span Type 1

5.5.4.4.2 Plasti-Span Type 2

5.5.4.4.3 Plasti-Span Type 3

5.5.4.4.4 Enerspan Type 1

5.5.4.4.5 Enerspan Type 2

5.5.4.4.6 Enerspan Type 3

5.5.4.5 SUPERFORM[35]

5.5.4.5.1 EPS+ Type 1

5.5.4.5.2 EPS+ Type 2

5.5.4.5.3 EPS+ Type 3

5.5.5 **Accepted Extruded Polystyrene Roof Insulation[36]**

5.5.5.1 DuPont [37]

5.5.5.1.1 DeckMate Type 2

5.5.5.1.2 DeckMate 200 Type 3

5.5.5.1.3 RoofMate Type 4

5.5.5.1.4 Deckmate PLUS FA

5.5.5.2 SOPREMA[38]

5.5.5.2.1 SOPRA-XPS 35

5.5.5.2.2 SOPRA-XPS 35 DC

5.5.5.2.3 SOPRA-XPS 40

5.5.5.2.4 SOPRA-XPS 40 PL

5.5.5.2.5 SOPRA-XPS 60

5.5.5.2.6 SOPRA-XPS 60 PL

5.5.5.2.7 SOPRA-XPS 100

5.5.5.3 OWENS CORNING CANADA[39]

5.5.5.3.1 Foamular NGX C-300

5.5.5.3.2 Foamular NGX 350

[32] MB 5.5.4 Revised February 15, 2023 (TB-2023-01)

[33] MB 5.5.4 Revised December 14, 2023 (TB-2023-06)

[34] MB 5.5.4.4 Revised September 25, 2024 (TB-2024-03)

[35] MB 5.5.4.4 Added March 31, 2021 (TB-2021-03)

[36] MB 5.5.5 Revised July 15, 2024 (TB-2024-02)

5.5.6 **Accepted Mineral Fibre Roof Insulation**
5.5.6.1 SOPREMA INC.
5.5.6.1.1 Soprarock DD (Plus)
5.5.6.1.2 Soprarock MD (Plus) – 25mm thick

5.5.7 **Fibreboard Roof Insulation**
5.5.7.1 Building Products of Canada (BP)[40]
5.5.7.1.1 ESGARD High Density (HD) Roof Insulator
5.5.7.1.2 ESGARD High Strength (HS) Roof Insulator
5.5.7.2 MSL LOUISEVILLE FIBREBOARD INC.
5.5.7.2.1 Wood Fibreboard Insulation
5.5.7.3 Soprema
5.5.7.3.1 Soprafibre 1C[41]

5.6 Accepted Coverboard

5.6.1 Acceptance of coverboard products by the ARCA Warranty Ltd. are on an individual product basis. The acceptance criteria provide for specific manufacturing or application parameters pertaining to each listed product.

5.6.2 **Accepted Coverboard**

Fibreboard Roof Insulation Coverboard (CAN/ULC S706-02)	Thickness	Attachment Method		
		Adhered (adhesive)	Adhered (asphalt)	Mech. Fast.
BP - ESGARD High Density (HD) Roof Insulator	12.7mm, 25mm		●	●
BP - ESGARD High Strength (HS) Roof Insulator	12.7mm, 25mm		●	●
MSL - Wood Fibreboard	12.7mm	●	●	●
Soprema Soprafibre 1C	12.7mm	●	●	●

Note 1: Fibreboard Roof Insulation Coverboard is not considered an ARCA Accepted High Density Coverboard with a minimum compressive strength of 550 kPa (80 PSI).

5.6.3 **Accepted Asphalt Coverboard[42]**

Asphalt Core Board (CSA A123.25)	Thickness	Attachment Method		
		Adhered (adhesive)	Adhered (asphalt)	Mech. Fast.
IKO - Protectoboard	Min. 3mm	●	●	●
HAL - Perma-Board	Min. 4.5mm	●	●	●
Polyglass - Polyboard W	Min. 4.5mm	●	●	●
Polyglass - Polyboard E	Min. 4.5mm	●	●	●
Soprema - Sopraboard	Min. 3mm	●	●	●

Note 1: Combination base sheet membranes incorporating asphalt coreboard and asphalt coreboard are not accepted coverboards directly over polystyrene insulation.

[37] MB 5.5.5 Revised December 1, 2020 (TB-2020-11)
[38] MB 5.5.5.3 Revised June 16, 2022 (TB-2022-04)
[39] MB 5.5.5.3 Added December 4, 2024 (TB-2024-05)
[40] MB 5.5.7.1 Added December 6, 2021 (TB-2021-07)
[41] MB 5.5.7 Revised October 1, 2020 (TB-2020-09)
[42] MB 5.6.3 Revised February 27, 2025 (TB-2025-01)

5.6.4 Accepted Gypsum Fibre Roof Board

Gypsum Fiber Roof Board Coverboard (ASTM C1278)	Thickness	Attachment Method			
		Adhered (adhesive)	Adhered (asphalt)	Mech. Fast.	
CGC Securock Gypsum Fiber Roof Board	9.5mm 12.7mm, 15.9mm	●	●	●	Max. asphalt application temperature for Type III asphalt of 235°C (455°F)

Note 1: Attachment in a full mopping of hot bitumen is permitted only over faced insulations that are not heat sensitive.

5.6.5 Accepted Fibreglass Faced Gypsum Board[43]

Glass Faced Gypsum Coverboard (ASTM C1177)	Thickness	Attachment Method			
		Adhered (adhesive)	Adhered (asphalt)	Mech. Fast.	
Georgia Pacific - Densdeck	6.4mm, 12.7mm, 15.9mm	●	●	●	Mech. Fastened systems only
Georgia Pacific - Densdeck Prime	6.4mm, 12.7mm, 15.9mm	●	●	●	Mech. Fastened, Partially Adhered and Adhered Systems systems
CGC Securock Coated Glass Mat Roof Board	6.4mm, 12.7mm, 15.9mm	●		●	For use in cold-applied adhesive applications only

Note 1: Attachment in a full mopping of hot bitumen is permitted only over faced insulations that are not heat sensitive.

5.6.6 Accepted High Density Polyisocyanurate Coverboards [44][45][46]

High-Density Polyisocyanurate Coverboard	Thickness	Attachment Method			
		Adhered (adhesive)	Adhered (asphalt)	Mech. Fast.	
Atlas - ACFOAM HS	Min. 12.7mm	●		●	
Elevate - Isogard HD	Min. 12.7mm	●	●	●	Coverboard can not be encapsulated with hot asphalt.
Carlisle - Securshield HD	Min. 12.7mm	●		●	
Carlisle - Securshield HD RL	Min. 12.7mm	●		●	
IKO - IKOTherm CoverShield	Min. 12.7mm	●	●	●	
Soprema SOPRA-ISO PLUS HD	12.7mm	●		●	

Notes:

[43] MB 5.6.5 Revised April 6, 2022 (TB-2022-02)
[44] MB 5.6.6 Revised June 16, 2022 (TB-2022-04)
[45] MB 5.6.6 Revised June 1, 2023 (TB-2023-03)
[46] MB 5.6.6 Revised February 27, 2025 (TB-2025-01)

5.7 Polyurethane Foam Adhesive for Insulation and Coverboard

5.7.1 **General**

5.7.1.1 A membrane manufacturers' accepted low-rise two component, chemical cure, polyurethane foam adhesive, when used in compliance with the manufacturer's written application instructions, may be used to uniformly adhere accepted insulation, coverboard, and combination membrane base sheets to one another, to accepted vapour retarders, insulation and substrates.

5.7.1.2 The membrane manufacturers' insulation adhesive(s) have been evaluated by ARCA Warranty Ltd. for specific applications and are not accepted as general purpose roofing adhesives and are not to be substituted for other accepted membrane manufacturers insulation adhesives.

5.7.1.3 Prior to dispensing, store adhesive at recommended application temperature and ensure adhesive shelf life date has not been exceeded.

5.7.1.4 Insulation adhesives may be dispensed to clean moisture free substrate surfaces, by wand or spray equipment, applied in accordance with adhesive manufacturer's application rates. For wand applications, maintain proper adhesive ribbon size and spacing for roof field, perimeter and corners. When spraying, maintain minimum coverage rates.

5.7.1.5 Protect newly applied insulation adhesive from contamination prior to bonding roofing components. Follow manufacturer's post application requirements for weighting, rolling or walk-in insulation boards into the uncured adhesive to prevent air gaps from forming between insulation boards and their supporting substrate.

5.7.1.6 When polyisocyanurate roof insulation forms the insulation layer, insulation boards shall not exceed 1200mm x 1200mm (4' x 4') in size.

5.7.2 **Roof Insulation Adhesives**

5.7.2.1 The adhesives listed below by membrane manufacturer have been evaluated and accepted for specific applications. Accepted adhesives are not general purpose roofing adhesives and are not interchangeable amongst membrane manufacturers.

5.7.2.2 Polyurethane Foam Insulation Adhesive. A two component low-rise, chemically cured urethane foam adhesive for the attachment of selected rigid roof insulation and cover boards to one another and to fully adhered vapour barriers.

5.7.2.3 Other Insulation Adhesives. When approved for application by the membrane manufacturer and accepted by ARCA Warranty Ltd. on a project by project basis.

5.7.3 **Accepted Polyurethane Foam Adhesives**[47][48]

5.7.3.1 SOPREMA INC. (ACCEPTED SOPREMA SYSTEMS ONLY)

5.7.3.1.1 Duotack Roof Insulation and Coverboard Adhesive

5.7.3.1.2 DUOTACK 365 Roof Insulation and Coverboard Adhesive

5.7.3.2 IKO INDUSTRIES LTD. (ACCEPTED IKO SYSTEMS ONLY)

5.7.3.2.1 Roofcraft Roofmix Two Part Insulation Adhesive

5.7.3.2.2 IKO Millennium Adhesive

5.7.3.3 POLYGLASS

5.7.3.3.1 Polyglass LRF[49]

5.7.4 Accepted Other Insulation Adhesives

[47] MB 5.7.3 Revised December 1, 2020 (TB-2020-11)

[48] MB 5.7.3 Revised June 16, 2022 (TB-2022-03)

[49] MB 5.7.3.3 Revised February 27, 2025 (TB-2025-01)