



MITTEN®
CLADDING SYSTEMS

**TECHNICAL EXPLANATION, USAGE, WARRANTY &
IMPORT/MANUFACTURING INFORMATION**

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BRANZ APPRAISAL 81421

EXPLANATION OF PRODUCT AND BASIC APPLICATION

AS per BRANZ APPRAISAL 814 for Mitten Cladding, this is to affirm the product name terminology adaption, profile range, and uses in the New Zealand market:

Mitten® “CAMBRIDGE”

Denotes Profile Shape – AKA “RUSTICATED” / “SENTRY”

This profile is also known in the New Zealand market as “RUSTICATED” and “SENTRY” – Rusticated is the texture of finish where an embossed woodgrain pattern is visible, whereas Sentry is a brush texture finish and available in a dark colour range.



Figure 1- CAMBRIDGE PROFILE



Rusticated/Sentry

Mitten® “CEDARLINE”

Denotes Profile Shape – AKA “Bevelback”

This profile is also known in the New Zealand market as “BEVELBACK”. Bevelback is a brush texture of finish profiled to look like traditional lapped weatherboards. This board is available in a wide range of colour formulations.





Figure 2 -CEDARLINE

Cedarline/Bevelback

Mitten® “Vertical D5”/ Soffit

Denotes Profile Shape – AKA “Vertical D5” “Soffit”

This profile is also known in the New Zealand market as “Soffit”. The profile look makes it most suitable for soffit area and patio ceiling areas. The profile look makes it most suitable for soffit area and patio ceiling areas. The profile is also popular for use as vertical accenting, as full wall cladding, or gables ends. The finish texture is smooth, and it comes in a range of standard colours. The product is also available with a foam backing



Figure 3 -Vertical D5/Soffit



Vertical D5/Soffit

Mitten® “Board & Batten”

Denotes Profile Shape

This profile is also known in the New Zealand market as “Board and Batten. The profile look makes it most popular for vertical accenting and full cladding situations. The finish texture is a heavy brushed woodgrain, and it comes in a range of standard colours and special Sentry dark colours.



Figure 4 – Board and Batten



Board & Batten

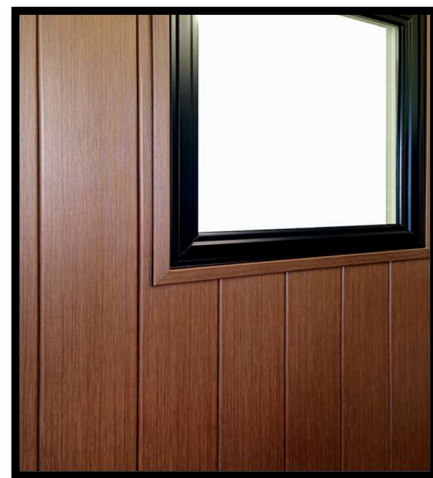
Mitten® “WESTRIDGE”

Denotes Profile Shape

This profile is known in the New Zealand market as “WEST RIDGE”. The profile look makes it most popular for vertical accenting, horizontal and even 45-degree cladding situations. The PVC skin is heavy gauge and comes in a range of variegated colours and textures. A modern sleek looking profile with superior long lasting maintenance free qualities carrying a 50-year integrity warranty.



Figure 5 – WEST RIDGE S8



WEST RIDGE S8

GENERAL PRODUCT INFORMATION (ALL PROFILES)

- All Mitten® vinyl weatherboards are exclusively sold and distributed in New Zealand by Vinyl Cladding New Zealand Limited since 2011.

- There are several different profiles in the Mitten® system. All profiles use the same fixing system and methods for installation and interfacing. This includes horizontally applied claddings or vertically applied claddings, such as the Soffit D5 and Board and Batten profiles and Westridge
- All Mitten profiles are a single skin PVC vinyl with not less than 8- 9ppm of titanium dioxide UV stabilizer giving the correct “tropical mix” for UV resistance. The product comes with a manufacturer backed 50-year integrity warranty.
- Most profiles can carry an optional EPS insulation backing adhered to the back of the board.
- The product can be applied direct fixed up to a risk score of 12. Any higher risk score will require application over a cavity.
- Where a cavity is specified, vertical installations require horizontal castellated cavity battens or setting standard cavity battens at a 45 degree ensuring the fixing distance of the board is maintained to specification.
- The systems are fixed using screws (NZ) or clouts if for specific requirements. These fixings are finalized in a “closed” as per NZS3604:2011 position suiting all environmental zones. The system can also be used with hurricane fixing load spread washers where the wind zone is very high or above.
- The systems are free floating nonstructural and have vapour breathing capability designed to quickly gas off moisture vapour out and away from the building allowing for improved building health.
- Apart from 6-12 monthly soft washing the system is maintenance free with a 50year product integrity warranty.
- As a proprietary product, installation of this product in New Zealand should comply with the guidelines located in the installation guides supplied by Vinyl Cladding New Zealand Limited, the manufacturer and the VSI siding institute.
- The product has been used as a cladding system since 1959 and to date has proven to be one of the most effective weathertight cladding solutions on the market.
- Although the product has been used in New Zealand for over 40 years, Vinyl Cladding New Zealand Ltd has distributed this product across New Zealand for the last 12 years. Commercial and residential building consents have been granted for new builds, renovations, alterations and reclads.
- To date, no issues with weathertightness have arisen in NZ nor have any weathertight issues arisen worldwide since introduced in 1959.

INSTALLATION OVERVIEW

WHERE TO USE	Suitable Install Considerations	Limitations
Residential Commercial	<ul style="list-style-type: none"> • Seaside & Lakefront • Geothermal Areas • All other Areas • Extra High Wind Zones • Cold & Damp Environments • Difficult Access Areas • Ultra Low Maintenance • Zero Painting Requirement • Quick and Easy Repair 	<ul style="list-style-type: none"> • Not higher than 10 meters from ground level • Cannot be used as a special fire protection wall • Very high and extra high wind zones require load spread hurricane fixing washer to be used. • Cannot be used for mounting of heavy

	<ul style="list-style-type: none"> • Light weight transportation • Traditional to modern aesthetic and design • Excellent longevity • Non toxic, recyclable • Direct fix (up to Risk Score 12) • Vertical and Horizontal Profiles • Raked Installation • Low Gloss Requirements 	<p>accessories and fittings (Special solution bracketing & fixing process is required)</p> <ul style="list-style-type: none"> • Must not be fixed tight to allow for expansion and contraction.
Installer Requirements	<ul style="list-style-type: none"> • Any Restricted Building Work - Licenced Building Practitioner / Installer / Supervisor, Owner Builder (supervised or exempt). • Non Restricted Building Work – DIY, Handy person, Owner Builder. 	<ul style="list-style-type: none"> • In all cases, products must be installed as per Manufacturer and Vinyl Cladding New Zealands installation requirements and special final solution requirements.

TESTING AND COMPLIANCE

The system has been tested and approved in accordance with the standards in the following Countries:

NEW ZEALAND: BRANZ Appraisal – NZBC; B1|B2|E2|F2 | NZS3604

CANADA: CAN/CGSB - 41.24.95 | CCMC Eval No. 06419L

UNITED STATES: ASTM D3679 | UBC Standard 14-2 NER -528 ER-5660

AUSTRALIA: AS/NZ S4256 Type B

EUROPE: CE Certification EN 13245 -2:2008+AC+2010

THE NEW ZEALAND BUILDING CODE.

B1 – STRUCTURE

We refer to:

1. BRANZ APPRAISAL 814 whereas the system is classed as a lightweight cladding system and meets all the conditions under this clause.
2. We refer to ASTM standards testing in comparison to New Zealand standards which supports the products manufactured formulation and suitability.

B2 – DURABILITY

We refer to:

1. BRANZ Appraisal 814 whereas the serviceable life of the cladding is not less than 20 years which exceeds the 15-year requirement.

2. This product system has been distributed globally since 1959. uPVC is known for its superior longevity in all environments. With the addition of Titanium Dioxide being 9ppm (tropical mix) uPVC or PVC has vastly increased UV exposure tolerance to more than 50 years.
3. The product is maintenance free - only requiring cleaning to maintain its expected lifespan.

E2 – EXTERNAL MOISTURE

We refer to:

1. BRANZ Appraisal 814 whereas the system being “like for like” on all profiles, meets the requirements of this clause.
2. The molecular composition of uPVC has a lower surface tension than water. This means capillary reaction cannot occur, and the design of the hook and hem fixing system together with designed fluting and vapour holes improve breathability of the structure. It is breathable yet impermeable to moisture.

F2 – HAZARDOUS MATERIALS

We refer to:

1. Testing: ASTM D method, whereas the product has natural self-extinguishing abilities and requires higher temperatures and oxygen saturation to propagate flame.
2. The BRANZ appraisal 814.
3. The product is suitable for use on residential buildings to a maximum building height of 10 meters except where a fire wall is required due to close (<1m) boundary proximity.

PRODUCT IMPORT/MANUFACTURE INFORMATION

Importer/ NZ Assembler	VINYL CLADDING NEW ZEALAND LIMITED
Address	1 FACTORY ROAD, ROLLESTON, SELWYN DISTRICT, CANTERBURY
NZBN	9429031999250
Email	martin@vinylcladding.co.nz
Phone	0800 648 836
Website	www.vinylcladding.co.nz
Contact Technical	Martin Hartley
Supplier/Importer Relationship	Long Term Exclusive Distribution Agreement
Product Manufacturer (MITTEN SYSTEM)	Mitten INC
Website	www.mittenbp.com

Email:	warranty.mit@cornerstone-bb.com
Country Of Manufacture	CANADA
Address	CURTIS AVENUE NORTH PARIS, ON,N3L 3V3
Phone	+1 640-777-8000
Product Manufacturer (Eps Insulation)	EXPOL NEW ZELAND
Website	www.expol.co.nz
Email:	sales@expol.co.nz
Country Of Manufacture	New Zealand
Address	105 Captain Springs Road Onehunga, Auckland
Phone	0800 86 33 73

WARRANTY INFORMATION & PROCESS

PERIOD	50 YEAR TRANSFERABLE WARRANTY – Pro rated once transferred. Fade warranty allowance - 4 hunter units
UNDERWRITER (Manufacturer Backed)	MITTEN INC
Warranty email	warranty.mit@cornerstone-bb.com
Warranty Claim Process	Home Owner direct application via Global website portal: https://www.mittensiding.com/en/customer-product-damage-report-form
Registration of Owner	Owner / New owner must register cladding system.
WARRANTY WORDING	

MITTEN LIFETIME NON-PRORATED TRANSFERABLE LIMITED WARRANTY

Mitten proudly warrants the original purchaser of our siding for as long as the original purchaser is the owner of the property to which our products are applied. The said products will be free from manufacturing defects. Any and all product failures covered by this Warranty as set forth will be remedied by Mitten AT NO COST TO THE ORIGINAL HOMEOWNER, if the defect is reported in accordance with the terms thereof.

The Lifetime non-prorated coverage in this warranty is designed to cover individual homeowners only. In the instance of siding purchased by or installed upon property owned by for example; corporations, governments, condominiums or premises not used by individual homeowners as their residences, the warranty period will be fifty years following the installation of the siding and it will be prorated as indicated herein. For such purchasers or entities to which the prorated coverage applies, the warranty is transferable to a new owner by the original purchaser under the terms and conditions set forth herein, in which event it will cover the period of fifty years following the installation of the siding (prorated as indicated herein).

HAIL DAMAGE

Every piece of Mitten vinyl siding is manufactured with excellent impact resistance. Mitten warrants to the original owner that should the siding receive damage from a hail storm, Mitten will provide replacement material to cover those pieces which received damage and provided that such damage is not covered by the homeowners insurance policy or other insurance coverage. The homeowner shall be responsible for the payment of all installation, labour and freight costs associated.

UNIFORM WEATHERING

The term "uniform weathering" means the appearance of the colour of the siding and does not refer to the straightness or the even or level wall appearance of the siding. Exposure to exterior elements can be expected to cause gradual and uniform colour change. This can vary, dependent on geographical location and wall exposure. Mitten warrants that its products will weather in a uniform manner. A defect will be defined as any weathering change that occurs on a specific wall exposure in a manner that varies from panel to panel (checkerboard effect). It is normal for a weathered siding material to have slight and unobjectionable shade differences underneath the butt (or shadow line) portions of the panel - as well as underneath protected eaves and overhang areas.

COLOUR-RICH COVERAGE

Mitten, at its discretion, shall determine whether the siding is suffering from abnormal fading or natural weathering. This conclusion shall be based on whether the siding shows a change in colour in excess of the Hunter units as calculated according to ASTM D2244. Premium colours are guaranteed against fade of 3 Hunter Units. Standard colours are guaranteed against fade of 4 Hunter Units. The fade warranty will last as long as Mitten's Lifetime Limited warranty lasts and upon transfer with the Property, shall continue based upon the coverage terms for Mitten's, Lifetime Limited Warranty. Siding which experiences colour change due to normal weathering is excluded from this warranty.

CONDITIONS OF THIS WARRANTY

This Warranty covers only defects in the manufacture of Mitten vinyl siding and accessories. It does not cover damage to such products caused by faulty installation, settlement of the building, failure of the structure (including foundations and walls), fire, wind, flood, lightning, or other acts of God, intentional acts, failure to provide reasonable and necessary maintenance, accidental damage or negligence, or exposure to atmospheric pollution, acid rain, salt spray, harmful chemicals or vapors. Mitten vinyl siding and accessories are not warranted in the event that heat sources, such as BBQs, argon gas glass units or other items that can reflect heat over and above 160°F, are located in close proximity of the installed vinyl products.

If a homeowner neglects to keep the solid vinyl siding surface clean and a harmful surface buildup is allowed to occur, restoration of the wall appearance to a fresh and clean condition can become a difficult task. In such cases, it is specifically the homeowners responsibility and not the responsibility of either Mitten or the installing contractor to restore the wall surface to a clean and fresh condition

REMEDIES

If your product contains manufacturing defects covered by this Warranty, Mitten will incur the costs (material and labour) to repair or replace the defective part or portion of Mitten Vinyl Siding and Accessories.

All warranty work will be performed by Mitten or a designated agent selected by Mitten. Any repair or replacement not authorized by Mitten shall release Mitten from any and all warranty obligations concerning the products. All warranty work will be performed no later than one hundred sixty (160) days after notice is received unless adverse weather conditions prevent repair or replacement from being completed within the one hundred sixty (160) day period. If so, repair or replacement will be completed as soon after the 160-day period as weather conditions will reasonably permit. Repairs will be performed at a mutually agreed time by the customer and the designated agent. Mitten reserves the right to discontinue or modify any of its products, including the colour thereof, without notice to the homeowner/consumer and shall not be liable to the homeowner/consumer as a result of such discontinuance or modification, nor shall Mitten be liable in the event replacement material may vary in colour or gloss in comparison to the original products as a result of normal weathering. If Mitten replaces any material under warranty, it may substitute products designated by Mitten to be of comparable quality or price range in the event the product initially installed has been discontinued or modified.

Mitten shall have sole discretion to determine whether the siding is suffering from normal weathering. In the event that the siding weathers to a degree which is determined by Mitten to be beyond normal, then Mitten shall, at its option, either apply a special coating to any siding determined to have weathered beyond normal or perform the necessary repairs as outlined above.

THE REMEDIES PROVIDED FOR HEREIN ARE EXCLUSIVE WHETHER FOR BREACH OF EXPRESSED WARRANTIES, IMPLIED WARRANTIES, WARRANTIES OF MERCHANTABILITY OR OTHERWISE, AND MITTEN MAKES NO EXPRESSED WARRANTIES OTHER THAN AS SPECIFICALLY SET FORTH HEREIN. IN NO EVENT SHALL MITTEN BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Some jurisdictions do not allow the exclusion or limitations of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Warranty gives you specific legal rights and you may have other rights which vary between jurisdictions.

OBTAINING PERFORMANCE OF THIS WARRANTY - ORIGINAL OWNER

The procedure for obtaining performance of this Warranty is simple. If you feel that our product contains manufacturing defects simply write to: Warranty Claims, attention of Quality Assurance Manager, 70 Curtis Avenue North, Paris, Ontario, Canada, N3L 3V3, briefly explaining your complaint. Accompanying the complaint must be a proof of purchase and installation along with proof of property ownership. Appropriate photos can be required along with a sample of the alleged defect for laboratory analysis.

IMPORTANT: ALL CLAIMS UNDER THIS WARRANTY MUST BE REPORTED TO MITTEN WITHIN SIXTY (60) DAYS FROM THE DATE THAT THE DEFECT IS FIRST DISCOVERED OR REASONABLY COULD HAVE BEEN FIRST DISCOVERED.

Mitten will reply within a reasonable period of time from receipt of your complaint. Further, Mitten reserves the right when necessary to inspect any damages or defects within a reasonable period of time after the claim is made.

REGISTRATION OF WARRANTY

The attached warranty registration card must be completed, signed by the purchaser and installing Contractor and returned to Mitten within thirty (30) days after completion of the installation. Please mail to Mitten, 70 Curtis Avenue North, Paris, Ontario, Canada, N3L 3V3. Failure to register the Warranty will not void the Warranty, but registration of this Warranty confirms the date of installation and is a benefit to you, especially if your original proof of purchase is lost. It is a good idea to retain your proof of purchase in case it is needed if you submit a warranty claim.

TRANSFER OF THE WARRANTY - SUBSEQUENT OWNER

This Warranty is transferable to a new owner. In the event of transfer of the warranty, the warranty period shall be for fifty (50) years from the original date of purchase/installation and shall be prorated as indicated on the reverse side of this warranty. The original purchaser is responsible to leave the warranty card with the attached proof of purchase with the subsequent home owner.

CLAIM SCHEDULE FOR PRO RATED CLAIMS

MITTEN[®]

BUILDING PRODUCTS

WARRANTY CLAIM SCHEDULE

Claim Made By: Original Purchaser, Subsequent Owner
(where Mitten has received timely notice of transfer as specified on the reverse hereof.)

Number of Years (after original installation) Within Which Claim is Made	Percentage of Costs Borne by Mitten
Lifetime of Original Purchaser	100%
ProRated Schedule Upon Warranty Transfer	
0 - 5 Years	100%
6 Years	90%
7 Years	80%
8 Years	70%
9 Years	60%
10 Years	50%
11 Years	40%
12 Years	30%
13 Years	20%
14 - 50 Years	10%
More than 50 Years	-0-

MAINTENANCE & CARE

YOUR MITTEN VINYL SIDING IS BEAUTIFUL. HERE IS HOW TO KEEP IT THAT WAY.

While Mitten vinyl siding comes close to being virtually maintenance free, it will become dirty just as does a freshly painted house or a new automobile or any other product that is exposed to atmospheric conditions. Generally, your Mitten solid vinyl siding can be cleaned satisfactorily with the use of an ordinary garden hose.

If this does not do the job, then we suggest the following:

1. Equip the garden hose with a soft bristled, long-handle car brush for example.
2. Where soil is of a stubborn nature, (as frequently found in industrial areas) the following cleaning solution works well: 1/3 c. detergent (Tide as an example) + 2/3 c. trisodium phosphate (Soilax as an example) + 1 gallon of water.

In certain geographic areas where mildew may be a problem, substitute one quart of 5% sodium hydrochloride (Clorox for example) for one quart water in the above formula.

Where the house is extremely dirty, it is recommended that you start washing from the bottom and go to the top, rinsing frequently. Cleaning solutions should be permitted to stand on the surface of the siding for several minutes before rinsing.

STAIN	CLEANERS*	STAIN	CLEANERS*
Bubble Gum	Fantastik, Murphy's Oil Soap, or solution of vinegar (30%) and water (70%)	Mold and Mildew	Fantastik, Murphy's Oil Soap, or solution of vinegar (30%) and water (70%)
Crayon	Lestoil	Motor Oil	Fantastik, Lysol, Murphy's Oil Soap or Windex
DAP (Oil Based Caulk)	Fantastik	Paint	Brillo Pad or Soft Scrub
Felt-tip Pen	Fantastik or water-based cleaners	Pencil	Soft Scrub
Grass	Fantastik, Lysol, Murphy's Oil Soap or Windex	Rust	Fantastik, Lysol, Murphy's Oil Soap or Windex
Lithium Grease	Fantastik, Lysol, Murphy's Oil Soap or Windex	Tar	Soft Scrub
Oil	Soft Scrub	Top Soil	Fantastik, Lysol or Murphy's Oil Soap

Follow the precautionary instructions on the cleaning agent container. Protect shrubs from direct contact with cleaning agents.

**Mitten does not endorse proprietary products or processes and makes no warranties for the products referenced herein.*

Reference to proprietary names is for illustrative purposes only and is not intended to imply that there are not equally effective alternatives.

SPECIFIC CAUTIONS OF USE

MITTEN WEATHERBOARDS SHOULD NOT BE USED

FIRE & HEAT	<ul style="list-style-type: none">• As a fire rated product, or to slow the spread of fire.• Closer than, next too, or adjacent, to any heat source or sun reflective item, that will or be likely too; reflect, convect, radiate, transfer or emit heat directly on to the product at temperatures at 70 degrees celsius or above (excessive heat will cause permanent heat distortion damage).
CONSTRUCTION	<ul style="list-style-type: none">• As a rated structural support product.• As a structural bracing system.• As a means to support heavy fixtures (refer solutions manual)

DECLARATION OF PRODUCT INFORMATION

1. This product is not subject to a ban imposed under section 26 of the building Act 2004.
2. It is with technical and applied confidence, based on manufacturer reports, testing's, historical real time installations in several countries such as Australia, Japan, Canada, American, trade professional feedback, hundreds of existing approved NZ consents and with zero failures occurring, that Vinyl Cladding New Zealand Limited confirms this product complies, without any reservation, with the New Zealand building code.

If you should have any questions regarding this information please do not hesitate to contact us.

Signed for and on behalf of Vinyl Cladding New Zealand Limited:

M.S. HARTLEY 202311-3564

.....
Martin Hartley MBA Grad Dip Bus Stud Cert P2Pm

DIRECTOR - VINYL CLADDING NEW ZEALAND LIMITED

Specification / Standards / References

- Appended hereto.

GLOBAL PRODUCT TECHNICAL MANUFACTURE STANDARDS

Product Physicals			
Test	Standard Method	UoM	Result
IZOD impact (0°C/32°F)	ASTM D-256	ft/lb/in	3.53
IZOD impact (23°C/73°F)	ASTM D-256	ft/lb/in	33.9
Tensile strength	ASTM D-638	PSI	8200
Modulus of elasticity	ASTM D-638	PSI	370000
Deflection temp. under load @264Psi	ASTM D-648	°F	163
Coefficient of linear expansion	ASTM D-696	x10-5 in/in/°F	4.3
Chemical resistance	ASTM D-543	-	excellent
Cell classification	ASTM D-1784	class #	13544-B
Fire-Related Properties (PVC)			
Test	Standard Method		Result
Flame Spread Index	ASTM E-84, UBC 42-1		18
Flame spread Rating			0
Self ignition temperature, °F	ASTM D-1929, UBC 52-3		810
Smoke density rating (%)	ASTM D-2843, UBC 52-2		42.1
Maximum smoke density (%)			56.0
Visibility of exit sign			Good
Total burn time, seconds	ASTM D-635		<5
Extent of burning, mm			<5
Siding/Extrudate Typical Physical Properties			
Test	Standard Method	UoM	Result
Impact resistance (23°C/73°F)	ASTM D-4226	in-lb/mil	<80
Low temperature flexibility	CGSB41-GP-24Ma	% pass	<80
Shrinkage / reversion	ASTM D-1042	%	<3.0
Surface Distortion	CGSB41-GP-24Ma ASTM D-3679-02	°F	>131



Evaluation Listing CCMC 06419-L Premium Exterior Building Products

MasterFormat:	07 46 33.01
Evaluation issued:	1984-11-26
Re-evaluated:	2019-02-01
Revised:	2019-03-27

1. Evaluation

The product conforms to CAN/CGSB-41.24-95, "Rigid Vinyl Siding, Soffits and Fascia."

Description

The product is a single-wall, interlocking, exterior cladding system made of polyvinyl chloride that has a 1.0 mm nominal thickness for wall applications.

Standard and Regulatory Information

See the Annex appended to this Listing, which summarizes the product standard.

This/these product(s) was/were evaluated to the product standard referenced in the Annex current as of 2013-03-08. Note that the Annex may have been updated since this Listing was issued to include more recent editions of the applicable product standard. Therefore, this Listing may not reflect the requirements contained in any updated version of this product standard.

Listing Holder

Mitten Inc.
P.O. Box 2005
70 Curtis Avenue North
Paris, ON N3L 3T2

Telephone: 519-805-4767

Fax: 866-261-6279

Web site: www.mittenbp.com

Plant(s)

Paris, ON

Disclaimer

This Listing is issued by the Canadian Construction Materials Centre, a program of the NRC Construction Research Centre at the National Research Council of Canada. The Listing must be read in the context of the entire CCMC Registry of Product Evaluations.

Readers must confirm that the Listing is current and has not been withdrawn or superseded by a later issue. Please refer to http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/ccmc_index.html, or contact the Canadian Construction Materials Centre, NRC Construction Research Centre, National Research Council of Canada, 1200 Montreal Road, Ottawa, Ontario, K1A 0R6. Telephone 613-993-6189. Fax 613-952-0268.

NRC has evaluated the material, product, system or service described herein only for those characteristics stated herein. The information and opinions in this Listing are directed to those who have the appropriate degree of experience to use and apply its contents. This Listing is provided without representation, warranty, or guarantee of any kind, expressed, or implied, and the National Research Council of Canada (NRC) provides no endorsement for any evaluated material, product, system or service described herein. NRC accepts no responsibility whatsoever arising in any way from any and all use and reliance on the information contained in this Listing. NRC is not undertaking to render professional or other services on behalf of any person or entity nor to perform any duty owed by any person or entity to another person or entity.

Date modified: 2019-03-27



Rigid Vinyl Siding, Soffits and Fascia [Preface]

MASTERFORMAT: 07 46 33.01

Issued: 2013-03-08

Scope

Vinyl siding is a flexible material used for exterior wall cladding of buildings. This standard applies to extruded sections produced from rigid compound of poly(vinyl chloride) intended as siding, soffits and fascia. Its wide range of characteristics includes good durability, light weight and minimal maintenance. It is available in a variety of profiles, colours and surface textures.

Standard(s)

CAN/CGSB-41.24-95. "Rigid Vinyl Siding, Soffits and Fascia."

Labelling

The vinyl siding is identified on the packaging with the following information:

manufacturer's name or logo

product's tradename(s)

colour of siding

quantity (expressed in terms of effective coverage) • CCMC Evaluation Listing number.

National Building Code of Canada (NBC)

NBC References

National Building Code of Canada (NBC) 2010, Subsection 9.27.13.1. Material Standard

National Building Code of Canada (NBC) 2010, Subsection 9.27.13.2. Attachment

Table 1. Performance Requirements

Property			Unit	Requirement
Material (Physical Properties)	Impact Resistance (Izod)	Class 1 compound	J/m	≥ 80.1
		Class 2 compound		≥ 266.9
	Tensile Strength	Class 1 compound	MPa	≥ 44.9
		Class 2 compound		≥ 37.7
	Modulus of Elasticity	Class 1 compound	MPa	≥ 2483
		Class 2 compound		≥ 2208
	Heat Deflection Temperature	Class 1 compound	$^{\circ}\text{C}$	≥ 70
		Class 2 compound		≥ 70
	Thermal Expansion Coefficient		mm/mm \cdot $^{\circ}\text{C}$	$\leq 8.1 \times 10^{-5}$
	Flammability	extent of burning	mm	≤ 25
time of burn		s	≤ 10	

Table 1. Performance Requirements (cont.)

Property			Unit	Requirement	
Siding, Soffits and Fascia Properties	Colour			Consistent and Uniform	
	Specular Gloss	smooth siding		> of 10 % or 5 points from specified value	
		embossed siding		> of 15 % or 8 points from specified value	
	Shrinkage	siding	%	≤ 3.0	
		accessories	%	≤ 3.0	
	Warpage	top edge	mm	≤ 3.0	
		bottom edge	mm	≤ 3.0	
	Weatherability			No peeling, flaking, chipping or pitting	
	Thickness (exposed face)	single wall	mm	≥ 1.0	
		double wall	mm	≥ 0.7	
	Thickness (at nailing slot)	single wall	mm	≥ 0.9	
		double wall	mm	≥ 0.9	
	Impact Resistance	at 23°C	single wall	J	≥ 9.0
			double wall		≥ 6.3
		at 0°C	single wall	J	≥ 6.8
			double wall		≥ 4.8
	Surface distortion			50°C for whites/ 55°C for colours	Surface shall be free from bulges and ripples
	Low Temperature Flexibility				No cracking or splitting
	Low Temperature Shearability				No cracking or splitting
	Fastener hole size			mm	≥ 25 in length
Fastener hole spacing			mm	≤ 50 centre-to-centre	
Drain Opening	major dimension		mm	≥ 3.0	
	minor dimension		mm	≥ thickness of base material	
	spacing		mm	≤ 450	

EUROPE CE



2020-1

CE – Marking & Declaration of Performance



Mitten 5A - 225 Henry St. Brantford, ON N3S 7R4 CANADA
EN 13245-2:2008+AC:2010 PVC-U profiles for exterior wall finishes of buildings

Declared performance has been assessed and verified for Ply Gem by:

VTT Expert Services Oy, notified body 0537

PL 1001

02044 VTT

Classification report number VTT-S-10496-

DECLARATION OF PERFORMANCE

Number 2015-1

Unique identification code of the product-type: Mitten product lines: "Sentry", "Highland", "Cambridge", "Oregon Pride", "Southern Beaded" and "Board and Batten ASA".

Type marking allowing identification of the construction product:

Mitten Sentry, Mitten Highland, Mitten Cambridge, Mitten Oregon Pride and Mitten Southern Beaded

Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer:

PVC-U profile for exterior wall finishes of buildings

Name and contact address of the manufacturer: Mitten

5A - 225 Henry St.
Brantford, ON N3S 7R4
CANADA

Name and contact address of the authorised representative:

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Materials & Process Engineer
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System of assessment and verification of constancy of performance of the construction product as set out in Construction Product Regulation 305/2011 Annex V (system 4) complying with applied Harmonised Standard EN 13245-2:2008 as amended in 2010.

Declared performance

Essential characteristics	Performance	Harmonised technical specification
Reaction to fire	E / AVM, AHM (1/-)	EN 13501-1 (EN ISO 11925-2)
Release of dangerous substances	NPD	
Mechanical resistance	NPD	SFS-EN13245-1
Durability:		
Artificial (UV) ageing	NPD	EN 513
Change in colour	NPD	ISO 7724
Tensile-impact strength	NPD	ISO 8256

Performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 7. Manufacturer assembly instructions need to be followed in order to achieve declared performance.

This declaration of performance is issued under the sole responsibility of the identified manufacturer and it is valid for declared products sold in EU starting 15-08-2015.

BRANZ APPRAISAL 814



BRANZ Appraised
Appraisal No. 814 [2019]

MITTEN CAMBRIDGE AND CEDARLINE VINYL CLADDINGS

Appraisal No. 814 (2019)

This Appraisal replaces BRANZ
Appraisal No. 814 [2013]



BRANZ Appraisals

Technical Assessments
of products for building
and construction.



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Product

- 1.1 Mitten Cambridge and Cedarline Vinyl Claddings are cavity-based external wall claddings for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 The cladding systems consist of colour finished vinyl (PVC) weatherboards with an extruded polystyrene backing, vinyl finishing profiles, flashings and accessories. The weatherboards are installed horizontally with concealed fixings over timber structural battens.
- 1.3 The claddings incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the claddings from the external wall frame with a nominal 20 mm drained cavity.

Scope

- 2.1 Mitten Cambridge and Cedarline Vinyl Claddings have been appraised as external horizontally fixed wall claddings for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - constructed with timber framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including Extra High.
- 2.2 Mitten Cambridge and Cedarline Vinyl Claddings have also been appraised as external horizontally fixed wall claddings for specifically designed buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - constructed with timber framing complying with the NZBC; and,
 - situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5 kPa.
- 2.3 Mitten Cambridge and Cedarline Vinyl Claddings are appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[The Appraisal of Mitten Cambridge and Cedarline Vinyl Claddings relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or wind pressure.]*
- 2.4 Mitten Cambridge and Cedarline Vinyl Claddings must be installed by trained installers licensed by Mitten Vinyl Australia.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Mitten Cambridge and Cedarline Vinyl Claddings, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Mitten Cambridge and Cedarline Vinyl Claddings meet the requirement for loads arising from self-weight, wind, impact and creep [i.e. B1.3.3 (a), (h), (j) and (q)]. See Paragraphs 9.1 to 9.3.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years and B2.3.2. Mitten Cambridge and Cedarline Vinyl Claddings meet these requirements. See Paragraphs 10.1 to 10.5.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Mitten Cambridge and Cedarline Vinyl Claddings meet this requirement. See Paragraphs 15.1 to 15.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Mitten Cambridge and Cedarline Vinyl Claddings meet this requirement and will not present a health hazard to people.

Technical Specification

4.1 Components and accessories supplied by Mitten Vinyl Australia are as follows:

Mitten Vinyl Cladding Weatherboards

- Mitten Cambridge and Cedarline Weatherboards are manufactured from extruded PVC and are formed into a profile that allows the boards to lock with each other. On the back face of the weatherboards is an expanded polystyrene (EPS) foam backing that adds rigidity and impact resistance once installed. The weatherboards including the EPS backing are 21 mm thick and supplied in 5.8 m lengths.
- Cambridge weatherboards are produced to replicate a pair of conventional rusticated weatherboards and are 265 mm wide, giving an effective vertical coverage of 230 mm per weatherboard course.
- Cedarline weatherboards are produced to replicate a pair of conventional bevel-back weatherboards and are 290 mm wide, giving an effective coverage of 255 mm per weatherboard course.
- The weatherboards are factory supplied in white (Frost) and a variety of nine other pastel colours as a finished product that does not require any subsequent coating or painting. The ten colours that are covered by the scope of this Appraisal are:

Frost	Bone	Ivory	Lite Maple	Sandlewood
Ash	Brownstone*	Satin Grey	Mist Green	Golden Sand

* Note: Cedarline is not available in Brownstone colour.

Accessories

- Starter strip** is a PVC extruded profile used to secure the bottom of the first course of weatherboards.
- J-Trim** is an extruded PVC channel profile used as a general purpose trim and flashing around penetrations.
- Corner Posts** are extruded PVC profile for use on external corners.
- Mitten weatherboard fixings** – 34 mm long x 4.15 mm diameter screws with coarse thread at 1.7 mm pitch and 10 mm button-head AS 3566 galvanised Class 4 for NZS 3604 Exposure Zones B and C and Grade 304 Stainless Steel for NZS 3604 Exposure Zone D.
- Cyclone Washers** – 50 x 12 x 2 mm with a 4.5 mm diameter central hole, hot dip galvanised or stainless steel.

4.2 Accessories used with Mitten Cambridge and Cedarline Vinyl Claddings which are supplied by the building contractor are:

- **Structural cavity battens** – 45 mm wide by maximum 20 mm thick MSG 8 Radiata pine treated to Hazard Class H3.1.
- **Structural cavity batten fixings** – 60 x 2.8 mm flat-head hot-dip galvanised or 60 x 3.15 mm flat-head annular grooved stainless steel hand-driven nails, or 65 x 2.87 mm round-head or D-head, hot-dip galvanised or stainless-steel ring-shanked power-driven nails.

[Note: Hot-dip galvanising must comply with AS/NZS 4680 and stainless steel fixings must be Grade 316.]

- **Flashings** – external corner flashing, internal corner flashing, horizontal inter-storey joint flashing, and parapet cap flashings. The flashings are available in galvanised steel, aluminium or stainless steel. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for durability requirements.
- **Cavity vent strip** – PVC, aluminium or stainless steel, punched with 3 – 5 mm diameter holes or slots complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3.
- **Flexible wall underlay** – building paper complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
- **Flexible wall underlay support** – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible building underlay in place and preventing bulging of the bulk insulation into the drainage cavity. [Note: mesh and wire galvanising must comply with AS/NZS 4534.]
- **Rigid wall underlay** – Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.
- **Flexible sill and jamb flashing tape** – flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- **Window and door trim cavity air seal** – air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- **Aluminium joinery head flashings** – as supplied by the joinery manufacturer or contractor.
- **Flexible sealant** – sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Mitten Vinyl Australia or the Mitten Vinyl licensed installer, on site or off-site, is under the control of the licensed installer.
- 5.2 Mitten Cambridge and Cedarline weatherboards and PVC accessories must be stacked flat, clear of the ground and supported on timber bearers along their entire length. They must be kept dry at all times either by storing within an enclosed building or when stored externally an additional secondary cover to the plastic wrapping is required. If left in direct sunlight, wrapping should be cut open at the ends to allow for air movement. Do not store the cladding material in a location where the temperature may exceed 54°C, e.g. stacked on hot tarmac or wrapped in plastic in the sun.
- 5.3 Care must be taken to avoid damage to edges and ends and the material must be stored away from areas where construction activity may cause damage.
- 5.4 All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Mitten Cambridge and Cedarline Vinyl Claddings. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Framing

Timber Treatment

- 7.1 Timber wall framing behind Mitten Cambridge and Cedarline Vinyl Cladding must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

- 7.2 Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. Studs must be at maximum 600 mm centres for buildings situated in NZS 3604 Wind Zones up to and including Very High. Studs must be at maximum 400 mm centres for buildings situated in NZS 3604 Wind Zone Extra High and specific design wind pressures up to and including design differential 2.5 kPa ULS. Dwgans must be fitted flush between the studs at maximum 800 mm centres. Refer to Paragraphs 18.1 to 18.13 for information relating to the installation of the Mitten Cambridge and Cedarline Vinyl Claddings.
- 7.3 Additional framing may be required at soffits, internal and external corners and window and door openings for the support and fixing of structural cavity battens and the Mitten Cambridge and Cedarline Vinyl Claddings.
- 7.4 Timber wall framing behind where weatherboards are joined over a cavity batten must be nominal 50 mm thickness [i.e. 45 mm minimum finished thickness].
- 7.5 Structural cavity battens must have a maximum moisture content of 20% at the time of the cladding application.

General

- 8.1 Punching of the cavity vent strip must provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3 (b).
- 8.2 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level, paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding by a minimum of 100 mm, and unpaved surfaces by 175 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Table 18.
- 8.3 At balcony, deck or roof/wall junctions, the bottom edge of Mitten Cambridge and Cedarline Vinyl Claddings must be kept above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.6.
- 8.4 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High, and rigid underlays for buildings in the Extra High Wind Zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the cavity batten fixing lengths must be increased by a minimum of the thickness of the underlay.

- 8.5 Where cladding penetrations are wider than the cavity batten spacing, allowance must be made for airflow between adjacent cavities by leaving a minimum gap of 10 mm between the bottom of the cavity and the flashing to the opening.
- 8.6 Where Mitten Cambridge and Cedarline Vinyl Claddings abut other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Some guidance is given within the Technical Literature. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Inter-storey Junctions

- 8.7 Inter-storey junctions must be constructed in accordance with the Technical Literature. Inter-storey joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4 (b).

Structure

Mass

- 9.1 The mass of Mitten Cambridge and Cedarline Vinyl Claddings is approximately 8 kg/m², and they are therefore considered lightweight claddings in terms of NZS 3604.

Impact Resistance

- 9.2 Mitten Cambridge and Cedarline Vinyl Claddings have adequate resistance to impact loads likely to be encountered in normal residential use. The likelihood of impact damage to the cladding system when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers should be considered for vulnerable areas.

Wind Zones

- 9.3 Mitten Cambridge and Cedarline Vinyl Claddings are suitable for use in all Wind Zones of NZS 3604, up to and including Extra High where buildings are designed to meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 or up to 2.5 kPa design differential ULS wind pressure where buildings are specifically designed. See Paragraph 7.2.

Durability

- 10.1 Mitten Cambridge and Cedarline Vinyl Claddings meet the performance requirements of NZBC Clause B2.3.1 (b), 15 years for the cladding components.

Serviceable Life

- 10.2 Mitten Cambridge and Cedarline Vinyl Cladding installations are expected to have a serviceable life of at least 30 years for white (Frost), and at least 20 years for the remaining colours provided the cladding is maintained in accordance with the Technical Literature and this Appraisal.
- 10.3 On exposure to the environment, Mitten Cambridge and Cedarline Vinyl weatherboards will gradually lose gloss and coloured weatherboards will gradually fade.
- 10.4 Coastal locations can be very corrosive to fasteners, especially locations within distances of up to 500 m from the sea including harbours, or 100 metres from tidal estuaries and sheltered inlets, and otherwise as shown in NZS 3604 Figure 4.2. These coastal locations are defined in NZS 3604 as Exposure Zone D. To achieve a maximum serviceable life in Exposure Zone D, Mitten Cambridge and Cedarline Vinyl Cladding weatherboards and the structural battens supporting them must be fixed with stainless steel fasteners.
- 10.5 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of Mitten Cambridge and Cedarline Vinyl Claddings in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

- 11.1 Regular cleaning of the surface of the cladding (at least annually) is required to remove grime, dirt and any organic growth and to maximise the life and appearance of the material. Grime may be removed by brushing with a soft brush, warm water and a mild detergent. Avoid the use of stiff brushes or abrasive detergents as these will affect the gloss finish of the product. A water-blaster must not be used on this cladding.
- 11.2 Annual inspections must be made to ensure that all aspects of the cladding, including flashings and any sealed joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately.
- 11.3 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the cladding.

Prevention of Fire Occurring

- 12.1 Mitten Cambridge and Cedarline Vinyl Claddings must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the requirements of NZBC Acceptable Solutions C/AS1 to C/AS6, Paragraph 7.5.9 for the protection of combustible materials.

Control of Internal Fire and Smoke Spread

- 13.1 Mitten Cambridge and Cedarline Vinyl Claddings meet the flame propagation criteria of AS 1366.3 as specified in NZBC Acceptable Solution C/AS1, Paragraph 4.3 and NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.1.7.2. The completed wall system, including the surface lining product enclosing the Mitten Cambridge and Cedarline Vinyl Claddings from the adjacent occupied space, must achieve the Group Number for internal surface finish requirements as specified in the relevant NZBC Acceptable Solutions C/AS1 to C/AS6.

Control of External Fire Spread

- 14.1 The Mitten Cambridge and Cedarline Vinyl Claddings has not been assessed for a peak heat release or total heat released rating.
- 14.2 Refer to NZBC Acceptable Solutions and Verification Methods C/AS1-C/AS7 and C/VM2 for Requirements for fire rating and exterior surface finish requirements of external walls.

External Moisture

- 15.1 Mitten Cambridge and Cedarline Vinyl Claddings, when installed in accordance with this Appraisal and the Technical Literature will prevent the penetration of moisture that could cause undue dampness or damage to building elements.
- 15.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with NZBC Clause E2.3.5.
- 15.3 Mitten Cambridge and Cedarline Vinyl Claddings allow excess moisture present at the completion of construction to be dissipated without permanent damage to building elements, and meets code compliance with Clause E2.3.6.
- 15.4 The details given in the Technical Literature for weather sealing are based on the principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.
- 15.5 Mitten Cambridge and Cedarline Vinyl Claddings, where there is a designed cavity drainage path for moisture that penetrates the cladding, do not reduce the requirements for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

- 16.1 Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

- 16.2 Mitten Cambridge and Cedarline Vinyl Claddings are not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create a risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

- 17.1 Installation of Mitten Cambridge and Cedarline Vinyl Claddings must be completed by competent licensed installers with suitable training from Mitten Vinyl Australia and with an understanding of cavity construction, in accordance with instructions given within the Technical Literature and this Appraisal.

Mitten Vinyl Cladding Installation

Wall Underlay and Flexible Sill and Jamb Tape Installation

- 18.1 The selected wall underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the cladding system.
- 18.2 Flexible wall underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Generic rigid underlay materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems must be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

Structural Cavity Batten Installation

- 18.3 Structural cavity battens must be installed over the building underlay to the wall framing at maximum 600 mm centres where the studs are at 600 mm centres or at 400 mm centres when studs are at 400 mm centres. The cavity battens must be fixed in place with flat head nails at 300 mm centres. The nail fixings must be staggered 12 mm either side of the batten centre line. Refer to Paragraph 4.2 for batten fixing options and refer to BRANZ Bulletin Number 475 for further information.
- 18.4 Where studs are at greater than 450 mm centres and a flexible wall underlay is being used, a building underlay support must be installed over the underlay at maximum 300 mm centres horizontally.

Aluminium Joinery Installation

- 18.5 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5 – 10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

Mitten Vinyl Weatherboard Installation

- 18.6 Mitten Cambridge and Cedarline Vinyl Cladding weatherboards may be cut on site by power or hand saw. Holes and cut-outs may be formed by using a hole saw. Specific guidance on the cutting of the vinyl and polystyrene materials is given in the Mitten Cambridge and Cedarline Vinyl Claddings Technical Literature.
- 18.7 Mitten Vinyl weatherboards must be kept dry prior to installation.
- 18.8 Mitten Cambridge and Cedarline Vinyl Claddings must be installed starting at the bottom of the wall. The Mitten starter strip must first be fixed behind the bottom course of weatherboards to ensure that this first course is set out level. The starter strip is designed to establish a level bottom course and to overhang the bottom plate by the required minimum of 50 mm.

- 18.9 Before the vinyl weatherboards are installed, the corner details must be decided and plumbed vertical, e.g. corner-post profile for external corners and J-trims used to create internal corners. The necessary flashings must be installed before commencing weatherboard fixing and a cavity closure must be installed continuously around the bottom of all cavities.
- 18.10 Mitten Vinyl weatherboard vertical joints must be overlapped by the depth of the factory cut notch. The EPS backing of the cladding profile is designed to be butted tight.
- 18.11 Mitten Vinyl weatherboards are located in place by sliding the bottom of the new board up and into the lock profile on the top of the previously fixed weatherboard. Once the new weatherboard is located, it must be fixed with a screw and washer through the centre of each fixing slot at each stud. Screws and washers must be placed in the centre of the slots to allow for thermal expansion and contraction movement. Screws and washers must not be driven home tight but left so that there is at least 1 mm of free-play between the washer and the vinyl profile. Failure to correctly place screws at the centre of fixing slots or their over-tightening will cause weatherboards to buckle or distort with heat.
- 18.12 Mitten Vinyl Weatherboards should be used in full lengths wherever possible. Where weatherboard end joints are required, the joint must be formed on a stud. Subsequent end joints in Mitten Vinyl Weatherboards must be staggered by at least 600 mm. No more than two joints are permitted in any vertical line and there must be no less than 3 rows of weatherboards between joints before repeating the joint position.

Finishing

- 18.13 Mitten Cambridge and Cedarline Vinyl weatherboards are pre-coloured at manufacture and factory finished with a gloss surface and require no on site finishing.

Inspection

- 18.14 The Technical Literature must be referred to during inspection of Mitten Cambridge and Cedarline Vinyl Cladding installations.

Health and Safety

- 19.1 Cutting of Mitten Vinyl weatherboards must be carried out in well ventilated areas and eye and hearing protection should be worn.
- 19.2 Safe use and handling procedures for the components that make up Mitten Cambridge and Cedarline Vinyl Cladding are provided in the manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 20.1 The following testing has been completed by BRANZ:
- BRANZ expert opinion on NZBC E2 code compliance for Mitten Cambridge and Cedarline Vinyl Claddings is based on testing and evaluation of all details within the scope and as stated within this Appraisal. Mitten Cambridge Vinyl Cladding details were tested to E2/VM1. The testing assessed the performance of the foundation detail, window head, jamb and sill details, vertical and horizontal weatherboard joints, internal and external corners. The results of the test were used in the evaluation of the Mitten Cambridge and Cedarline Vinyl Claddings. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of Acceptable Solution E2/AS1 for cavity-based weatherboard claddings.
 - Wind face load and fastener pull through testing for Mitten Cambridge and Cedarline Vinyl Claddings determined design wind suction pressures, and by comparing these pressures with the NZS 3604 design wind speeds and AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber framed walls.

Other Investigations

- 21.1 Structural and durability opinions have been provided by BRANZ technical experts.
- 21.2 The performance and history of use of vinyl weatherboard wall cladding products in New Zealand and Australia has been considered, including their structural and weathertightness performance, durability and non-hazardous nature.
- 21.3 Test results for flame propagation testing to AS 2122.1 of the EPS component of Mitten Cambridge and Cedarline Vinyl Claddings were obtained and reviewed by BRANZ technical experts. The review was satisfactory.
- 21.4 Site visits have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.
- 21.5 The Technical Literature for Mitten Cambridge and Cedarline Vinyl Claddings has been examined by BRANZ and found to be satisfactory.

Quality

- 22.1 The manufacture of Mitten Cambridge and Cedarline Vinyl Claddings has not been examined by BRANZ, however the methods adopted for quality control and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 22.2 Mitten Cambridge and Cedarline Vinyl Claddings manufactured at Mitten Inc. are subject to an annual manufacturing quality audit as part of the Vinyl Siding Institute Product Certification Program. The annual quality audit in turn supports ICC Evaluation and CCMC Acceptance which are recognised by BRANZ.
- 22.3 The quality control system and manufacture of the polystyrene insert material used as a component of Mitten Cambridge and Cedarline Vinyl Claddings has been assessed as meeting the requirements of AS 1366.3 and is also covered by quality certification to ISO 9001: 2015 by QAS International.
- 22.4 The quality of materials, components and accessories supplied to the market is the responsibility of Mitten Vinyl Australia.
- 22.5 Quality of installation on site of components and accessories supplied by Mitten Vinyl Australia is the responsibility of the Mitten Vinyl Australia licensed installer.
- 22.6 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing and joinery, wall underlays, flashing tapes and airseals.
- 22.7 Building owners are responsible for the maintenance of Mitten Cambridge and Cedarline Vinyl Claddings in accordance with the instructions of Mitten Inc.

Sources of Information

- AS 1366.3:1992 Rigid cellular polystyrene – Moulded (RC/PS-M).
- AS/NZS 1170:2002 Structural design actions.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber Structures Standard.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4211:2008 Specification for performance of windows.
- BRANZ Bulletin Number 582, April 2015, Structurally Fixed Cavity Battens.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Building, Innovation and Employment, Third Edition July 2005 (Amendment 8, 30 November 2018).
- AS2122.1-1993 [R2016] Combustion characteristics of plastics Determination of flame propagation - Surface Ignition of vertically oriented specimens of cellular plastics.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

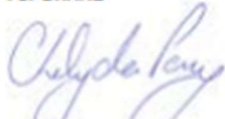
In the opinion of BRANZ, **Mitten Cambridge and Cedarline Vinyl Claddings** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Mitten Inc.**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Mitten Inc.:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Mitten Inc.**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Mitten Inc.** or any third party.

For BRANZ



Chelydra Percy
Chief Executive

Date of Issue:
09 May 2019