



Evaluation Listing CCMC 14012-L Duro-Tuff

Evaluation Issued: 2015-04-20
Revision: 2018-07-26

Preface: Masterformat 07 54 19.03, Polyvinyl Chloride Roofing and Waterproofing Membrane

Preface Issued: 2012-03-06

Scope

These Evaluation Listings apply to flexible polyvinyl chloride (PVC) membranes for use as roofing and waterproofing membranes.

The standard referenced below provides a basis for evaluating PVC membranes used on decking subject to pedestrian traffic, although additional criteria such as skid resistance, abrasion resistance and resistance to puncture from sustained loads may also be important. These additional criteria have not been included in these Evaluation Listings.

The proponent has demonstrated that the product meets the requirements of the following standard:

- CAN/CGSB-37.54-95, “Polyvinyl Chloride Roofing and Waterproofing Membrane.”

The standard classifies the membrane into four types and four classes of products:

- Type 1 – non-reinforced – for flashing only;
- Type 2 – containing embedded fibres;
- Type 3 – with a non-embedded fabric backing; and
- Type 4 – reinforced with an embedded fabric.

- Class A – non-exposed roofing;
- Class B – exposed roofing;
- Class C – waterproofing; and
- Class D – asphalt compatible.

For Classes A and C, if the membrane has been subjected to only 600 h of accelerated weathering, then its class must be designated as:

- Class A – non-exposed roofing: low ultraviolet (UV) exposure; and
- Class C – waterproofing: low UV exposure.

Standard

Table 1. Requirements for PVC Membranes¹

Property		Unit	Requirement				
			Type 1	Type 2	Type 3	Type 4	
Overall thickness		mm	1.2				
Coating thickness ²		mm	n/a ³	n/a	0.4	0.4	
Tensile strength		MPa	10.4	10.4	n/a	n/a	
Breaking strength		kN/m	n/a	n/a	35	35	
Elongation at break		%	250	250	15 ⁴	15 ⁴	
Lap joint strength	initial ⁵	% of tensile/breaking strength	75	75	75	75	
	after 7 d in boiling water ⁶		70	70	70	70	
Low temperature impact		8 out of 10 pass					
Retention of properties after heat aging	tensile/breaking strength	% of original	90	90	90	90	
	elongation ⁴		90	90	90	90	
	low temperature flexibility		Pass	Pass	Pass	Pass	
Low temperature flexibility		Pass					
Resistance to accelerated weathering	visual inspection	–	No cracking, blistering or appreciable colour change				
	elongation	% of original ⁴	90				
	low temperature impact	–	8 out of 10 pass				
	low temperature flexibility	–	Pass				
Water vapour transmission	Classes A and B	Max. g/m ² in 24 h	4.0				
	Class C		1.0				
Effect of water absorption	mass increase	Maximum %	3.0	3.0	3.0	3.0	
	tensile breaking strength	% of original	90	90	90	90	
	elongation	% of original ⁴	90	90	90	90	
Dimensional change	without loading		Maximum %	2.0	0.5	0.5	0.5
	with loading	machine direction		0.5	0.5	0.5	0.5
		cross-machine direction		0.2	0.2	0.2	0.2
Core penetration		N	30				
Asphalt compatibility of Class D only, mass decrease		Maximum %	5.0				

Notes to Table 1:

- ¹ Unless otherwise specified, these are minimum requirements.
- ² With no single measurement less than 0.32 mm.
- ³ n/a means not applicable.
- ⁴ The PVC matrix must not break before the reinforcement.
- ⁵ No shearing of the lap joint shall occur.
- ⁶ With no delamination.

Labelling

The containers holding the rolled material must be suitably marked to show the following information:

- manufacturer or distributor's name;
- trade name of the product;
- type and class;
- the phrase "Low UV exposure," if applicable;
- recommended adhesives, if applicable;
- the phrase "CAN/CGSB-37.54-95" indicating conformance to the standard;
- mass; and
- coverage.

National Building Code of Canada (NBC)

NBC References

CAN/CGSB-37.54-95 is referenced in Table 5.10.1.1. and Sentence 9.26.2.1.(1) of Division B of the NBC 2010.

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1. Evaluation

The product conforms to CAN/CGSB-37.54-95, Type 4, Class B.

2. Description

The product is a PVC roofing membrane that is reinforced with a weft-inserted polyester fabric.

The product is available in 1.3-mm, 1.5-mm and 2.0-mm thicknesses.

3. Standard and Regulatory Information

The roofing and waterproofing membrane is suitable for use in exposed and non-exposed applications. Only materials recommended by the manufacturer should be in contact with the membrane. The manufacturer's installation recommendations must be followed.

See the [Preface](#) and the standard for explanation.

Listing Holder

Duro-Last Roofing Inc.
525 Morley Drive
Saginaw, MI 48601
U.S.A.

Telephone: 800-248-0280

Fax: 800-432-9331

Plant(s)

Hillside, NJ, U.S.A.
Saginaw, MI, U.S.A.

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Date modified:
2015-04-22



Polyvinyl Chloride Roofing and Waterproofing Membrane [Annex]

MasterFormat: 07 54 19.03
Issued: 2017-06-26

Scope

Evaluation

These Evaluation Listings apply to flexible polyvinyl chloride (PVC) membranes for use as roofing and waterproofing membranes.

The standard referenced below provides a basis for evaluating PVC membranes used on decking subject to pedestrian traffic, although additional criteria such as skid resistance, abrasion resistance and resistance to puncture from sustained loads may also be important. These additional criteria have not been included in these Evaluation Listings.

The proponent has demonstrated that the product meets the requirements of the following standard:

- CAN/CGSB-37.54-95, “Polyvinyl Chloride Roofing and Waterproofing Membrane.”

The standard classifies the membranes into four types and four classes of products:

- Type 1 – non-reinforced – for flashing only;
 - Type 2 – containing embedded fibres;
 - Type 3 – with a non-embedded fabric backing; and
 - Type 4 – reinforced with an embedded fabric.
- Class A – non-exposed roofing;
 - Class B – exposed roofing;
 - Class C – waterproofing; and
 - Class D – asphalt compatible.

Where Class A or C membranes have been subjected to only 600 h of accelerated weathering, their class must be designated as:

- Class A – non-exposed roofing: low ultraviolet (UV) exposure; and
- Class C – waterproofing: low UV exposure.

Polyvinyl chloride sheet applied roofing membrane shall be installed in accordance with the manufacturer’s instructions and the following standard:

- CGSB 37-GP-55M, “Application of Sheet Applied Flexible Polyvinyl Chloride Roofing Membrane.”

Additional Information

If stated in the Listing, the proponent has provided information related to:

Fire Classification of Roof Covering

The membrane was tested in accordance with CAN/ULC-S107-10, “Standard Methods of Fire Tests of Roof Coverings.”

Fire-Resistance Rating

The membrane used in a roofing assembly was tested in accordance with CAN/ULC-S101-14, “Standard Method of Fire Endurance Test of Building Construction and Materials.”

Wind Uplift Resistance of Membrane-Roofing Assemblies

The membrane used in a roofing assembly tested in accordance with CAN/CSA-A123.21-10, “Dynamic Wind Uplift Resistance of Membrane-Roofing Systems.”

Evaluation Standard

Table 1. Requirements for PVC Membranes¹

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			Type 1	Type 2	Type 3	Type 4	
Overall thickness		mm	1.2				
Coating thickness ²		mm	n/a ³	n/a	0.4	0.4	
Tensile strength		MPa	10.4	10.4	n/a	n/a	
Breaking strength		kN/m	n/a	n/a	35	35	
Elongation at break		%	250	250	15 ⁴	15 ⁴	
Lap joint strength	initial ⁵	% of tensile/breaking strength	75	75	75	75	
	after 7 d in boiling water ⁶		70	70	70	70	
Low-temperature impact			8 out of 10 pass				
Retention of properties after heat aging	tensile/breaking strength	% of original	90	90	90	90	
	elongation ⁴		90	90	90	90	
	low-temperature flexibility		Pass	Pass	Pass	Pass	
Low-temperature flexibility			Pass				
Resistance to accelerated weathering	visual inspection	–	No cracking, blistering or appreciable colour change				
	elongation	% of original ⁴	90				
	low-temperature impact	–	8 out of 10 pass				
	low-temperature flexibility	–	Pass				
Water vapour transmission	Classes A and B	Max. g/m ² in 24 h	4.0				
	Class C		1.0				
Effect of water absorption	mass increase	Maximum %	3.0	3.0	3.0	3.0	
	tensile breaking strength	% of original	90	90	90	90	
	elongation	% of original ⁴	90	90	90	90	
Dimensional change	without loading		Maximum %	2.0	0.5	0.5	0.5
	with loading	machine direction		0.5	0.5	0.5	0.5
		cross-machine direction		0.2	0.2	0.2	0.2
Core penetration		N	30				
Asphalt compatibility of Class D only, mass decrease		Maximum %	5.0				

Notes to Table 1:

¹ Unless specified otherwise, these are minimum requirements.

² With no single measurement less than 0.32 mm

<u>3</u>	n/a means not applicable.
<u>4</u>	The PVC matrix must not break before the reinforcement.
<u>5</u>	No shearing of the lap joint must occur.
<u>6</u>	With no delamination

Labelling

The containers holding the rolled material must be suitably marked to show the following information:

- manufacturer or distributor's name;
- trade name of the product;
- type and class;
- the phrase "Low UV exposure" (if applicable);
- recommended adhesives (if applicable);
- the phrase "CAN/CGSB-37.54-95" (indicating conformance to the standard);
- mass; and
- coverage.

National Building Code of Canada (NBC)

References in Division B of the NBC 2015

Evaluation Standard

CAN/CGSB-37.54-95 is referenced in Tables 5.9.1.1. and 9.26.2.1.-B and Sentence 9.13.3.2.(2).

Standards Containing Additional Information

CAN/CSA-A123.21-10, which is referenced in Sentence 5.2.2.2.(4).

CAN/ULC-S101-14, which is referenced in Sentences 3.1.5.7.(2), 3.1.5.14.(5), 3.1.5.14.(6), 3.1.5.15.(3), 3.1.5.15.(4), 3.1.7.1.(1), 3.1.11.7.(1), 3.2.3.8.(1), 3.2.6.5.(6), 9.10.16.3.(1) and Table 9.10.3.1.-B.

CAN/ULC-S107-10, which is referenced in Sentence 3.1.15.1.(1).