



Evaluation Report CCMC 13450-R SUNTUF[®], PALRUF[®], PALOPAQUE[™], SUNLITE[®], PALSUN[®] and SUNTOP[®] (polycarbonate and polyvinyl chloride panels)

MasterFormat:	07 43 33
Evaluation issued:	2011-06-13
Re-evaluated:	2017-07-21
Re-evaluation due:	2020-06-13

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “SUNTUF[®], PALRUF[®], PALOPAQUE[™], SUNLITE[®], PALSUN[®] and SUNTOP[®] (polycarbonate and polyvinyl chloride panels),” when used as a canopy covering in accordance with the conditions and limitations stated in Section 3 of this Report, comply with the National Building Code (NBC) of Canada 2015:

- Clause 1.2.1.1.(1)(b) of Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Subsection 9.23.16., Roof Sheathing

This opinion is based on CCMC’s evaluation of the technical evidence in Section 4 provided by the Report Holder.

Ruling No. 12-09-279 (13450-R) authorizing the use of these products in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2012-06-21 pursuant to s.29 of the Building Code Act, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

2. Description

“PALRUF[®]” is a corrugated polyvinyl chloride (PVC) panel. “PALOPAQUE[™]” is a flat, corrugated PVC panel. “SUNLITE[®]” is a multiwalled polycarbonate panel. “PALSUN[®]” is a flat, extruded polycarbonate panel. “SUNTUF[®]” is a corrugated polycarbonate panel. “SUNTOP[®]” is a corrugated, foamed polycarbonate panel. All panels are available in various profiles (all manufactured), widths and lengths.

3. Conditions and Limitations

CCMC’s compliance opinion in Section 1 is bound by the “SUNTUF[®], PALRUF[®], PALOPAQUE[™], SUNLITE[®], PALSUN[®] and SUNTOP[®] (polycarbonate and polyvinyl chloride panels)” being used in accordance with the conditions and limitations set out below.

- The products are polycarbonate or PVC corrugated panels intended for use as roof panels for canopies or carports. They are not intended for use as skylights. They must not be subjected to any traffic, maintenance or other loads with the exception of uniform loads from snow, rain and wind.
- The supporting structure, which is not part of this evaluation, must be designed by a professional engineer who is skilled in such design and licensed to practice under the appropriate provincial or territorial legislation. The supporting structure must comply with the requirements of Part 9 of Division B of the NBC 2015 and to meet the load and deflection resistance requirements specified in Subsections 9.4.2., Specified Loads, and 9.4.3., Deflections, of Division B of the NBC 2015. The polycarbonate or PVC corrugated roof panels must be able to transfer the appropriate loads to the supporting structure.
- The flashing detail at the wall junction must be installed in accordance with Subsection 9.26.4., Flashing at Intersections, of Division B of the NBC 2015.
- The spacing of the supporting roof joists must not be greater than 600 mm on centre (o.c.).
- The products must be installed in accordance with manufacturer’s instructions and installation manual.
- The products must be identified with the phrase “CCMC 13450-R.”

4. Technical Evidence

The Report Holder has submitted technical documentation for CCMC's evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Material Requirements

Table 4.1 Results of Testing of Material Requirements of the Products

Property	Product	Unit	Requirement	Result
Flame-spread rating ¹	SUNTUF [®]	–	Report value	55
Smoke development ¹	SUNTUF [®]	–	Report value	355
Water absorption resistance ²	PALRUF [®]	g	< 1 g	0
	SUNTUF [®]	g		0
	PALSUN [®]	g		0
Watertightness prior to aging ³	PALRUF [®]	–	No water penetration	No leakage
	SUNTUF [®]	–		No leakage
	PALOPAQUE [™]	–		No leakage
	PALSUN [®]	–		No leakage
Watertightness after accelerated aging ³	PALRUF [®]	–	No water penetration	No leakage
	SUNTUF [®]	–		No leakage
	PALOPAQUE [™]	–		No leakage
	PALSUN [®]	–		No leakage
Watertightness after heat aging ³	PALRUF [®]	–	No water penetration	No leakage
	SUNTUF [®]	–		No leakage
	PALOPAQUE [™]	–		No leakage
	PALSUN [®]	–		No leakage
Watertightness after freeze/thaw ³	PALRUF [®]	–	No water penetration	No leakage
	SUNTUF [®]	–		No leakage
	PALOPAQUE [™]	–		No leakage
	PALSUN [®]	–		No leakage

Notes to Table 4.1:

1. The SUNTUF[®] Greca profile was used for testing. The profile used for testing is not considered to affect the results of this testing.
2. The PALRUF[®] Iron, SUNTOP[®] Greca and Flat PALSUN[®] profiles were used for testing. This panel profile did not affect the results of this testing.
3. The PALRUF[®] Iron, SUNTUF[®] Greca, PALOPAQUE[™] and Flat PALSUN[®] profiles were used for testing. These panels were considered to be the worst-case scenario.

4.2 Design Requirements

Table 4.2 Results of Testing of Design Requirements of the Products

Property	Product	Thickness	Unit	Requirement	Result
Uniform load resistance ¹ (spacing of supports 600 mm on center)	PALRUF®	0.8 mm	kPa	As reported	27.1
	SUNTUF®	0.8 mm	kPa		21.6
	SUNLITE®	8 mm	kPa		11.4
	PALSUN®	3.0 mm	kPa		13.3

Notes to Table 4.2:

- The PALRUF® Greca, the SUNTUF® Iron, the SUNLITE® 8-mm and the Flat PALSUN® profiles were used for testing. These panels were considered to be the worst-case thicknesses and profiles by which the remainder of the profiles can be deemed to be acceptable

4.3 Performance Requirements

Table 4.3 Results of Testing of Performance Requirements of the Products

Property	Product	Thickness	Unit	Requirement	Result
Tensile strength prior to aging ¹	PALRUF®	0.8 mm	kPa	As reported	45 576
	SUNTUF®	0.8 mm	kPa		51 915
	PALOPAQUE™	3.0 mm	kPa		46 061
	PALSUN®	3.0 mm	kPa		57 311
Tensile strength after freeze/thaw ¹	PALRUF®	0.8 mm	kPa	As reported	50 048
	SUNTUF®	0.8 mm	kPa		50 320
	PALOPAQUE™	3.0 mm	kPa		45 542
	PALSUN®	3.0 mm	kPa		55 025
Falling ball impact ²	PALRUF®	0.8 mm	–	As reported	No sign of any damage
	SUNTUF®	3.0 mm	–		No sign of any damage
	PALSUN®	3.0 mm	–		No sign of any damage
Wind uplift resistance ²	PALRUF®	0.8 mm	kPa	As reported	-2.9
	SUNTUF®	3.0 mm	kPa		-3.0
	PALSUN®	3.0 mm	kPa		+1.0
Resistance to accelerated aging ²	PALRUF®	0.8 mm	–	No water penetration	No cracking
	SUNTUF®	3.0 mm	–		No cracking
	PALSUN®	3.0 mm	–		No cracking

Property	Product	Thickness	Unit	Requirement	Result
Resistance to heat aging ²	PALRUF®	0.8 mm	–	No cracking or deterioration	No cracking or deterioration
	SUNTUF®	0.8 mm	–		No cracking or deterioration
	PALOPAQUE™	3.0 mm	–		No cracking or deterioration
	PALSUN®	3.0 mm	–		No cracking or deterioration
Freeze/thaw resistance ¹	PALRUF®	0.8 mm	–	No visible damage and mass loss ≤ 1%	No damage/0%
	SUNTUF®	0.8 mm	–		No damage/0%
	PALOPAQUE™	3.0 mm	–		No damage/0%
	PALSUN®	3.0 mm	–		No damage/0%
Fastener pull-through ³	PALRUF®	0.8 mm	N	As reported	531
	SUNTUF®	0.8 mm	N		153
	PALSUN®	3.0 mm	N		246

Notes to Table 4.3:

1. The PALRUF® Iron, the SUNTUF® Greca, the PALOPAQUE™ and the Flat PALSUN® profiles were used for testing. These panels were considered to be the worst-case thickness and profile.
2. The PALRUF® Iron, the SUNTUF® Greca and the Flat PALSUN® profiles were used for testing. These panels were considered to be the worst-case thickness and profile.
3. The PALRUF® Iron, the SUNTUF® Greca and the Flat SUNLITE® profiles were used for testing. These panels were considered to be the worst-case thickness and profile.

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Date modified:
2017-07-21