Code Compliance Research Report
CCRR-1033

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DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION
Section: 07 21 00 – Thermal Insulation

REPORT HOLDER:
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REPORT SUBJECT:
EnerSpan® Insulation
DuroSpan® GPS Insulation
EnerGreen Enhanced

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2024, 2021, 2018 *International Code Building®* (IBC)
- 2024, 2021, 2018 *International Residential Code®* (IRC)
- 2015 and 2010 *National Building Code of Canada* (NBC) – See Section 8.1
- 2012 *International Green Construction Code®* (IgCC) – See Section 8.2

NOTE: This report references the most recent edition of the Codes cited. Section numbers for earlier Code editions may differ.

1.2 EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations have been evaluated for the following properties (see Table 1):

- Physical properties
- Surface-burning characteristics
- Thermal resistance
- Attic and crawl space installation
- Exterior walls in Types I – IV construction
- Use in Type V construction

1.3 The EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations have been evaluated for the following uses:

- Non-structural thermal insulation in wall assemblies, roof, ceiling or floor assemblies, and door cavities.
- A sandwich panel core where EPS insulation complying with ASTM C578 or CAN/ULC-S701.1 (formerly CAN/ULC-S701) is specified in the Code Evaluation Report for the sandwich panel.
- On the interior face or under interior or exterior foundation walls or slab foundations as described in Section 4.2.
- In attic and crawl spaces without a code-prescribed ignition barrier when installed as per Section 4.3.
- In Type V construction as described in Sections 41 through 4.3.
- In Types I, II, III, and IV construction as described Section 4.4.

2.0 STATEMENT OF COMPLIANCE

The EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations complies with the Codes listed in Section 1.1, for the properties stated in Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

2.1 2024 IBC and IRC Evaluation Reports: The Intertek CCRR is an Evaluation Report for approval of an alternate material, design, or method of construction in accordance with Section 104.2.3.6.1 of the 2024 IBC and Section R104.2.2.6.1 of the 2024 IRC.

3.0 DESCRIPTION

3.1 General: EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations are expanded polystyrene (EPS) complying with ASTM C578 Types I, VIII, II, II (high density), and IX, with minimum densities of 0.90 pcf, 1.15 pcf, 1.35 pcf, 1.45 pcf, and 1.80 pcf respectively; and complying with CAN/ULC-S701.1 Types 1, 2, 2 (high density) and 3. The DuroSpan® GPS Insulation and the EnerGreen Enhanced are

an EnerSpan® product laminated with one layer of a proprietary film on each side of the board.

3.2 Performance Characteristics:

3.2.1 Surface Burning Characteristics: EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations have a flame spread index not exceeding 25 and a smoke developed index not exceeding 450 for thicknesses up to 6 inches, when tested in accordance with UL 723 (ASTM E84) as required by Section 2603.3 of the IBC or Section R303.3 of the IRC, as applicable. EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations have a flame spread index of 230 and a smoke developed index of over 500 when tested in accordance with CAN/ULC-S102.2, as required by NBC 2010 and 2015, Sentence 3.1.12.1(2).

3.2.2 Thermal Resistance: EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations have thermal resistance values as listed in Table 4.

4.0 INSTALLATION

4.1 General: EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. The manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

The insulation boards must be separated from the interior of the building by a thermal barrier complying with IBC Section 2603.4 or IRC Section R303.4, as applicable. See Table 2 for minimum thickness of the thermal barrier required. When using insulation boards thicker than 1-1/2 inches (38 mm) with cementitious exterior wall coatings, fasteners must be considered for lateral resistance to ensure support of the exterior wall covering.

4.2 Protection Against Termites: The insulation boards may be used on the interior face, or under interior or exterior foundation walls, or slab foundations, except where the probability of termite infestation is "very heavy" as described in IBC Section 2603.8 or IRC Section R305.4. The clearance between foam plastics installed above grade and exposed earth shall be not less than 6 inches.

4.3 Attic and Crawl Spaces: The insulation boards may be used for walls and ceilings of attic or crawl spaces without an ignition barrier required by IBC Section 2603.4.1.6, or IRC Sections R303.5.3 or R303.5.4 when all of the following conditions are met:

- Entry to the attic or crawl space is only to service utilities, and no storage is permitted. Utilities include, but are not limited to, mechanical equipment, electrical wiring, fans, and gas or electric hot water heaters and furnaces.
- There are no interconnected attic or basement areas.
- Air in the attic or crawl space is not circulated to other parts of the building.
- Attic ventilation is provided when required by IBC Section 1202.2 or IRC Section R806, as applicable.
- Under-floor (crawl space) ventilation is provided that complies with IBC Section 1202.4 or IRC Section R408.2, as applicable.
- Combustion air is provided in accordance with IMC (*International Mechanical Code*) Section 701.
- The insulation is limited to the Type and thickness specified in Table 3.

4.4 Exterior Walls in Buildings Required to be of Types I, II, III, and IV Construction: The EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulation boards may be used on or in exterior walls in Types I, II, III, or IV construction, when it is part of an exterior wall assembly qualified in accordance with the requirements of IBC Section 2603.5.

EnerSpan® Insulation boards meet the requirements for exterior foamed plastic insulation as described in UL listed Exterior Wall Systems EWS0025 and EWS0026.

5.0 CONDITIONS OF USE

5.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

5.2 Exterior walls must be protected by a water-resistive barrier complying with IBC Section 1403.2 or IRC Section R703.2, and by wall coverings that provide the necessary structural wind and seismic resistance between the wall framing members.

5.3 The insulation boards must not be used as a nailing base for siding materials. All fasteners must penetrate through the insulation into the existing wall framing or structural sheathing as required by the wall covering manufacturer's instructions or the applicable Code.

5.4 EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations are manufactured by Plasti-Fab Ltd., at locations listed in Table 6 of this report. Each manufacturing location is under a quality control program with inspections by Intertek Testing Services NA, Inc.

6.0 SUPPORTING EVIDENCE

6.1 Reports of tests in accordance with: CAN/ULC-S701.1:2017 and CAN/ULC-S102.2.

6.2 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015 (editorially revised May 2016).

6.3 Reports of tests in accordance with NFPA 286.

6.4 Intertek Listing Report Plasti-Fab Ltd. EnerSpan®, DuroSpan®, and EnerGreen Enhanced Insulation.

7.0 IDENTIFICATION

EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations are identified on the packaging or product by a marking bearing the report holder's name (Plasti-Fab Ltd.), the product name, the product EPS type, density, the manufacturing location, the Intertek Mark, the Code Compliance Research Report number (CCRR-1033), and thermal resistance value.

8.0 OTHER CODES

8.1 National Building Code of Canada: EnerSpan®, DuroSpan® GPS, and EnerGreen Enhanced Insulations , with properties described in Sections 3.0, 6.0, and 7.0 of this Research Report, comply with CAN/ULC-S701.1 as Type 1, 2, 2 (high density), and 3 EPS, and therefore comply with the requirements of the following NBC Articles: 3.1.4.2., 3.1.5.12., 5.10.1.1., 9.10.3.2., 9.10.17.10., 9.23.17.2., and 9.25.2.2. Thermal resistance shall comply with Table A-9.36.2.4(1)-D.

8.2 International Green Construction Code: EnerSpan Insulation has been evaluated under the UL GREENGUARD GOLD certification program. The properties referenced therein are intended to address requirements in IgCC Section 806.6 for material emissions and Section A108.5, total VOC limit project elective. The listing may be found at the following address: http://productguide.ulenvironment.com.

9.0 CODE COMPLIANCE RESEARCH REPORT USE

9.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

9.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

9.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

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TABLE 1A – PROPERTIES EVALUATED – INTERNATIONAL CODES

PROPERTY	IBC SECTION	IRC SECTION	IECC SECTION
Physical properties	Table 1508.2	R404.1.3.3.6.1	Not required
Surface burning characteristics	2603.3	R303.3	N/A
Type I – IV construction	2603.5	N/A	N/A
Thermal resistance	1301	N1101.10 N1102	C303.1.1, C303.1.4, R303.1.1, R303.1.4
Thermal barrier/ignition barrier	2603.4	R316.4	N/A

TABLE 1B – PROPERTIES EVALUATED – NATIONAL BUILDING CODE OF CANADA

PROPERTY	NBC REFERENCE
Physical properties	5.10.1.1. and 9.25.2.2.
Combustible insulation and its protection	3.1.4.2., 9.10.17.10.
Combustible insulation	3.1.5.12.
Foamed plastic insulation	3.1.5.15.
Surface burning characteristics	3.1.12.1., 9.10.3.2.
Thermal resistance	9.25.2.1. and 9.36.2.
Thermal barrier	3.1.4.2. and 9.10.17.10.

TABLE 2 – MINIMUM INSULATION BOARD PROPERTIES AND REQUIRED THERMAL BARRIER

EPS TYPE	THERMAL BARRIER REQUIRED	THERMAL BARRIER THICKNESS
ASTM C578 - TYPE I, VIII, II, II (high density), IX	Thermal barrier material as permitted in IBC Section 2603.4 or IRC Section R316.4	Min. 1/2 in. (12.7 mm)
CAN/ULC-S701.1 - TYPE 1, 2, 2 (high density), 3	Thermal barrier material as permitted in NBC Article 3.1.4.2., 9.10.17.10.	Min. 12.7 mm (1/2 in.)

TABLE 3 – MAXIMUM INSULATION THICKNESS FOR USE IN ATTICS OR CRAWL SPACES

ASTM C578 EPS TYPE	MAXIMUM THICKNESS
Type I	4.0 inches (101.6 mm)
Type VIII	3.2 inches (81.3 mm)
Type II	2.7 inches (67.6 mm)
Type IX	2.0 inches (50.8 mm)

TABLE 4 – THERMAL RESISTANCE BY ASTM C578 TYPE

ASTM C578 EPS TYPE	MINIMUM DENSITY (pcf)	R-VALUE @ 75°F Mean Temperature $ft^2 \cdot h \cdot {}^oF/BTU$ per inch	R-VALUE @ 75°F Mean Temperature $ft^2 \cdot h \cdot {}^oF/BTU$ per 1.06 inch of thickness
Type I	0.90	4.7	5.0
Type VIII	1.15	4.7	5.0
Type II	1.35	4.7	5.0
Type II (high density)	1.45	4.7	5.0
Type IX	1.80	4.7	5.0

TABLE 5 – THERMAL RESISTANCE BY CAN/ULC-701.1 TYPE

CAN/ULC-S701.1 EPS TYPE	Thermal Resistance (for 25 mm thickness) m^2-°C/W
Type 1	0.82
Type 2	0.82
Type 2 (high density)	0.82
Type 3	0.82

TABLE 6 – ENERSPAN, DUROSPAN GPS, AND ENERGEEN ENHANCED* MANUFACTURING LOCATIONS

MANUFACTURING LOCATION	ASTM C578 TYPE	CAN/ULC-S701.1 TYPE
Ajax, Ontario, Canada* Crossfield, Alberta, Canada* Delta, British Columbia, Canada Kitchener, Ontario, Canada Saskatoon, Saskatchewan, Canada Winnipeg, Manitoba, Canada Lebanon, Ohio, USA	I	1
	VIII	-
	II	2
	II (1.45 pcf)	2 (1.45)
	IX	3
*EnerGreen Enhanced is only manufactured at the Ajax and Crossfield facilities		