

ICC-ES Evaluation Report

ESR-5194

Issued March 2024

Revised June 2024



Subject to renewal March 2025

This report also contains:

- CHI Supplement
- LABC Supplement
- CBC Supplement
- FBC Supplement

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<p>DIVISION: 06 00 00 – WOOD, PLASTICS AND COMPOSITES</p> <p>Section: 06 16 23 – Subflooring</p> <p>Section: 06 16 26 – Underlayment</p> <p>DIVISION 09 00 00 – FINISHES</p> <p>Section: 09 28 15 – Magnesium Oxide Backing Panels</p>	<p>REPORT HOLDER: NEXGEN BUILDING PRODUCTS LLC</p> 	<p>EVALUATION SUBJECT: MAXTERRA™ 20 MM THICK MAGNESIUM OXIDE PANELS</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018 and 2015 [International Building Code® \(IBC\)](#)
- 2021, 2018 and 2015 [International Residential Code® \(IRC\)](#)
- For evaluation for compliance with codes adopted by [Los Angeles Department of Building and Safety \(LADBS\)](#), see [ESR-5194 LABC and LARC Supplement](#)

Property evaluated:

- Durability
- Structural
- Surface Burning Characteristics
- Non-combustibility

2.0 USES

MAXTERRA™ panels are 20 mm (0.787-inch) thick magnesium-oxide panels are intended for use in single floor applications, subfloor applications, or as floor underlayment. The panels may also be used as substrate sheets for tile and resilient flooring. The product has been evaluated for use in Types I-V construction under the IBC and all construction types under the IRC.

3.0 DESCRIPTION

3.1 General:

MAXTERRA™ panels are 20 mm (0.787 inch) thick magnesium oxide panels reinforced with multiple embedded fiberglass mesh sheets. The panels are available in nominal 4-foot (1.22 m) widths at a nominal

length of 4, 8, 10 or 12 feet (1.22 m, 2.44 m, 3.05 m, or 3.66 m). The panels have tongue and groove features on the edges along the length of the panels.

3.2 Surface Burning Characteristics:

MAXTERRA™ panels have a flame spread index of 25 or less and a smoke developed index of 450 or less when tested in accordance with ASTM E84. The panels exhibit a Class A interior finish in accordance with Section 803.1.2 of the 2021 and 2018 IBC (Section 803.1.1 of the 2015 IBC).

3.3 Non-combustibility:

MAXTERRA™ panels are classified as noncombustible building materials in accordance with ASTM E136 and Section 703.3.1 of the 2021 IBC (Section 703.5.1 of the 2018 and 2015 IBC).

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 Single Floor and Subfloor Applications: MAXTERRA™ panels may be used in single floor or subfloor applications when installed in accordance with Section 4.2.1 of this report. See [Table 1](#) for allowable uniform loads.

4.1.2 Floor Underlayment Application: MAXTERRA™ panels may be used as floor underlayment on top of a structural subfloor system constructed to meet the applicable building code requirements. Installation must be in accordance with Sections 4.2.2 of this report. MAXTERRA™ panels may be used as floor underlayment may also be used as interior substrate sheets when coverings are installed in accordance with Section 4.2.3 of this report.

4.2 Installation:

4.2.1 Single Floor and Subfloor: When used in single floor or subfloor applications, the MAXTERRA™ panels must be installed on minimum nominal 2-by-4 lumber joists, having a specific gravity of 0.55 or greater. The MAXTERRA™ panels must be installed with the smooth side up (printed side facing down). The panels must be fitted together such that the tongue and groove features are fully interlocked with one another. The joists must be spaced no greater than 24-inches (610 mm) on center. Square edges (edges without tongue and groove) must be located over framing members. MAXTERRA™ panel edges that are not supported by the tongue and groove profile must be supported by blocking or covered with one of the materials described in IBC Table 2304.8(3) footnote c and IRC Table R503.2.1.1(1) footnote j or k, as applicable. Panels must be fastened to the lumber framing using 2-inch (50.8 mm) #8 stainless steel screws or 0.133-inch x 2-inch (2.9 mm x 50.8 mm) galvanized ring shank nails. Fasteners must be spaced 6-inches (152.4 mm) on center along the perimeter and 12-inches (304.8 mm) on center in the field of the panel. A ½-inch (12.7 mm) edge distance must be maintained along the panel edges, and no fasteners may be placed within 2 inches (50.8 mm) of a panel corner.

4.2.2 Underlayment: When used as underlayment, MAXTERRA™ panels must be installed with the smooth side up (printed side facing down) on top of a structural subfloor system designed to limit the deflection, including live and dead loads, to L/360 of the span, in accordance with the applicable code. The panels must be fitted together such that the tongue and groove features are fully interlocked with one another. Any flatness or surface quality requirements of the structural subflooring must be addressed prior to installing the MAXTERRA™ panels.

4.2.3 Use as Interior Substrate Sheets:

When used in underlayment applications, MAXTERRA™ panels may be decorated with resilient flooring, ceramic tile, natural stone or dimensional stone veneers on floors, walls and ceilings in interior dry areas.

4.2.3.1 Use with Tile, Natural Stone, or Dimensional Stone Veneers:

For tile, natural stone and dimensional stone veneers, only those that are compatible with dry-set Portland cement mortars complying with ANSI A118.1, or latex modified thinset mortars complying with ANSI A118.4 may be used. Prior to setting the covering, all panel joints must be filled with the same mortar used to set the covering. While the mortar is still wet, 2-inch-wide (51 mm), high-strength, coated, alkali resistant, glass fiber reinforcing tape must be embedded into the wet mortar, leveled and allowed to thoroughly dry prior to applying the covering.

4.2.3.2 Use with Resilient Flooring:

Resilient flooring installed on MAXTERRA™ used in single floor or underlayment applications must be installed in accordance with the flooring manufacturer's published installation instructions.

5.0 CONDITIONS OF USE:

- 5.1 Use of MAXTERRA™ magnesium-oxide panels must be installed in accordance with this report and the manufacturer’s published installation instructions. In the event of a conflict between this report and the manufacturer’s published installation instructions, this report governs.
- 5.2 Use of MAXTERRA™ magnesium-oxide panels in fire-resistance rated construction is outside of the scope of this report.
- 5.3 Use of MAXTERRA™ magnesium-oxide panels as a horizontal diaphragm is outside of the scope of this report.
- 5.4 Support framing must be designed for maximum allowable assembly deflection of L/360 under live loads for ceilings supported by floor framing.
- 5.5 For single floor and subfloor applications, MAXTERRA™ panel edges that are not supported by the tongue and groove profile must be supported by blocking or covered with one of the materials described in IBC Table 2304.8(3) footnote c and IRC Table R503.2.1.1(1) footnote j or k, as applicable. Use of MAXTERRA™ panels with metal framing is outside of the scope of this report.
- 5.6 Compatibility of resilient flooring adhesives with the panels is outside of the scope of this report.
- 5.7 MAXTERRA™ magnesium-oxide panels are limited to use on interior surfaces as defined in 2021 and 2018 IBC Section 202 (2015 IBC Section 2502). The panels must not be used in wet areas as defined in IBC Section 2509; under the IRC, the panels must not be used in showers.
- 5.8 MAXTERRA™ magnesium-oxide panels are manufactured under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the [ICC-ES Acceptance Criteria for Fiber-reinforced Magnesium-oxide-based Sheets \(AC386\)](#), dated October 2023; excluding corrosion resistance.
- 6.2 Data in accordance with the applicable sections of the [ICC-ES Acceptance Criteria for Reinforced Cementitious Sheathing and Floor Underlayment \(AC376\)](#), dated August 2012 (editorially revised January 2021).
- 6.3 Data in accordance with the [ICC-ES Acceptance Criteria for Fiber-Cement Interior Substrate Sheets Used in Wet and Dry Areas \(AC378\)](#), dated August 2012 (editorially revised January 2021).
- 6.4 Data in Accordance with the [ICC-ES Acceptance Criteria for Fiber-Reinforced Cement Sheet Structural Floor Sheathing \(AC367\)](#), dated October 2020.
- 6.5 Data in accordance with ASTM E136.

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5194) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2 The report holder’s contact information is the following:

NEXGEN BUILDING PRODUCTS LLC
1904 MANTEE AVENUE WEST #300
BRADENTON, FLORIDA 34205
(855) 639-4361
www.nexgenbp.com
support@nexgenbp.com

TABLE 1 – ALLOWABLE UNIFORM TRANSVERSE LOADS^{1, 2}

MAXTERRA™ 20mm Thick Magnesium Oxide Panel	Allowable Uniform Load (supports spaced 24-inches o.c. max.)
	133 psf

For **SI**: 1 psf 47.88 pa; 1 inch = 25.4 mm

¹ Load is applicable for long edge of panel placed perpendicular to supports. Minimum of 2 spans.

² Load values are based on L/360 deflection limits with maximum load controlled by bending and shear capacity. Table does not consider the influence of joists on deflection.

DIVISION: 06 00 00— WOOD, PLASTICS AND COMPOSITES

Section: 06 16 26—Underlayment

Section: 06 16 23 — Subflooring

DIVISION 09 00 00 — FINISHES

Section: 09 28 15 — Magnesium Oxide Backing Panels

REPORT HOLDER:

NEXGEN BUILDING PRODUCTS LLC

EVALUATION SUBJECT:

MAXTERRA™ 20 MM THICK MAGNESIUM OXIDE PANELS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in ICC-ES evaluation report [ESR-5194](#), have also been evaluated for compliance with the Chicago Construction Codes (Title 14 of the Chicago Municipal Code) as noted below.

Applicable code editions:

- 2019 *Chicago Building Code* (Title 14B)

2.0 CONCLUSIONS

The MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-5194](#), comply with Title 14B, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels described in this evaluation report supplement must comply with all of the following conditions:

- The design, installation, conditions of use and identification of the panels are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-5194](#).
- The design, installation and inspection are in accordance with additional requirements of Chapters 16 and 17 of Title 14B, as applicable.

This supplement expires concurrently with the evaluation report, issued March 2024 and revised June 2024.

DIVISION: 06 00 00— WOOD, PLASTICS AND COMPOSITES

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REPORT HOLDER:

NEXGEN BUILDING PRODUCTS LLC

EVALUATION SUBJECT:

MAXTERRA™ 20 MM THICK MAGNESIUM OXIDE PANELS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in ICC-ES evaluation report [ESR-5194](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-5194](#), comply with the LABC Chapters 8 and 23, and the LARC, Chapter 5 and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-5194](#).
- The design, installation, conditions of use and identification of the panels are in accordance with the 2021 *International Building Code*® (IBC) or 2021 *International Residential Code*® (IRC) provisions, as applicable, noted in the evaluation report [ESR-5194](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17 and 23, or LARC Chapter 5, as applicable.

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REPORT HOLDER:

NEXGEN BUILDING PRODUCTS LLC

EVALUATION SUBJECT:

MAXTERRA™ 20 MM THICK MAGNESIUM OXIDE PANELS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in ICC-ES evaluation report ESR-5194, have also been evaluated for compliance with the code(s) noted below.

Applicable code edition(s):

- 2022 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Healthcare Access and Information (HCAI) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-5194, comply with CBC Chapters 8 and 23, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 23, as applicable.

2.1.1 OSHPD: The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA: The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-5194, comply with CRC Chapter 5, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report and the additional requirements of CRC Chapter 5, as applicable.

This supplement expires concurrently with the evaluation report, issued March 2024 and revised June 2024.

DIVISION: 06 00 00— WOOD, PLASTICS AND COMPOSITES

Section: 06 16 26—Underlayment

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Section: 09 28 15 — Magnesium Oxide Backing Panels

REPORT HOLDER:

NEXGEN BUILDING PRODUCTS LLC

EVALUATION SUBJECT:

MAXTERRA™ 20 MM THICK MAGNESIUM OXIDE PANELS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that MAXTERRA™ 20 mm (0.787 inch) thick panels, described in ICC-ES evaluation report ESR-5194, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 Florida Building Code—Building
- 2023 Florida Building Code—Residential

2.0 CONCLUSIONS

The MAXTERRA™ 20 mm (0.787 inch) thick magnesium oxide panels, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-5194, comply with the *Florida Building Code—Building* or the *Florida Building Code—Residential*. The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-5194 for the 2021 *International Building Code*® meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the MAXTERRA™ 20 mm (0.787 inch) magnesium oxide panels for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

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