ICC-ES Evaluation Report

ESR-1023

Reissued May 2024

This report also contains:

- CBC Supplement

Subject to renewal May 2026

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES Section: 06 05 23.10—Adhesives	REPORT HOLDER: DUPONT DE NEMOURS, INC	EVALUATION SUBJECT: BETAFUSE™ STRUCTURAL ADHESIVES	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012, and 2009 *International Building Code®* (IBC)
- 2021, 2018, 2015, 2012, and 2009 *International Residential Code®* (IRC)

Properties evaluated:

- Durability
- Strength

2.0 USES

Betafuse™ Structural Adhesives are used in the factory fabrication of laminated sandwich panels supporting loads in addition to the panel weight. See Table 1 for product names and applicable facing and core materials.

3.0 DESCRIPTION

The Betafuse™ Structural Adhesives are one-part, moisture-cured, urethane adhesives. The various adhesives within a series have different working and curing times to accommodate different manufacturing operations, as well as variations in temperature and humidity. The adhesives are brown and have a liquid specific gravity of 1.15. They are available in 5-gallon (18.9 L) pails, 55-gallon (208 L) drums and 2400-pound (1090 kg) totes. Storage temperature for unopened containers is to be between 50°F and 75°F (15.6°C and 23.9°C). Containers are to be stored indoors, protected from any water contact and out of direct sunlight. The adhesives, when stored in unopened containers, have a shelf life as given in Table 2. The adhesives are to be used immediately once the containers are opened, or are to be protected with a blanket of dry nitrogen when standing unused.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The Betafuse™ Structural Adhesives are Type II, Class 2, structural adhesives in accordance with the ICC-ES Acceptance Criteria for Sandwich Panel Adhesives (AC05). The allowable shear stress based on creep is limited to a maximum of 40 psi (276 kPa).

4.2 Installation:

4.2.1 General: The adhesives are to be applied in accordance with this report and the adhesive manufacturer's installation instructions titled "Structural Adhesives Troubleshooting Guide," version 3.0,

provided to the sandwich panel manufacturer on a CD-ROM. The CD-ROM and this report are to be available at all times during adhesive application.

4.2.2 Preparation and Application: Surfaces being bonded are to be clean and dry. Dust, oil, grease, water, paint and other contaminants are to be removed prior to application of the adhesive. The adhesive must be applied in accordance with the adhesive manufacturer's recommended installation instructions using the type of applicator specified in Table 2. The adhesives are to be applied at ambient temperatures between 60°F and 105°F (15.6°C and 40.6°C). When the adhesive is applied to wood, the moisture content of the wood is limited to a maximum of 12 percent.

To ensure adhesion, the laminated sandwich panels are to be placed under pressure in accordance with the adhesive manufacturer's instructions. For adhesives applied by bead applicators, the sandwich panel manufacturer must employ a means to verify that complete coverage of the panel with the adhesive has occurred after adhesive application and panel pressing are done.

5.0 CONDITIONS OF USE:

The Betafuse™ Structural Adhesives described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The adhesives are used, applied and cured in accordance with this report and the adhesive manufacturer's published instructions. In the event of a conflict between the installation instructions and this report, the more restrictive governs.

5.2 Use of the adhesive is limited to sandwich panels specifically recognized in a current ICC-ES evaluation report, and evaluated in accordance with Section 4.0 of the ICC-ES Acceptance Criteria for Sandwich Panels (AC04).

5.3 Based on creep test results, the maximum allowable design shear stress for the Betafuse™ adhesives, when used in sandwich panels supporting loads other than self-weight, is 40 psi (276 kPa).

5.4 The adhesives are used only with the facings and cores described in Table 1.

5.5 The adhesives are limited to use in other than Group H and I Occupancies. Use of the adhesives with fire-retardant or preservative-treated wood products is outside the scope of this report.

5.6 The adhesives are manufactured under a quality program with inspections conducted by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Sandwich Panel Adhesives (AC05), dated June 2009 (editorially revised July 2020).

7.0 IDENTIFICATION

7.1 Each container of Betafuse™ Structural Adhesive is identified by markings and inscriptions showing the product name, DuPont de Nemours, Inc. company name, the batch code, the manufacturing date, the expiration date, storage requirements, and the evaluation report number (ESR-1023).

7.2 The report holder's contact information is the following:

DUPONT DE NEMOURS, INC.
1501 LARKIN CENTER DRIVE
MIDLAND, MICHIGAN 48642
(866) 583-2583
www.dupont.com/building

TABLE 1—APPLICABLE FACING AND CORE MATERIALS

PRODUCT NAME	FACING MATERIALS										CORE MATERIALS			
	Plywood	OSB	Zinc-borate treated OSB	FRP	Aluminum	Steel	Hard board	Cement board	Gypsum	Pionite®[1]	EPS	Extruded Polystyrene	Polyiso-cyanurate	Paper Honeycomb
Betafuse™ 640	X	X	X	X	X	X		X			X	X	X	X
Betafuse™ 642	X	X	X	X	X	X		X			X	X	X	X
Betafuse™ 643	X	X	X	X	X	X		X			X	X	X	X
Betafuse™ 644	X	X	X	X	X	X		X			X	X	X	X
Betafuse™ 646	X	X	X	X	X	X		X			X	X	X	X
Betafuse™ 647	X	X	X	X	X	X		X			X	X	X	X
Betafuse™ 648	X	X	X	X	X	X		X			X	X	X	X
Betafuse™ 650	X	X	X	X	X	X	X	X	X		X			X
Betafuse™ 652	X	X	X	X	X	X	X	X	X		X			X
Betafuse™ 653	X	X	X	X	X	X	X	X	X		X			X
Betafuse™ 654	X	X	X	X	X	X	X	X	X		X			X
Betafuse™ 656	X	X	X	X	X	X	X	X	X		X		X	X
Betafuse™ 657	X	X	X	X	X	X	X	X	X		X		X	X
Betafuse™ 6575	X	X	X		X	X		X			X			X
Betafuse™ 658	X	X	X		X	X		X			X			X
Betafuse™ 661	X	X		X	X	X				X	X	X	X	X

X = Applicable Use

[1]Pionite® is a registered trademark of Panolam Industries. Pionite is made by Pionite Decorative Surfaces. Pionite is a high-pressure laminate.

TABLE 2—STORAGE AND APPLICATION REQUIREMENTS

PRODUCT NAME	TYPE OF APPLICATOR	SHELF LIFE
Betafuse™ 640	Roll coater	1 year
Betafuse™ 642	Roll coater	1 year
Betafuse™ 643	Roll Coater	1 year
Betafuse™ 644	Bead applicator	1 year
Betafuse™ 646	Bead applicator	1 year
Betafuse™ 647	Bead applicator	1 year
Betafuse™ 648	Bead applicator	6 months
Betafuse™ 650	Roll coater	1 year
Betafuse™ 652	Roll coater	1 year
Betafuse™ 653	Roll coater	1 year
Betafuse™ 654	Bead applicator	1 year
Betafuse™ 656	Bead applicator	1 year
Betafuse™ 657	Bead applicator	1 year
Betafuse™ 6575	Bead applicator	1 year
Betafuse™ 658	Bead applicator	1 year
Betafuse™ 661	Roll Coater	1 year

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23.10—Adhesives

REPORT HOLDER:

DUPONT DE NEMOURS, INC.

EVALUATION SUBJECT:

BETAFUSE™ STRUCTURAL ADHESIVES

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Betafuse™ Structural Adhesives, described in ICC-ES evaluation report ESR-1023, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2019 *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 Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 *California Residential Code*® (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Betafuse™ Structural Adhesives, described in Sections 2.0 through 7.0 of the evaluation report ESR-1023, comply with CBC, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report.

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 Betafuse™ Structural Adhesives, described in Sections 2.0 through 7.0 of the evaluation report ESR-1023, comply with CRC Chapter 3, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued May 2024.