

ICC-ES Evaluation Report

ESR-2728

Reissued October 2024

This report also contains:


- CA Supplement

Subject to renewal October 2025

- FL Supplement

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<p>DIVISION: 08 00 00— OPENINGS</p> <p>Section: 08 84 00— Plastic Glazing</p> <p>DIVISION: 09 00 00— FINISHES</p> <p>Section: 09 00 00— Finishes</p>	<p>REPORT HOLDER: PLASKOLITE, LLC</p>	<p>EVALUATION SUBJECT: TUFFAK® (MODELS GP, SL, SK, SK1, AR, 15, UV, CA, CA-UV, AND CA-AR) AND HYGARD® (MODELS CG375, CG500, CG750, BR750, BR1000, BR1250, MS1250, EX250, EX525, EX1100 AND EX1300) POLYCARBONATE SHEETS</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012, 2009 and 2006 [International Building Code® \(IBC\)](#)

Properties evaluated:

- Light-transmitting plastics
- Interior finish
- Safety glazing (indoor applications only)
- Durability

2.0 USES

TUFFAK® GP, SL, SK, SK1, AR, 15, UV, CA, CA-AR and CA-UV sheets and all Hygard® products comply with the requirements for light-transmitting plastics set forth in IBC Section 2606.4, and have either a CC1 or CC2 classification, as noted in [Tables 1, 2, and 3](#).

TUFFAK® AR sheets with a minimum thickness of 0.125 inch (3.2 mm) comply with the safety glazing requirements of IBC Section 2406.1.2.

TUFFAK® CA, CA-AR and CA-UV sheets with thicknesses ranging between 0.118 to 0.236-inch-thick (3 to 6 mm) for interior wall applications and 0.118 to 0.50-inch-thick (3 to 12.7 mm) for interior ceiling applications comply with the interior finish requirements of IBC Section 803.1.

TUFFAK® GP sheets with thicknesses ranging between 0.030 to 0.060-inch-thick (0.76 to 1.5 mm) for wall and ceiling applications comply with the interior finish requirements of IBC Section 803.1. Select TUFFAK® GP, SL, UV, and SK1 sheets may be used in exterior applications.

TUFFAK® CA-UV sheets with a maximum thickness of 0.375 inch (9.5 mm) and TUFFAK® CA-AR sheets with a thickness of 0.236 inch (6.0 mm) comply with the requirements listed in 2021 and 2018 IBC Section 3105.3 for exterior canopies.

3.0 DESCRIPTION

3.1 TUFFAK® Products:

The TUFFAK® GP, AR, 15, SL, SK, SK1, UV, CA, CA-UV, and CA-AR are monolithic polycarbonate sheets. The sheets are available in a uniform thickness and in a variety of transparent, and translucent opaque colors and patterns.

The TUFFAK® SK and SK1 are also available with one side prismatic and available in transparent-clear or translucent-white.

The TUFFAK® sheets are manufactured from the same polycarbonate material but have different coatings and surface treatments. The TUFFAK® CA, CA-UV and CA-AR contain a Flame Retardant (FR) resin additive. The sheets are available in various lengths, with thicknesses as set forth in [Tables 1, 2 and 4](#).

3.2 Hygard® Products:

The Hygard® EX250 and EX525 are clear monolithic polycarbonate sheets of uniform thickness. The Hygard® CG375, CG500, CG750, BR1000, BR1250, EX1100, and EX1300 are clear laminated polycarbonate sheets. The BR750 and MS1250 are clear laminated polycarbonate sheets with an acrylic core. All Hygard® sheets are manufactured from the same polycarbonate material, and the exterior surface has a proprietary hardcoat. The sheets are available in various lengths, with thicknesses as set forth in [Table 3](#).

4.0 DESIGN AND INSTALLATION

4.1 General:

TUFFAK® and Hygard® products must be limited and installed in applications permitted by the IBC. The prismatic side must be installed facing the interior of the building, as applicable.

4.2 Light-Transmitting Plastics –TUFFAK® GP, SL, SK, SK1, AR, 15, and UV and All Hygard® products:

TUFFAK® GP, SL, SK, SK1, AR, 15, and UV sheets and all Hygard® products have a self-ignition temperature greater than 650°F (343°C) per ASTM D1929; a maximum average smoke density rating less than 75 per ASTM D2843; and a CC1 or CC2 rating per ASTM D635, as noted in [Table 1, 2, or 3](#). Therefore, all products comply with the requirements for light-transmitting plastics per IBC Section 2606.4.

4.3 Interior Finishes – TUFFAK® CA, CA-AR, and GP:

4.3.1 Class A: TUFFAK® CA, CA-AR and CA-UV sheets comply with the requirements listed in IBC Section 803 when installed in accordance with [Table 4](#) of this report and tested in accordance with NFPA 286. Therefore, these sheets comply with the requirements for Class A interior finishes.

TUFFAK® GP sheets with a uniform thickness of 0.030 inch sheets exhibit a flame spread of less than 25 and a smoke developed index of 450 or less when tested in accordance with ASTM E84. Therefore, these sheets comply with the requirements for Class A interior finishes per IBC Section 803.1.

4.3.2 Class B: TUFFAK® GP sheets with a uniform thickness greater than 0.030 inch but less than 0.060 inch thick exhibit a flame spread of less than 75 and a smoke developed index of 450 or less per ASTM E84. Therefore, these sheets comply with the requirements for Class B interior finishes per IBC Section 803.1.

4.4 Safety Glazing – TUFFAK® AR:

The TUFFAK® AR sheets with a minimum thickness of 0.125-inch (3.2 mm) comply with the safety glazing requirements of IBC Section 2406.1.2.

4.5 Exterior Applications – TUFFAK® GP, SL, UV, SK1, and CA-UV:

Application in skylights, exterior walls, and roof sheets is limited to the following TUFFAK® sheets, when specifically recognized in a current ICC-ES report:

- GP sheets with uniform thicknesses from 0.03 to 0.50 inch.
- SL and UV sheets with uniform thicknesses from 0.06 to 0.50 inch.
- SK1 sheets with uniform thicknesses from 0.06 to 0.50 inch.
- SK1 sheets with a prismatic side with thinnest thicknesses from 0.060 to 0.435 inch (overall thickness from 0.125 to 0.50 inch).

5.0 CONDITIONS OF USE:

The TUFFAK[®] and Hygard[®] products described in this report comply with, or are suitable alternatives to what is specified in, those codes indicated in Section 1.0 of this report, subject to the following conditions:

- 5.1 The sheets are manufactured, installed and identified as described in this report, the IBC 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 Except as provided in Section 4.5, end use of the TUFFAK[®] and Hygard[®] products is outside the scope of this report, thereby requiring compliance to the satisfaction of the code official, with requirements of code sections applicable to end use (such as, but not limited to, structural and drop-out performance).

6.0 EVIDENCE SUBMITTED

- 6.1 Manufacturer's descriptive literature.
- 6.2 Reports of tests in accordance with ASTM D2843, ASTM D635, ASTM D1929 and ASTM E84.
- 6.3 Reports of tests in accordance with NFPA 286.
- 6.4 For recognition under the 2021, 2018, 2015 and 2012 IBC, reports of weathering tests (ultraviolet-light tests and comparison tension tests) in accordance with Section 4.1.2 of the [ICC-ES Acceptance Criteria for Plastic Glazed Skylights \(AC16\)](#), dated April 2020 (Editorially revised August 2020), on the products specified in Section 4.5.
- 6.5 For recognition under the 2009 and 2006 IBC, reports of weathering tests (ultraviolet-light tests and comparison tension tests) in accordance with Section A.4.1.2 of the [ICC-ES Acceptance Criteria for Plastic Glazed Skylights \(AC16\)](#), dated April 2011 (Editorially revised August 2013), on the products specified in Section 4.5.
- 6.6 Reports of tests in accordance with ANSI Z97.1 and CPSC 16 CFR1201 on 0.125-inch-thick (3.2 mm) TUFFAK[®] AR polycarbonate sheets.
- 6.7 Quality documentation.

7.0 IDENTIFICATION

- 7.1 Each polycarbonate sheets or bundle of sheets must be identified by a label bearing the manufacturer's name (Plaskolite, LLC), the product name (TUFFAK[®] or Hygard[®] model name), the CC1 or CC2 plastic classification and the evaluation report number (ESR-2728).
- 7.2 The TUFFAK[®] AR polycarbonate sheets with a minimum thickness of 0.125 inch (3.2 mm) used as safety glazing in hazardous locations must be legibly and permanently marked in one corner with: ANSI Z97.1-2014 – Indoor Use Only for the 2021, 2018 and 2015 IBC, ANSI Z97.1-2009 – Indoor Use Only for the 2012 IBC and ANSI Z97.1-2004 – Indoor Use Only for the 2009 and 2006 IBC; the thickness of the sheet; and the manufacturer's mark or designation in accordance with Section 6.0 of ANSI Z97.1-2015, ANSI Z97.1-2009 and 2004.
- 7.3 The report holder's contact information is as follows:

PLASKOLITE, LLC
POST OFFICE BOX 1497
COLUMBUS, OHIO 43216
(413) 528-7811
www.plaskolite.com

TABLE 1—TUFFAK® PROPERTIES

PARAMETER	TUFFAK® MODELS										
	GP		SK	SL	SK1	AR	15	UV	CA	CA-UV	CA-AR
Thickness (inch)	0.030 to <0.060	0.060 to 0.50	0.060 to 0.50	0.060 to 0.50	0.060 to 0.50	0.118 to 0.50	0.118 to 0.50	0.060 to 0.50	0.118 to 0.50	0.118 to 0.375	0.118 to 0.236
Plastic classification (IBC Section 2606.4)	CC2	CC1	CC1	CC1	CC1	CC1	CC1	CC1	CC1	CC1	CC1

For SI: 1 inch = 25.4 mm.

TABLE 2—TUFFAK® PROPERTIES (ONE SIDE PRISMATIC)

PARAMETER	TUFFAK® MODELS	
	SK	SK1
Thinnest Thickness (inch)	0.053 to 0.435	0.053 to 0.435
[Overall Thickness (inch)]	0.118 to 0.50	0.118 to 0.50
Plastic classification (IBC Section 2606.4)	CC1	CC1

For SI: 1 inch = 25.4 mm.

TABLE 3—HYGARD® PROPERTIES

PARAMETER	HYGARD® MODELS										
	CG375	CG500	CG750	BR750	BR1000	BR1250	MS1250	EX250	EX525	EX1100	EX1300
Thickness (inch)	0.375	0.500	0.750	0.750	1.00	1.250	1.250	0.250	0.525	1.10	1.30
Plastic classification (IBC Section 2606.4)	CC1	CC1	CC1	CC2	CC1	CC1	CC2	CC1	CC1	CC1	CC1

For SI: 1 inch = 25.4 mm.

TABLE 4—TUFFAK® CA, CA-UV AND CA-AR INSTALLATION REQUIREMENTS¹

TUFFAK® MODELS	THICKNESS (inch)	INSTALLATION LOCATION	STANDOFF REQUIREMENT (inch)
CA	0.118 to 0.236	Interior wall	0 to 6
	0.118 to 0.5	Interior ceiling	2 to 12
CA-UV	0.118 to 0.375	Exterior canopy	2 to 12
	0.118	Interior ceiling	2
	0.375 to 0.5		12
CA-AR	0.118	Interior wall	0 to 6
	0.236		6
	0.236	Exterior canopy	6

For SI: 1 inch = 25.4 mm.

¹ Based on room corner fire testing in accordance with NFPA 286, when the panel is installed over 5/8-inch Type X gypsum board.

DIVISION: 08 00 00—OPENINGS

Section: 08 84 00—Plastic Glazing

DIVISION: 09 00 00—FINISHES

Section: 09 00 00—Finishes

REPORT HOLDER:

PLASKOLITE, LLC

EVALUATION SUBJECT:

TUFFAK® (MODELS GP, SL, SK, SK1, AR, 15, UV, CA, CA-UV, AND CA-AR) AND HYGARD® (MODELS CG375, CG500, CG750, BR750, BR1000, BR1250, MS1250, EX250, EX525, EX1100 AND EX1300) POLYCARBONATE SHEETS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Tuffak® and Hygard® products, described in ICC-ES evaluation report ESR-2728, have also been evaluated for compliance with the code noted below.

Applicable code edition:

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

2.0 CONCLUSIONS

2.1 CBC:

The Tuffak® and Hygard®, described in Sections 2.0 through 7.0 of the evaluation report ESR-2728, comply with CBC Chapters 8, 24 and 26, 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 8, 24 and 26, 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

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

DIVISION: 08 00 00—OPENINGS
Section: 08 84 00—Plastic Glazing

DIVISION: 09 00 00—FINISHES
Section: 09 00 00—Finishes

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PLASKOLITE, LLC

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TUFFAK® (MODELS GP, SL, SK, SK1, AR, 15, UV, CA, CA-UV, AND CA-AR) AND HYGARD® (MODELS CG375, CG500, CG750, BR750, BR1000, BR1250, MS1250, EX250, EX525, EX1100 AND EX1300) POLYCARBONATE SHEETS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the TUFFAK and Hygard products, described in ICC-ES evaluation report ESR-2728, have also been evaluated for compliance with the code noted below.

Applicable code edition:

2023 *Florida Building Code—Building*

2.0 CONCLUSIONS

The TUFFAK and Hygard products, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-2728, comply with the 2023 *Florida Building Code—Building*. The design requirements must be determined in accordance with the *Florida Building Code—Building*. The installation requirements noted in ICC-ES evaluation report ESR-2728 for the 2021 *International Building Code*® meet the requirements of the *Florida Building Code—Building*.

Use of the TUFFAK and Hygard products for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* has not been evaluated and is outside the scope of this evaluation 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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