
ASTM E 648 Critical Radiant Flux of "IMPCTBRD2500"

A Report To:	Protec International Limited Construction House Adlington Estate Adlington, SK10 4NL United Kingdom
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Submitted by:	Element Fire Testing
Report No.	20-002-398(A) 3 Pages
Date:	September 2, 2020

1.0 ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the International Accreditation Service

2.0 SPECIFICATIONS OF ORDER

Determine critical radiant flux in accordance with ASTM E 648, as per Element Quotation No. 20-002-146594 dated February 6, 2020.

3.0 SAMPLE IDENTIFICATION (Element sample identification number 20-002-S0398-1)

Reinforced plastic sheeting material, described as, "Impact Board FR", and identified as: "IMPCTBRD2500"

4.0 SUMMARY OF TEST PROCEDURE

This procedure is intended to measure the critical radiant flux of horizontally-mounted floor covering systems exposed to a flaming ignition source in a graded radiant heat energy environment, in a test chamber.

The radiant panel is calibrated to yield a heat flux gradient ranging from 1.1 W/cm² at the near end of the specimen to 0.1 W/cm² at the far end of the specimen.

The test specimen (250 x 1070 mm) is mounted in the test frame as specified by its end use (e.g. glued directly to cement board, clamped to cement board or clamped over an undercushion).

The system is admitted into the calibrated test chamber, and after a 5 minute pre-heat, is ignited by a pilot flame. The distance at which extinguishment takes place is measured, correlated with the heat flux at that point, and is reported as the critical radiant flux (CRF). This value represents the minimum radiant energy required to sustain propagation of flaming combustion along the surface of the material.

The higher the critical radiant flux, the more resistant the material under test is to flame propagation.

5.0 TYPICAL PERFORMANCE REQUIREMENTS

Specifier	Minimum CRF (W/cm ²)	Designated End-Use
General Services Administration (GSA)	0.45	Institutional
	0.22	Commercial
Health, Education & Welfare (USA)	0.45	Institutional
	0.22	Commercial
New York & New Jersey Port Authority	0.50	Corridors, exitways
	0.40	General areas
NFPA 130 (2017 Edition)	0.50	Rail Cars

Many Building Codes and/or authorities having jurisdiction may also refer to the following categories:

Class I	Class II
0.45 W/cm ² or greater	0.22 W/cm ² to 0.44 W/cm ²

6.0 SAMPLE PREPARATION

The sheet plastic material was tested in the lay-down mode (no substrate or adhesive). Prior to testing, the sample was conditioned at a temperature of $23 \pm 3^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

7.0 SUMMARY OF TEST RESULTS

SAMPLE: "IMPCTBRD2500"

Average Critical Radiant Flux (W/cm^2)	0.50
Standard Deviation	0.019
Coefficient of Variation	3.8

8.0 INDIVIDUAL TEST RESULTS

ASTM E 648-19

Critical Radiant Flux of Floor-Covering Systems
Using a Radiant Heat Energy Source

	Test 1	Test 2	Test 3
Distance Burned (mm)	424	401	416
Critical Radiant Flux (W/cm^2)	0.48	0.52	0.49

9.0 OBSERVATIONS

Heat distortion was observed during the pre-heat period. Melting behavior, as well as a slow but steady flame front progression was observed after the test burner flame was removed.

10.0 CONCLUSIONS

With an average critical radiant flux of $0.50 \text{ W}/\text{cm}^2$, the panel material identified in this report qualifies for use in commercial and institutional applications, as governed by the General Services Administration and Health, Education and Welfare in the United States as well as corridors, exitways and general areas, as governed by the New York and New Jersey Port Authority. The plastic also meets the Federal Railroad Administration requirements for rail cars. The plastic would also be considered a Class I material by many authorities having jurisdiction.



Mel Garces,
Senior Technologist.



Ian Smith,
Technical Manager.

Note: This report and service are covered under Element Materials Technology Canada Inc. Standard Terms and Conditions of Contract which may be found on our company's website at www.element.com, or by calling 1-866-263-9268.



CERTIFICATE OF APPROVAL

No CF 5955

This is to certify that, in accordance with
TS00 General Requirements for Certification of Fire Protection Products
The undermentioned products of

PROTEC INTERNATIONAL LTD
Construction House
Adlington Estate
Adlington,
Cheshire
SK10 4NL
TEL: 01625 855666

Have been assessed against the requirements of the Technical Schedule(s)
denoted below and are approved for use subject to the conditions
appended hereto:

CERTIFIED PRODUCT

Impact Board
- 5mm to 6mm
- 1500g/m² to 2500g/m²

TECHNICAL SCHEDULE

**TS 63 Reaction To Fire
Requirements, Materials Used
As Temporary Protective
Coverings**

Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited

Paul Duggan
Certification Manager

Issued: 20th February 2021
Revised: 16th January 2023
Audit Test Frequency: Every 2 years
Valid to: 19th February 2026





CERTIFICATE No CF5955

PROTEC INTERNATIONAL LTD

This certification is provided to the client for their own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Protec International Limited's Temporary Protective Covering

"IMPACT Board – 5mm / 1500g/m² to 6mm / 2500g/m²

1. This approval relates to the use of the above temporary protective covering. The product has shown a fire performance which should ensure that when the temporary protective covering is in use on floors, walls and furnishings during building construction or refurbishment, it should not significantly add to the fire risk.
2. This approval does not cover other features required of protective coverings such as resistance to abrasion or liquid absorption.
3. The approval does not relate to the durability of fire performance if the protective covering is used repeatedly.
4. The temporary protective covering is approved on the basis of:
 - i) Initial type testing
 - ii) Audit testing at the frequency specified in TS63
 - iii) Inspection and surveillance of factory production control
5. This approval is applicable to the following range(s) of temporary protective coverings:

"IMPACT Board – 5mm / 1500g/m² to 6mm / 2500g/m², a multi-walled polypropylene protection board.
6. The temporary protective covering shall be fixed in accordance with manufacturers instructions.
7. Markings to the CERTIFIRE design referencing Protec International Limited's "IMPACT BOARD". CERTIFIRE and CERTIFIRE Ref. No. CF5955 shall be affixed to the protective covering in the prescribed position.
8. This approval relates to ongoing production. The product and/or its immediate packaging is identified with the manufacturer's name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application when appropriate.

Signed
E/408

Issued: 20th February 2021
Revised: 16th January 2023
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CERTIFICATE No CF5955 PROTEC INTERNATIONAL LTD

Approved Manufacturing Location

E/408

Certification evidence:

- FPC audit conducted on the 13th January 2021 - WF 437048
- Material was sampled for testing on the 30th October 2020 - WF 434491

Test Data

5mm / 1500g/m² product

- BS 476: Part 12 – Source C, small flame test - WF 434995
- BS 476: Part 12 – Source D, medium flame test - WF 434996
- ISO 4589-2 Oxygen Index - WF 434997
- TS 63, Smoke and Toxic Fume Emissions Test - WF 434998

6mm / 2500g/m² product

- BS 476: Part 12 – Source C, small flame test - WF 434999
- BS 476: Part 12 – Source D, medium flame test - WF 435000
- ISO 4589-2 Oxygen Index - WF 435002
- TS 63, Smoke and Toxic Fume Emissions Test - WF 435001

Product information

Generic type	Polypropylene sheet
Product reference	"Impact Board"
Detailed description	Twinwall polypropylene sheet with circular flutes
Name of manufacturer	Polycorr
Thickness	5 to 6mm (stated by sponsor)
Weight per unit area	1500 to 2500g/m ² (stated by sponsor)
Colour	Translucent
Flame retardant details	See Note 1 below
Brief description of manufacturing process	Hollow profile extrusion

Note 1. The sponsor was unwilling to provide this information.

Signed
E/408



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