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CAN-BEST
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TEST REPORT

CAN/CGSB-12.1-M90
IMPACT RESISTANCE OF TEMPERED GLASS

Report No. 664-5547

Report Date: June 10, 2019

Prepared for:
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Respectfully submitted by:

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- This report covers tests carried out on one specimen having specific dimensions. Product performance is affected by variations in its dimensions, assembly details and installation method. The reader is advised to ensure product conformity with all the details of the test sample described in "Sample Description" and annexed drawings of this report.
- This report does not constitute certification of the test product. The reported test results refer only to the specimen tested. No representation is made that other samples of similar design will feature like performance.
- This report was prepared for the consideration of the addressee only. It shall not be used by any other party without the written consent of CAN-BEST.
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1. INTRODUCTION

Canadian Building Envelope Science and Technology (CAN-BEST) was retained by **Anatoli Glass and Mirror Inc.** to carry out impact testing of transparent, float tempered glass in accordance with Section 7.2.3.4 of CAN/CGSB-12.1-M90 Standard *"Tempered or Laminated Safety Glass"*.

Various glass thicknesses ranging from 6 mm to 12 mm were considered for testing, and characterized in accordance with the referenced standard as follows:

Type: **2** - Tempered
Class: **B** – Float Glass
Category: **II** – Impact Drop Height 1220 mm (48 in) corresponding to 540 Joules (J) kinetic energy

2. DISCLAIMERS

This report covers tests carried out on a specific number of glass specimens having specific properties and under certain conditions, specifically aging under service environment, glass loading history and surface and edge finishes. Consequently, the reader is advised to ensure product suitability for the intended application.

Furthermore, no conclusions regarding field performance of the tested glass specimens system, such as glass stability and spontaneous fracturing, may be drawn from the reported results.

3. TEST PROCEDURE

A total of 12 specimens comprising three sets of four specimens for each glass thickness were received at CAN-BEST laboratory on April 22, 2019. Each specimen measured 865 mm x 1930 mm (34 in x 76 in).

Upon receipt of the specimens, they were conditioned for a minimum of four hours at the laboratory's ambient temperature prior testing. Testing was carried out on June 7, 2019.

A total of four glass specimens were tested for each of 6 mm, 10 mm, and 12 mm nominal glass thicknesses.

For impact testing, each specimen was mounted vertically, edge clamped in a standard test frame, and impacted within 50 mm of the geometrical centre of the specimen. The standard impactor is described in Section 7.2.3.1b of the referenced Standard as a leather punching bag filled with #7½ lead shots and having weight of 45.4 kg (100 lb).

4. PERFORMANCE REQUIREMENTS

When impacted at 540 J, or a drop height of 1220 mm (48 in) for a 45.4 Kg (100 lb) impactor, all four test specimens shall meet one of the following requirements:

1. The specimen shall remain intact, No Breakage (NB), after one 1220 mm drop test and the sample will have the Center Punch Fragmentation test performed as described in Section 10.2 and must meet the requirements as described in Section 10.2.4.
2. The ten largest fragments, free of cracks selected after 5 min. of test, shall not exceed the equivalent mass of 6500 mm^2 (10 in^2) of the unbroken test specimen, calculated in grams as 16.34 x glass thickness (mm).

5. TEST RESULTS

As shown in Table (1), all glass specimens have passed the Standard's performance requirements by either not breaking or by meeting the maximum allowable mass requirement for the corresponding thickness.

Table (1): Impact Test Results and Observations

Nominal Glass Thickness (mm)	Actual Thickness (mm)	Maximum allowable mass of the 10 largest broken pieces that are equivalent to 6500 mm^2 (g)	Actual mass of 10 largest broken pieces (g) *NB: No Breakage*				Rating
			1	2	3	4	
6	5.65	92.32	15.72	17.34	18.50	18.22	PASS
10	9.19	150.17	NB 50.58	58.25	NB 58.20	NB 56.07	PASS
12	12.28	200.66	NB 64.53	NB 66.67	NB 63.36	NB 70.18	PASS

6. CONCLUSION

Based on the test results, the three nominal thicknesses of 6 mm, 10 mm and 12 mm of transparent, float, tempered test samples passed the impact tests in accordance with the performance criteria outlined in CAN/CGSB-12.1-M90.

7. MARKING

Having successfully met the requirements of the CAN/CGSB-12.1-M90 Standard, like products of the same nominal thickness produced in the same manner as the tested samples referred to in this report may be permanently marked with the manufacturers name and or trademarks and the characters "CAN/CGSB-12.1-M2" in accordance with section 5.6 in CAN/CGSB-12.1-M90.

Report History

Revision No.	*Change and Reason*	*Date*	*Approved by*
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