

Automotive Manufacturers
Equipment Compliance Agency, Inc.

P.O. Box 76960 • National Capitol Station • Washington, D.C. 20013-6960
Telephone: 202-898-0145 • FAX: 202-898-0148 • www.ameca.org



Application for Compliance Notification

1. **Model name/number of device:** DOT- 786 AS- 4 M- 250PM

2. **Description of device:**

5mm nominal thickness clear rigid plastic (PMMA) without shade bands, without obscuration bands.

3. **Manufactured by:** BSG AUTO GLASS CO., LTD.

Address: San Zao Hi-tech Park, Zhuhai

City/State: Guangdong Province

Country: P. R. China

ZIP/Postal Code: 519040

4. **Make of vehicle and model year on which device will be used (when applicable):**

Motor vehicle

5. **Laboratory test report submitted (report must cover actual item/sizes submitted):**

Name of laboratory: China National Safety Glass & Quartz Glass Test Center

Report no: 04874

Report date: Jun. 30, 2022

6. **Type of application**

\$350.00 (Y) Initial Notification

\$350.00 () Reconfirmation; indicate previous notification no.:

\$350.00 () First item of a Family Series (the Family Series designation applies only to certain device categories; please see the AMECA Manufacturers Guide for more information)

\$75.00 () Subsequent items of a Family Series; indicate notification no. of first item:

\$75.00 () Brand registration (brake fluid and antifreeze/engine coolants only)

\$75.00 () Revision; indicate notification no.

7. **Applicant:** BSG AUTO GLASS CO., LTD.

Address: San Zao Hi-tech Park, Zhuhai

City/State: Guangdong Province

ZIP/Postal Code: 519040

Country: P. R. China

Contact Personal: Li Heng

Telephone: +86-13676098029

Fax: /

Email: heng.li@bsgautoglass.net

Company Website: /

8. **Mail notification to (please specify when other than Applicant):**

Wang Rui, Glass Institute, China Building Materials Academy,

Guanzhuang, Chaoyang District, Beijing 100024,

P. R. China

NOTE: Emailed application forms should be sent to: submissions@ameca.org

Air express or overnight packages should be sent to: AMECA

1101 15th Street NW, Suit 607
Washington, D.C. 20005

TEST REPORT

China National Safety Glass & Quartz Glass Test Center
(accredited by AMECA, U.S.A.)

Address: **China Building Materials Academy**
Guangzhuang, Beijing, 100024
P. R. China
Phone: **(010)51167357**
Fax: **(010)65761715 or 65711591**

Order No: 2—2537

Date: Jun. 30, 2022

Report No: 04874

**5MM NOMINAL THICKNESS CLEAR RIGID PLASTIC (PMMA) WITHOUT SHADE BANDS,
WITHOUT OBSCURATION BANDS.**

DOT- 786

AS- 4

M- 250PM

RENDERED TO: **BSG AUTO GLASS CO., LTD.**

Introduction

This report contains the results of examination and test of the above automotive safety glass to demonstrate compliance with the applicable requirements of the Federal Motor Vehicle Safety Standard 205 of the National Motor Vehicles Safety Act of 1966.

Summary

The following is a summary of the results of tests performed in accordance with ANSI Standard Z26.1-1996.

<u>TEST</u>	<u>REMARKS</u>
2- Luminous transmittance	Complies
10-Impact, Dart	Complies
13-Impact, Ball	Complies
16-Weathering test	Complies
17-Abrasion resistance	Complies
19- Chemical resistance (Nonstressed)	Complies
20- Chemical resistance (Stressed)	Complies
21- Dimensional stability	Complies
24- Flammability	Complies

Authorization

LETTER DATED Nov. 09, 2021

Material Submitted

5mm nominal thickness clear rigid plastic (PMMA) without shade bands, without obscuration bands.

DOT- 786

M- 250PM

AS- 4

Specimens Submitted

Seventeen	(17) - 12×12 – inches (305×305mm) flat
Six	(6) - 4×4 – inches (102×102mm) flat
Eighteen	(18) - 7×1– inches (178×25mm) flat
Two	(2) - 6×6 – inches (152×152mm) flat
Three	(3) - 6×0.5 – inches (152×13mm) flat

Approval Markings

BSG

DOT- 786

M- 250PM

AS- 4

Checked by: **Wang Rui**



Test No. 2 – Luminous Transmittance

Three 12×12 – inch flat specimens were tested for regular (parallel) luminous transmittance at normal incidence using ICI Illuminant A.

Results-

Percent Transmittance

Specimen No.	Light transmittance
1	92.3
2	92.5
3	92.3

Specified – Safety glazing materials or multiple glazed units intended for use at levels requisite for driving visibility in the motor vehicle shall show regular (parallel) luminous transmittance of not less than 70% of the light , at normal incidence.

Test No.10 – Impact, Dart

Five 12×12 – inch flat specimens were separated and kept at a temperature of 70°F to 85°F (21°C to 29°C) for 4 hours immediately preceding the test. The specimens were supported horizontally in steel frame made in accordance with Fig. 1 of this standard. A 196g to 201g (6.9 oz to 7.1 oz) steel dart, made in accordance with Fig.3 of the Standard, was dropped from 5.07 m, once on each specimen, freely and from rest, the nose striking within 1 inch (25mm) of its center.

Results – None of the specimens broke.

Specified – The dart may crack or puncture the specimen, but not more than one specimen shall break into separate large pieces.

Test No.13 – Impact, Ball

Twelve 12×12 – inch flat specimens were separated and kept at a temperature of 70°F to 85°F (21°C to 29°C) for 4 hours immediately preceding the test. The specimens were supported horizontally in a steel frame made in accordance with Fig. 1 of the Standard. A 224g to 230g (0.5-lb ± 0.1-oz) solid smooth, steel sphere was dropped from a height of 3.93 m, once, freely and from rest, striking the specimen within 1 inch (25mm) of its center.

Checked by: **Wang Rui**



Test and Test Result (Cont'd)

Results – One specimen broke into separate pieces.

Specified – The impact may produce cracks in the plastic, not more than two of the specimens shall break into separate large pieces, nor shall more than two of the remaining specimens develop a fracture that can be described as a hole through the body of the specimen.

Test No. 16 - Weathering

Three 4×4 – inch flat specimens were tested for regular (parallel) luminous transmittance at normal incidence using ICI Illuminant A and the percentages of light scattered . These specimens then were exposed with their exterior surfaces facing the light source for a total ultraviolet irradiance of 306MJ/m² according to 5.16.2.2 in this standard. After exposure, the specimens were conditioned for 48 hours at 71°F to 75°F (22°C to 24°C) and 50% ± 2% realative humidity. The irradiated specimens were tested for regula (parallel) luminous transmittance and percentages of light scattered again.

Results-**Percent Transmittance**

Specimen No.	Light transmittance before exposure	Light transmittance after exposure	Net light transmittance after	Status after exposure
1	92.3	91.7	0.6	No noticeable defectes.
2	92.5	91.5	1.0	No noticeable defectes.
3	92.3	91.3	1.0	No noticeable defectes.

Percentages of light scattered after exposure

Specimen No.	Haze of the sample	Haze of track after 100 cycles	Net haze after 100 cycles	Arithmetic mean (100 cycles)
1	0.05	1.71	1.66	
2	0.07	1.75	1.68	1.67
3	0.05	1.72	1.67	

Checked by: **Wang Rui**



Test and Test Result (Cont'd)

Specified –The regular (parallel) luminous transmittance of the exposed specimens shall be reduced no more than 5%. Any increase in regular (parallel) luminous transmittance is acceptable. Some discoloration may develop, but defects other than this discoloration shall not develop. No bubbles or other noticeable decomposition shall develop in the irradiated specimens.

The arithmetic mean of the percentages of light scattered by the three specimens as a result of abrasion shall not exceed 15.0%. For glass-plastic specimens, the arithmetic mean of the percentages of light scattered, on the plastic surface (whether coated or uncoated) facing inward, by the three specimens as a result of abrasion shall not exceed 4%.

Test No. 17 - Abrasion Resistance

Three 4×4 – inch flat specimens were tested. The specimens were conditioned for 48 hours at 71°F to 75°F (22°C to 24°C) and 50% ± 2% relative humidity prior to the test. Then subjected to a test with the Taber Abraser loaded to 500 grams on each wheel operated under standardized conditions for 100 cycles. The light scattered by the abraded track was measured. Remount the specimen on the specimen holder so that it rotates substantially in a plane and is subjected to abrasion for an additional 400 cycles on the same track already abraded for 100 cycles. The light scattered by the abraded track was measured again.

Results-**Percentages of light scattered after abrasion**

Specimen No.	Haze of the sample	Haze of track after 100 cycles	Net haze after 100 cycles	Arithmetic mean (100 cycles)
1	0.04	5.71	5.67	
2	0.04	5.60	5.56	5.71
3	0.05	5.96	5.91	

Specified –The arithmetic mean of the percentages of light scattered by the three specimens as a result of abrasion shall not exceed 15.0%. For glass-plastic specimens, the arithmetic mean of the percentages of light scattered, on the plastic surface (whether coated or uncoated) facing inward, by the three specimens as a result of abrasion shall not exceed 4%.

Checked by: **Wang Rui**

Test and Test Result (Cont'd)**Test No.19 – Chemical Resistance (Nonstressed)**

Two 1×7 – inch flat specimens, were tested with each of chemicals drescribed in 5.19.1 of the standard. Using a new specimen for each test with each chemical.

Specimens were kept at 71°F to 75°F (22°C to 24°C) and 50% ± 2% relative humidity for 48 hours prior to testing. The test was conducted in an atmosphere maintained at 71°F to 75°F (22°C to 24°C) and 50% ± 2% relative humidity. The specimens were completely immersed in the fluid being tested, held for 1 minute, removed , immediately wiped with absorbent cotton and examined.

Result – No tackiness, craing, nor apparent loss of transparency is found in both specimens.

Specified – There shall be no tackiness, crazing, or apparent loss of transparency in the specimens.

Test No.20 – Chemical Resistance (Stressed)

Two 1×7 – inch flat specimens, were tested with each of chemicals prescribed in 5.20.1 of the standard. Using a new specimen for each test with each chemical.

The specimens were set up as a Class I level with the fulcrum 51mm (2 in) from the stationary end and a load suspended at a 102mm (4 in) overhang from the fulcrum. The load is 1033.2 gram. While the specimen is stressed, one of the chemicals prescribed in 5.20.1 of the standard was applied to the top surface of specimen above the fulcrum point. The chemical was applied with a soft, 13mm wide brush. Ten individual strokes at one second intervals across the width of the specimen were applied. One minute after the last stroke the specimen was wiped dry with clean absorbent cotton and immediately examined.

Result – No tackiness, craing, nor apparent loss of transparency is found in both specimens.

Specified – There shall be no tackiness, crazing, or apparent loss of transparency in the specimens.

Test No.21 – Dimensional Stability

Two 6×6 – inch flat specimens, were kept at 71°F to 75°F (22°C to 24°C) and 50% ± 2% relative humidity for 48 hours prior to testing. Conditioned specimens were measured for initial "off-flatness" by determing the greatest distance from a straight edge connecting diagonally opposite corners to the near surface of the plastic.

Checked by: **Wang Rui**



Test and Test Result (Cont'd)

Specimens were placed on a plane glass in the same orientation in which they were conditioned, and exposed for 24 hours at 71°C (160°F) and 70% to 73% relative humidity. Following this the specimen were immediately transferred to a container at 71°F to 75°F (22°C to 24°C) and 70% to 75% relative humidity for 2 hours. Then the specimens were removed to 71°F to 75°F (22°C to 24°C) and 50% ± 2% relative humidity atmosphere, wiped dry, and immediately remeasured for the warpage by determining the greatest distance from a straight edge connecting diagonally opposite corners to the near surface of the plastic.

Results-

Specimen No.	Initial warpage/mm		Final warpage/mm		Maximum warpage change/mm Initial -Final
	Diagonal 1	Diagonal 2	Diagonal 1	Diagonal 2	
1	0	0	0.10	0	0.10
2	0	0	0.10	0.13	0.13

Specified – The maximum warpage shown by any of the specimens shall not exceed 1.27mm (0.050 in).

Test No.24 – Flammability

Three 6×0.5 – inch flat specimens marked by scribing two lines 25mm and 102mm from one end were tested. The specimen was clamped in a support, at the end farthest from the 25mm mark, with its inboard surface facing downward and with its longitudinal axis horizontal and its transverse axis inclined at 45 degrees to the horizontal. A bunsen burner with a flame 13mm in height was placed under the free end of the specimen and adjusted so that the flame tip is just in contact with the specimen. At the end of 30 seconds the flame was removed and the specimen allowed to burn. The safety glazing plastic did not continue to burn after the first ignition, the burner was placed under the free end for a second period of 30 seconds immediately following the extinction of the flame.

Results- All specimens are non-sustaining.

Specified – The horizontal burning rate shall not exceed 1.48mm/s. If the specimen does not continue burning to the 102mm mark after the second ignition, the specimen shall be reported as non-sustaining.

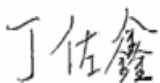
Report Approved by: Wang Rui



Report Prepared by: Zhao Wenjing



Checked by: Ding Zuoxin



THIS IS THE END OF REPORT.