MPA NRW
Materialprüfungsamt Nordrhein-Westfalen
PRÜFEN · ÜBERWACHEN · ZERTIFIZIEREN
Marsbruchstraße 186 · 44287 Dortmund · Postfach: 44285 Dortmund · Telefon (0231) 4502-0 · Telefax (0231) 45 85 49 · E-Mail: info@mpanrw.de

Report No. 41 0002768

3rd issue

Rendered to

General Electric Plastic bv

4600 AC Bergen op Zoom
The Netherlands

Tests of clear safety plastics ("Polycarbonate "LEXAN® MARGARD® MR5E") with a mar-resistance coating ("AS4000" from GE Bayer Silicones") on both sides in thicknesses of 5 mm to 6 mm.

Markings of Test Samples

Thickness 5 mm	Thickness 6 mm
LEXAN®	LEXAN®
DOT94 AS4 M197-C	DOT94 AS4 M236-C

The test certificate extends over 6 pages.

Introduction

This report contains the results of examination and test of the above automotive safety glazing materials to demonstrate compliance with the applicable requirements of the American National Standard for Safety Glazing Materials for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways (ANSI/SAE Z26.1-1996).

Summary

The following is a summary of the results of tests which were performed in accordance with the FMVSS 205 (ref. standard ANSI/SAE Z26.1-1996).

Test No.	T e s t	Remarks
2	Luminous transmittance	complies
10	Impact, Dart	complies
13	Impact, Ball	complies
16	Weathering	complies
17	Abrasion resistance	complies
19	Chemical resistance	complies
20	Chemical Resistance	complies
21	Dimensional stability	complies
24	Flammability	complies

Authorization

Letter from General Electric Plastics bv, 4600 AC Bergen op Zoom, The Netherlands

dated September 21, 2004.

Material Submitted

Seventeen	305 mm x 305 mm,
three	102 mm x 102 mm,
twenty	25 mm x 178 mm,
three	13 mm x 152 mm

flat specimens of the mentioned material in thicknesses of 5 mm and 6 mm

and two 152 mm x 152 mm x 5.90 mm flat specimens of the mentioned material.

These samples were received May 13, 2004.

Tests and Results of Tests

Test No. 2 - Luminous Transmittance

Three 102 mm x 102 mm flat specimens of each thickness were tested according to the above mentioned Safety Code.

Results

Specimen	Percent Luminous Transmittance
Thickness 5 mm	
1	90.1
2	90.1
3	90.1
Thickness 6 mm	
1	90.1
2	90.1
3	90.1

The regular (parallel) luminous transmittance was not less than 70 %.

Test No. 10 - Impact, Dart

Five 305 mm x 305 mm flat specimens of each thickness were tested according to the above mentioned Safety Code.

Results

No specimen in the thickness 5 mm and no specimen in the thickness 6 mm broke into separate large pieces.

Test No. 13 - Impact, Ball

Twelve 305 mm x 305 mm flat specimens of each thickness were tested according to the above mentioned Safety Code.

Results

No specimen in the thickness 5 mm and no specimen in the thickness 6 mm broke into separate large pieces.
No specimen in the thickness 5 mm and no specimen in the thickness 6 mm developed a fracture that could be described as a hole through the body of the specimen.

Test No. 16 - Weathering

Three 102 mm x 102 mm flat specimens of each thickness were tested according to the above mentioned Safety Code.

Results:

Specimen	Percent Luminous Transmittance	
	before weathering	after weathering
Thickness 5 mm		
1	90.1	90.8
2	90.1	90.7
3	90.1	90.7
Thickness 6 mm		
1	90.1	90.7
2	90.1	90.6
3	90.1	90.7

The regular (parallel) luminous transmittance of the exposed specimens was reduced no more than 5 %. The regular (parallel) luminous transmittance before and after exposure was not less than 70 %.
No defects other than discoloration developed.

Test No. 17 - Abrasion Resistance

Those three 102 mm x 102 mm flat specimens (Test No. 16) of each thickness exposed in the Weathering Test (Test No. 16) were tested according to the above mentioned Safety Code.

Results:

Specimen No.	Percent			
	Haze of Track	Haze of Plastic	Net Haze	Arithmetic Mean
Thickness 5 mm				
1	2.4	0.2	2.2	
2	2.8	0.1	2.7	2.2
3	2.1	0.3	1.8	
Thickness 6 mm				
1	5.5	0.4	5.1	
2	2.1	0.3	1.8	3.0
3	2.4	0.2	2.2	

The arithmetic mean of the percentages of light scattered by the three specimens of each thickness as a result of abrasion did not exceed 15 %.

Test No. 19 - Chemical Resistance (Nonstressed)

Ten 25 mm x 178 mm flat specimens of each thickness were tested according to the above mentioned Safety Code.

Results

Test Chemicals	Remarks
Thickness 5 mm	
1 % solution of a nonabrasive soap Kerosene Alcohol Motor car gasoline Commercial windshield cleaner	No tackiness, crazing or apparent loss of transparency in the samples
Thickness 6 mm	
1 % solution of a nonabrasive soap Kerosene Alcohol Motor car gasoline Commercial windshield cleaner	No tackiness, crazing or apparent loss of transparency in the samples

Test No. 20 - Chemical Resistance (Stressed)

Ten 25 mm x 178 mm flat specimens of each thickness were tested according to the above mentioned Safety Code.

Results

Test Chemicals	Remarks
Thickness 5 mm	
1 % solution of a nonabrasive soap Kerosene Alcohol Motor car gasoline Commercial windshield cleaner	No tackiness, crazing or apparent loss of transparency in the samples
Thickness 6 mm	
1 % solution of a nonabrasive soap Kerosene Alcohol Motor car gasoline Commercial windshield cleaner	No tackiness, crazing or apparent loss of transparency in the samples

Test No. 21 - Dimensional Stability

Two 152 mm x 152 mm x 5.90 mm flat specimens were tested according to the above mentioned Safety Code.

Results

The maximum warpage of the specimens did not exceed 1.27 mm.

Test No. 24 - Flammability

Three 152 mm x 13 mm flat specimens of each thickness were tested according to the above mentioned Safety Code.

Results

Specimen No.	Burning rate mm/s
Thickness 5 mm	
1 2 3	All specimens non-sustaining
Thickness 6 mm	
1 2 3	All specimens non-sustaining

The horizontal burning rate did not exceed 1.48 mm/s.

Dortmund, September 29, 2004
Report approved by

Dipl.-Ing. Biller