SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 110(INDICANT)
TIRES SELECTION AND RIMS

GENERAL MOTORS CORPORATION
2003 CHEVROLET CAVALIER PASSENGER CAR
NHTSA NO. C30114

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

SEPTEMBER 16, 2003
FINAL REPORT

PREPARED FOR
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 5111 (NVS-220)
WASHINGTON, D.C. 20590
This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: Della Minard
Approved By: MM. P. Bl.
Approval Date: 09/16/03

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: John T. m
Acceptance Date: 9/29/03
Final Report of FMVSS 110 (Indicant) Test of 2003 CHEVROLET CAVALIER PASSENGER CAR
NHTSA No. C30114

Performing Organization Name and Address
General Testing Laboratories, Inc.
1623 Leedstown Road
Colonial Beach, Va 22443

Sponsoring Agency Name and Address
U.S. Department of Transportation
Safety Enforcement
Office of Vehicle Safety Compliance (NVS-220)
400 7th Street, S.W., Room 6111
Washington, DC 20590

Abstract
This test was conducted on the subject, 2003 Chevrolet Cavalier passenger car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-110-02 (partial), to gather data relating to the normal load requirements specified in FMVSS 110. NHTSA’s Office of Safety Performance Standards requested this data to support the agency’s TREAD tire rulemaking efforts.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Test Procedure and Summary of Results</td>
</tr>
<tr>
<td>3</td>
<td>Test Data</td>
</tr>
<tr>
<td>4</td>
<td>Test Equipment List</td>
</tr>
<tr>
<td>5</td>
<td>Photographs</td>
</tr>
<tr>
<td>5.1</td>
<td>¾ Frontal View of Vehicle</td>
</tr>
<tr>
<td>5.2</td>
<td>Vehicle’s Certification Label</td>
</tr>
<tr>
<td>5.3</td>
<td>Vehicle’s Tire Information Label</td>
</tr>
<tr>
<td>5.4</td>
<td>Vehicle’s Monroney Label Part 1</td>
</tr>
<tr>
<td>5.5</td>
<td>Vehicle’s Monroney Label Part 2</td>
</tr>
<tr>
<td>5.6</td>
<td>Vehicle’s Monroney Label Part 3</td>
</tr>
<tr>
<td>5.7</td>
<td>Tire Showing Brand</td>
</tr>
<tr>
<td>5.8</td>
<td>Tire Showing Model</td>
</tr>
<tr>
<td>5.9</td>
<td>Tire Showing Size, Load Index and Speed Symbol</td>
</tr>
<tr>
<td>5.10</td>
<td>Tire Showing Max Load Rating</td>
</tr>
<tr>
<td>5.11</td>
<td>Tire Showing Max Inflation Pressure</td>
</tr>
<tr>
<td>5.12</td>
<td>Vehicle Ballasted to Simulate Normal Load Condition</td>
</tr>
</tbody>
</table>

APPENDIX – Normal Load Occupation Distribution
SECTION 1

INTRODUCTION

1.0 PURPOSE OF INDICANT TEST

A 2003 Chevrolet Cavalier passenger car was subjected to a FMVSS No. 110 (Indicant) test intended to gather data relating to the normal load requirements specified in FMVSS 110. NHTSA's Office of Safety Performance Standards requested this data to support the agency's TREAD tire rulemaking efforts.

1.1 TEST VEHICLE

The test vehicle was a 2003 Chevrolet Cavalier passenger car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1G1JH12F237299001

B. NHTSA No.: C30114

C. Manufacturer: GENERAL MOTORS CORPORATION

D. Manufacture Date: 03/03

1.2 TEST DATE

The test vehicle was subjected to testing on May 22, 2003.
SECTION 2

TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 TEST PROCEDURE

The vehicle was inspected, photographed and filled with fuel. It was then weighed to establish total curb weight and the weights of all wheels were measured and recorded. The vehicle was then ballasted to its normal load condition (refer to appendix) and the weights of all wheels were measured and recorded. Tire information labeling data and tire sidewall data were recorded.

This indicative test did not include any other requirements in FMVSS 110.

2.1 SUMMARY OF RESULTS

Test results are provided in Section 3.
SECTION 3
TEST DATA
Vehicle Make/Model/Body Style: 2003 CHEVROLET CAVALIER PASSENGER CAR
Vehicle NHTSA No.: C30114  VIN: 1G1JH12F237299901
Laboratory: GENERAL TESTING LABORATORIES
Test Date: 05/22/03

Requirement

The vehicle is equipped with tires that meet the requirements of FMVSS 109 or FMVSS 119.   YES

The vehicle normal load on the tire is not greater than the high speed performance test load specified in FMVSS 109 paragraph S5.5 or FMVSS 119 paragraph S7.4.   YES

For passenger cars, the tire information placard is permanently affixed to the glove compartment door or equally accessible location; and displays the required information (FMVSS 110, S4.3).   YES

For vehicles other than passenger cars, a combined certification/tire information label or separate tire information label is permanently affixed to either the hinge pillar, door-latch post or to the inward-facing surface of the door next to the driver's seating position (FMVSS 120, S5.3).   N/A

Remarks:

Recorded By: D. Marsh  Date: 05/22/03
Approved By: D. Marsh
DATA SHEET 2
TEST VEHICLE INFORMATION/RECEIVING INSPECTION

LABORATORY: GENERAL TESTING LABORATORIES        DATE: 05/22/03

VEHICLE MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003 CHEVROLET CAVALIER

MANUFACTURE DATE 03/03  NHTSA NO.: C30114  BODY COLOR: SILVER METALLIC

VIN: 1G1JH12F237299001        VEHICLE TYPE: PASSENGER CAR

GVWR 1661 kg (3662 lbs)  GAWR(Fr) 906 kg (1997 lbs)  GAWR(Rr) 755 kg (1685 lbs)

BELTED SEATING POSITIONS: FRONT 2  MID N/A  REAR 3  OTHER N/A

ENGINE DATA: 4 Cylinders 2.2 Liters  ___ Cubic Inches

TRANSMISSION DATA: X Automatic ___ Manual ___ 4 No. of Speeds

FINAL DRIVE DATA: ___ Rear Drive   X Front Drive  ___ 4 Wheel Drive

INSTALLED TIRE DATA: Size: P205/55R16  Mfr. - GOODYEAR

CHECK APPROPRIATE BOXES FOR VEHICLE EQUIPMENT/MAKE SURE ALL OPTIONS ON WINDOW STICKER ARE LISTED:

<table>
<thead>
<tr>
<th></th>
<th>Traction Control</th>
<th>X Clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tinted Glass</td>
<td>All Wheel Drive</td>
<td></td>
</tr>
<tr>
<td>X Power Steering</td>
<td>X Cruise Control</td>
<td>X Console</td>
</tr>
<tr>
<td>X Power Windows</td>
<td>X Rear Window Defroster</td>
<td>X Driver Air Bag</td>
</tr>
<tr>
<td>X Power Door Locks</td>
<td>X Sun Roof or T-Top</td>
<td>X Passenger Air Bag</td>
</tr>
<tr>
<td>Power Seat(s)</td>
<td>X Tachometer</td>
<td>X Front Disc Brakes</td>
</tr>
<tr>
<td>X Power Brakes</td>
<td>X Tilt Steering Wheel</td>
<td>Rear Disc Brakes</td>
</tr>
<tr>
<td>X Anti-lock Brake System</td>
<td>X AM/FM/CD</td>
<td>Other</td>
</tr>
</tbody>
</table>

ARE ALL OPTIONS LISTED ON "WINDOW STICKER" PRESENT ON THE TEST VEHICLE:
(YES/NO)       Yes

REMARKS:

RECORDED BY: [Signature]  DATE: 05/22/03

APPROVED BY: [Signature]
DATA SHEET 3
CURB WEIGHT WITH OPTIONS AND NORMAL LOAD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 CHEVROLET CAVALIER PASSENGER CAR
VEHICLE NHTSA NO.: C30114; VIN: 1G1JH12F237299001
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/22/03

Full Fluid Levels:
Fuel: Full; Coolant: Full; Other Fluids: Full

Tire Pressure:
LF 210 KPA (30 psi) LR 210 KPA (30 psi)
RF 210 KPA (30 psi) RR 210 KPA (30 psi)

A. MEASURED CURB WEIGHT WITH INSTALLED OPTIONS AND ACCESSORIES

LF 415 KG (914 LB) LR 219 KG (482 LB)
RF 384 KG (846 LB) RR 235 KG (519 LB)

Front Axle 798 KG (1760 LB) Rear Axle 454 KG (1001 LB)

Total Vehicle 1252 KG (2761 LB)

B. MEASURED VEHICLE WEIGHT IN NORMAL LOAD CONDITION

(1) Seating Capacity (from Tire Information Placard) = 5
Seating Capacity (# of belted seating positions) = 6

(2) Normal Load # of Occupants from Appendix
Occupant Distribution: Front Seat- 2 Second Seat- 1
Third Seat- N/A Fourth Seat- N/A

(3) Total Normal Occupant Load 204 KG (450 LB)
(# of occupants x 68 KG per occupant)

(4) Measured Normal Load on Each Wheel and Axles (Sum)

LF 461 KG (1016 LB) LR 275 KG (606 LB)
RF 428 KG (944 LB) RR 293 KG (646 LB)

Frt Axle 889 KG (1960 LB) Rr Axle 568 KG (1252 LB)

Total Vehicle 1457 KG (3212 LB)
**DATA SHEET 3 – CONTINUED**

5. Calculated Vehicle Normal Load on the Tire
   Front Tires (measured front axle normal load/2) = 445 KG (980 LB)
   Rear Tires (measured front axle normal load/2) = 284 KG (626 LB)

6. High Speed Test Load from (X) FMVSS 109 (S5.5), or ( ) FMVSS 119 (S7.4)

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Installed Tire Size</td>
<td>P205/55R16</td>
<td>P205/55R16</td>
</tr>
<tr>
<td>Max. Load Rating on Sidewall</td>
<td>580 KG (1279 LBS)</td>
<td>580 KG (1279 LBS)</td>
</tr>
<tr>
<td>Reduced Sidewall Load Rating (if applicable)*</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>High Speed Test Load (88% of sidewall max. load rating)</td>
<td>510 KG (1126 LBS)</td>
<td>510 KG (1126 LBS)</td>
</tr>
<tr>
<td>(b) Optional Tire Size(s)</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

* If a passenger car tire is installed on a multipurpose passenger vehicle (MPV), truck or bus, the tire's load rating shall be reduced by dividing by 1.10.

**REMARKS:** The Vehicle Normal Load on the Tire is not greater than the High Speed Test Load.

**RECORDED BY:** [Signature]
**DATE:** 05/22/03

**APPROVED BY:** [Signature]
DATA SHEET 4
TIRE INFORMATION LABEL OR PLACARD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 CHEVROLET CAVALIER PASSENGER CAR
VEHICLE NHTSA NO.: 30114; VIN: 1G1JH12F237299001
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/22/03

A. Vehicle Type from Certification Label: Passenger Car

B. Identify Vehicle Labeling:

Vehicle has a combined Certification Tire Information Label ( ) Yes (X) No
Is Label Permanently Affixed: ( ) Yes ( ) No
Label Location: _________________________________________________
Description of Label: __________________________________________

Vehicle has a separate Tire Information Label or Placard. (X) Yes ( ) No
Is Label Permanently Affixed: (X) Yes ( ) No
Label Location: Inside Driver's Door Jam
Description of Label: White/Black Sticker

C. Enter Information from Combined or Separate Tire Information Label/Placard

Vehicle Capacity Weight - 400 KG (882 LBS)

Designated Seating Capacity (DSC) - 5

Expressed In—
(1) Total No. of Occupants (X) Yes ( ) No
(2) Terms of Occupants for Each Seat Location (X) Yes ( ) No

Manufacturer's Recommended Tire Size and Cold Tire Inflation Pressure For Maximum Load Vehicle Weight:

P205/55R16 FRONT - 210 kPa (30 psi)
REAR - 210 kPa (30 psi)

Manufacturer's Recommended Tire Size and Cold Tire Inflation Pressure For Other Load Conditions: NONE

REMARKS:

RECORDED BY: ___________________ DATE: 05/22/03
APPROVED BY: ___________________
DATA SHEET 5
VEHICLE TIRE DATA

VEHICLE MAKE/MODEL/BODY STYLE: 2003 CHEVROLET CAVALIER PASSENGER CAR
VEHICLE NHTSA NO.: C30114 ; VIN: 1G1JK12F237299001
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/22/03

All tires on the vehicle are the same size: (Yes/No) Yes

INFORMATION FROM TIRE SIDEWALL:

Right Front Tire

Tire Size Designation P205/55R16
Tire Load Index/Speed Symbol 89H
Maximum Inflation Pressure 300 kPa (44 psi)
Maximum Load Rating 580 KG (1279 LBS.)
Mfr. Name or Brand & Code GOODYEAR EAGLE
Tube or Tubeless TUBELESS
Treadwear/Traction/Temp. Grades 260/A/A
Sidewall (Plies & Composition) 2 PLY POLYESTER
Tread (Plies & Composition) 2 PLY STEEL
1 PLY NYLON
Serial Number: Right Front - NOT ON OUTSIDE OF WHEEL

Tire has "DOT" markings: ( ) YES ( ) NO (X) UNDETERMINED

REMARKS:

RECORDED BY: [Signature]  DATE: 05/22/03
APPROVED BY: [Signature]
## SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

### TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DESCRIPTION</th>
<th>MODEL/ SERIAL NO.</th>
<th>CAL. DATE</th>
<th>NEXT CAL. DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAD SCALES</td>
<td>#1 199744LF</td>
<td>199744LF</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td></td>
<td>#2 199744RF</td>
<td>199744RF</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td></td>
<td>#3 199744LR</td>
<td>199744LR</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td></td>
<td>#4 199744RR</td>
<td>199744RR</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td>PRESSURE GAGE</td>
<td>WESKLER</td>
<td>0-100</td>
<td>05/03</td>
<td>05/04</td>
</tr>
<tr>
<td>SURFACE LEVEL</td>
<td>GTL</td>
<td>N/A</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
</tbody>
</table>
SECTION 5
PHOTOGRAPHS
APPENDIX

Table 1 – Occupant Loading and Distribution for Vehicle Normal Load for Various Designated Seating Capacities

<table>
<thead>
<tr>
<th>Designated Seating Capacities, numbers of Occupants</th>
<th>Vehicle normal load, number of occupants</th>
<th>Occupant distribution in a normally loaded vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 through 4</td>
<td>2</td>
<td>2 in front</td>
</tr>
<tr>
<td>5 through 10</td>
<td>3</td>
<td>2 in front, 1 in second seat</td>
</tr>
<tr>
<td>11 through 15</td>
<td>5</td>
<td>2 in front, 1 in second seat, 1 in third seat, 1 in fourth seat</td>
</tr>
<tr>
<td>16 through 22</td>
<td>7</td>
<td>2 in front, 2 in second seat, 2 in third seat, 1 in fourth seat</td>
</tr>
</tbody>
</table>

NOTE: For the indicant test each seat was adjusted to its full down and mid forward to aft position with the seat back adjusted to a 25° reclined angle. Each designated seat position was ballasted with 54 KG (120 LBS) in the seat and 14 KG (30 LBS) on the floor directly in front of the respective seat position.