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

BAYERISCHE MOTOREN WERKE AG
2003 BMW MINI COOPER PASSENGER CAR
NHTSA NO. C30506

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

SEPTEMBER 25, 2003
FINAL REPORT

PREPARED FOR
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Accepted By: [signature]

Acceptance Date: 9/30/03
Final Report of FMVSS 110 (Indicant) Test of 2003 BMW MINI COOPER PASSENGER CAR
NHTSA No. C30506

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Performing Organization Rep# GTL-DOT-03-110(INDICANT)-035

Abstract
This test was conducted on the subject, 2003 BMW Mini Cooper 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.

Key Words
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Safety Engineering
FMVSS 110

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## 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></td>
<td>5.1 ¾ Rear View of Vehicle</td>
</tr>
<tr>
<td></td>
<td>5.2 Vehicle's Certification Label</td>
</tr>
<tr>
<td></td>
<td>5.3 Vehicle's Tire Information Label</td>
</tr>
<tr>
<td></td>
<td>5.4 Tire Showing Brand</td>
</tr>
<tr>
<td></td>
<td>5.5 Tire Showing Model</td>
</tr>
<tr>
<td></td>
<td>5.6 Tire Showing Size</td>
</tr>
<tr>
<td></td>
<td>5.7 Tire Showing Max Load Rating and Max Inflation Pressure</td>
</tr>
<tr>
<td></td>
<td>5.8 Tire Showing Serial Number</td>
</tr>
<tr>
<td></td>
<td>5.9 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 BMW Mini Cooper 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 BMW Mini Cooper. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: WMWRC33493TC41282

B. NHTSA No.: C30506

C. Manufacturer: BAYERISCHE MOTOREN WERKE AG

D. Manufacture Date: 11/02

1.2 TEST DATE

The test vehicle was subjected to testing on May 23, 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 indi cant 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
DATA SHEET 1
SUMMARY

VEHICLE MAKE/MODEL/BODY STYLE: 2003 BMW MINI COOPER PASSENGER CAR
VEHICLE NHTSA NO.: C30506; VIN: WMWRC33483TC41282
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/23/03

REQUIREMENT

YES/NO

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 5.5 or FMVSS 119 paragraph 5.7.

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, 5.4.3).

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, 5.5.3).

N/A

REMARKS:

RECORDED BY: [Signature]
DATE: 05/23/03

APPROVED BY: [Signature]
DATA SHEET 2
TEST VEHICLE INFORMATION/RECEIVING INSPECTION

LABORATORY: GENERAL TESTING LABORATORIES        DATE: 05/23/03

VEHICLE MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003 BMW MINI COOPER

MANUFACTURE DATE: 11/02  NHTSA NO.: C30506  BODY COLOR: INDIGO BLUE

VIN: WMWRC33493TC41282        VEHICLE TYPE: PASSENGER CAR

GVWR 1515 kg (3340 lbs)  GAWR(Fr) 870 kg (1918 lbs)  GAWR(Rr) 730 kg (1609 lbs)

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

ENGINE DATA: 4 Cylinders 16 Livers ___ Cubic Inches

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

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

INSTALLED TIRE DATA: Size: P195/55R16        Mfr.: GOODYEAR

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

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

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

REMARKS:

RECORDED BY:  DATE: 05/23/03

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

VEHICLE MAKE/MODEL/BODY STYLE: 2003 BMW MINI COOPER PASSENGER CAR
VEHICLE NHTSA NO.: C30506 ; VIN: WMWRC33493TC41282
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/23/03

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

<table>
<thead>
<tr>
<th></th>
<th>LF</th>
<th>RF</th>
<th>LR</th>
<th>RR</th>
<th>Front Axle</th>
<th>Rear Axle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>348 KG (768 LB)</td>
<td>357 KG (786 LB)</td>
<td>230 KG (508 LB)</td>
<td>230 KG (507 LB)</td>
<td>705 KG (1554 LB)</td>
<td>460 KG (1015 LB)</td>
</tr>
</tbody>
</table>

Total Vehicle: 1165 KG (2589 LB)

B. MEASURED VEHICLE WEIGHT IN NORMAL LOAD CONDITION

(1) Seating Capacity (from Tire Information Placard) = 4
   Seating Capacity (# of belted seating positions) = 4

(2) Normal Load # of Occupants from Appendix
   Occupant Distribution: Front Seat- 2, Second Seat- 0, Third Seat- N/A, Fourth Seat- N/A

(3) Total Normal Occupant Load = 136 KG (300 LB)
   (# of occupants x 68 KG per occupant)

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

<table>
<thead>
<tr>
<th></th>
<th>LF</th>
<th>RF</th>
<th>LR</th>
<th>RR</th>
<th>Ft Axle</th>
<th>Rr Axle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>382 KG (843 LB)</td>
<td>391 KG (863 LB)</td>
<td>264 KG (583 LB)</td>
<td>262 KG (578 LB)</td>
<td>774 KG (1706 LB)</td>
<td>527 KG (1161 LB)</td>
</tr>
</tbody>
</table>

Total Vehicle: 1300 KG (2867 LB)
DATA SHEET 3 — CONTINUED

(5) Calculated Vehicle Normal Load on the Tire
Front Tires (measured front axle normal load/2) = 387 KG (853 LB)
Rear Tires (measured front axle normal load/2) = 263 KG (580 LB)

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

<table>
<thead>
<tr>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed Tire Size</td>
<td>P195/55R16</td>
</tr>
<tr>
<td>Max. Load Rating on Sidewall</td>
<td>545 KG (1201 LBS)</td>
</tr>
<tr>
<td>Reduced Sidewall Load Rating (if applicable)*</td>
<td>N/A</td>
</tr>
<tr>
<td>High Speed Test Load (88% of sidewall max. load rating)</td>
<td>479 KG (1057 LBS)</td>
</tr>
<tr>
<td>Optional Tire Size(s)</td>
<td>Refer to Data Sheet 4 Remarks</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: 05/23/03

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

VEHICLE MAKE/MODEL/BODY STYLE: 2003 BMW MINI COOPER PASSENGER CAR
VEHICLE NHTSA NO.: C30506 VIN: WMWRC33493TC41282
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/23/03

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: Driver’s Side Lower “B” Pillar
Description of Label: Black/White Sticker

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

Vehicle Capacity Weight - 370 KG (816 LBS)

Designated Seating Capacity (DSC) - 4
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:

P195/55R16 87H (See Remarks) FRONT - 240 kPa (35 psi)
REAR - 240 kPa (35 psi)

Manufacturer’s Recommended Tire Size and Cold Tire Inflation Pressure For Other Load Conditions: For two occupants the P195/55R16 tire size should be inflated to 210kPa (30 psi) for both the front and rear tires.

REMARKS: There are nine other Manufacturer’s recommended size designations including load indexes and speed symbols (Refer to Figure 5.3).

RECORDED BY: [Signature] DATE: 05/23/03

APPROVED BY: [Signature]
DATA SHEET 5
VEHICLE TIRE DATA

VEHICLE MAKE/MODEL/BODY STYLE: 2003 BMW MINI COOPER PASSENGER CAR
VEHICLE NHTSA NO.: C30506
VIN: WMWRC33493TC41282
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/23/03

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

INFORMATION FROM TIRE SIDEWALL:

Right Front Tire

Tire Size Designation
P195/55R16

Tire Load Index/Speed Symbol
87H

Maximum Inflation Pressure
350 kPa (51 psi)

Maximum Load Rating
545 KG (1201 LBS.)

Mfr. Name or Brand & Code
GOODYEAR EAGLE

Tube or Tubeless
TUBELESS

Treadwear/Traction/Temp. Grades
240/A/A

Sidewall (Plies & Composition)
1 PLY RAYON

Tread (Plies & Composition)
1 PLY RAYON
2 PLY STEEL
2 PLY NYLON

Serial Number: Right Front - DOT NEWO 2JY2 3902

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

REMARKS:

RECORDED BY: [Signature] DATE: 05/23/03
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>11/02</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.