GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17501

Hydroplaning, Longitudinal Direction

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. Determination of hydroplaning behavior for different brands and sizes of tires.

1.2 Applicability. For all tires.

1.3 Remarks. Not applicable.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14264

3 Resources

3.1 Facilities.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.1.3 Wetted rail-guided (or free) asphalt road, Conti Co. (Contidrom).

3.1.4 Test center Bridgestone / Firestone (Rome).

3.2 Equipment.

3.2.1 DIGITALKER measuring system (or equivalent) for stopping distance measurement.

3.2.2 Evaluation computer for preparation of the DIGITALKER data.

3.2.3 V-Box for speed and CAN read-out device for wheel slip measurement.

3.2.4 Device for rail guidance of the test vehicle.

3.2.5 Load: Driver + measuring instruments.

3.3 Test Vehicle/Test Piece.

3.3.1 The test vehicles shall be provided by the operator of the test track, or own vehicle has to been equipped accordingly.

3.3.2 Test tires.

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3.4 Test Time.

Calendar time:	1 day
Test hours:	3 h
Coordination hours:	2 h

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

4 Procedure

4.1 Preparation.

4.1.1 The test tire shall be run in appropriately. The tires shall be adjusted to partial load pressure.

4.1.2 The watering device shall be switched on and adjusted to a constant water depth of 7 mm.

At wind intensities > 4, no measurements shall be performed.

4.1.3 The DIGITALKER measuring system shall be set and calibrated as specified.

4.1.4 The test wheel shall be mounted on the front left.

4.1.5 The test series always starts with a reference tire, which is already known from previous tests.

4.1.6 The measurement of the reference tire shall be repeated after the last test set (tendency compensation).

4.2 Conditions.

4.2.1 Environmental Conditions. No measurements at wind intensities > 4 and resulting fluctuating water depths (see paragraph 4.1.2).

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions.

4.3.1 The measurement vehicle shall be subjected to full acceleration in 3rd gear at the beginning of the wetted test track until the measurement is confirmed by the Digitalker.

Read out the Digitalker measured values in the computer. The program determines the speed achieved for each tire set at 10 %, 15 % and 30 % slip of the front left wheel with respect to the right wheel, which is not running in the water.

4.3.2 Each tire set shall be measured four times.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results.

5.2.1 The mean value for the speed is evaluated at 15 % slip. Results to be evaluated percentaged.

5.3 Test Documentation. The test data shall be added to the Global Tire Evaluation Chart (Appendix A) and Hydroplaning Calculation (Appendix B) and represented in a test report with reference to this Test Procedure.

6 Safety

This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, company rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

7 Notes

7.1 Glossary. Not applicable.

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