



SURFACE VEHICLE RECOMMENDED PRACTICE

J2718™

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Test for Tire Quasi-Static Longitudinal Force versus Longitudinal Displacement
and Quasi-Static Lateral Force versus Lateral Force

RATIONALE

This technical report is being Stabilized because it covers technology which is mature and not likely to change in the foreseeable future.

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1. SCOPE

This SAE Recommended Practice describes application of two closely related test procedures, which together determine the linear range longitudinal and lateral stiffnesses of a statically loaded non-rotating tire. The procedures apply to any tire so long as the equipment is properly sized to correctly conduct the measurements for the intended test tire. The data are suitable for use in determining parameters for road load models and for comparative evaluations of the measured properties in research and development.

NOTE: Herein, road load models are models for predicting forces applied to the vehicle spindles during operation over irregular pavements. Within the context of this document, forces applied to the pavement are not considered.

1.1 Procedures

Two closely related procedures are applied. In each procedure, the contact center of a loaded tire on a locked spindle and its wheel center are displaced horizontally, one with respect to the other, so as to generate shear force versus shear deflection data. In the first procedure, the displacement is purely longitudinal, parallel to the X'-axis in the SAE Tire Axis System. In the second procedure, the displacement is purely lateral, parallel to the Y'-axis in the SAE Tire Axis System. These procedures are spelled out in the body of this document.

1.2 Test Machines

This document is test machine neutral. It may be applied using any type of test machine capable of fulfilling the requirements stated in this document. The test machine must be capable of accommodating the tire sizes to be tested.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J2047	Tire Performance Technology
SAE J2429	Free-Rolling Cornering Test for Truck and Bus Tires
SAE 770870	The Effect of Tire Break-In on Force and Moment Properties
SAE 810066	The Effect of Tire Aging on Force and Moment Properties of Radial Tires

2.1.2 OSHA Publications

Available from U.S. Department of Labor/OSHA, 200 Constitution Avenue, Washington, DC 20210, Tel: 800-321-6742, www.osha.gov/pls/publications/pubindex.list.

OSHA 1910.177 Servicing Multi-Piece and Single Piece Rim Wheels (Available in wall chart form as #TTMP-7/95)

2.1.3 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 17025 General Requirements for the Competence of Testing and Calibration Laboratories

3. DEFINITIONS

The definitions that follow are of special meaning in this document and are either not contained in other recommended practices or are worded somewhat differently in this practice.

3.1 SHEAR DEFLECTIONS

Shear deflections are changes in the relative horizontal position between the contact center and the projection of the wheel center onto the road plane. Deflections may arise either due to horizontal translation of the contact center or the wheel center or both. They are considered equivalent regardless of source.

3.1.1 LONGITUDINAL DEFLECTION (δ_x)

The relative horizontal position between the contact center and the projection of the wheel center onto the road plane is changed only parallel to the SAE X'-axis.

3.1.2 LATERAL DEFLECTION (δ_y)

The relative horizontal position between the contact center and the projection of the wheel center onto the road plane is changed only parallel to the SAE Y'-axis.

3.2 100% LOAD

100% load is the test requester specified reference load.

3.3 TEST

A test is the execution of the procedure described in this document one time on one tire at a single set of test conditions.