



Standard Specification for Condition 1 Bicycle Forks¹

This standard is issued under the fixed designation F2899; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This standard establishes testing requirements for qualifying designs using production forks intended for use in Condition 1 per Classification **F2043**.

2. Referenced Documents

2.1 *ASTM Standards*:²

F2043 Classification for Bicycle Usage

F2273 Test Methods for Bicycle Forks

3. Classification

3.1 Condition 1 per Classification **F2043**.

4. Sampling and Test Specimens

4.1 *Selection and Preparation of Specimens*:

4.1.1 Three forks shall be randomly selected from the first production lot for the fatigue plus impact test per this test method.

4.1.2 One fork shall be randomly selected for the impact test per this test method.

4.1.3 One fork shall be randomly selected for both the compression and bending tests per this test method.

5. Performance Requirements

5.1 Bicycle forks intended by the manufacturer to be used according to Condition 1 shall be tested per Test Methods **F2273**.

5.1.1 *Compression Load Test (Suspension Forks)*:

5.1.1.1 The fork shall withstand a compression load of 2800 N without any component failure, fracture or permanent deformation.

5.1.1.2 Under the application of the compression load of 2800 N, the minimum clearance from the maximum tire profile

intended for use by the manufacturer to the nearest surface of the crown shall be at least 3 mm.

5.1.2 *Bending Load Test*:

5.1.2.1 The fork shall withstand a maximum bending load of 1200 N (100 N initial load plus an additional 1100 N).

5.1.2.2 The permanent deflection of a rigid fork shall not exceed 5 mm and the permanent deflection of a suspension fork shall not exceed 10 mm.

5.1.3 *Impact Resistance Test*:

5.1.3.1 For each fork, permanent deflection shall be less than 45 mm following impact of a 22.5 kg mass dropped from a height such that the velocity at impact shall be at least 3.54 m/s.

NOTE 1—In a frictionless system, this velocity would be achieved for a drop height of 640 mm.

5.1.3.2 For Condition 1 forks, a second drop test and steerer torsional assessment are not required in this impact resistance test.

5.1.4 *Fatigue Plus Impact Test*:

5.1.4.1 Each fork shall withstand a fully reversed sinusoidal load of 620 N for at least 100 000 cycles without structural cracks or fractures and without exceeding the displacement limits described in Test Methods **F2273**.

5.1.4.2 If the fork withstands 100 000 cycles, it shall be subjected to an impact of a 22.5 kg mass dropped from a height such that the velocity at impact shall be at least 2.66 m/s.

NOTE 2—In a frictionless system, this velocity would be achieved for a height of 360 mm.

5.1.4.3 Following this impact test the permanent deflection shall not exceed 45 mm.

6. Rejection and Rehearing

6.1 If any sample fails to meet all the requirements of this specification, the fork models shall be rejected.

7. Certification

7.1 When specified in the purchase order or contract, a report of the test results shall be furnished pursuant to the report as described in Test Methods **F2273**.

8. Keywords

8.1 bending; bicycle; compression; condition 1; fatigue; fork; impact; structural test

¹ This specification is under the jurisdiction of ASTM Committee **F08** on Sports Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee **F08.10** on Bicycles.

Current edition approved Oct. 1, 2016. Published October 2016. Originally approved in 2011. Last previous edition approved in 2011 as F2899 – 11. DOI: 10.1520/F2899-11R16.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.



F2899 – 11 (2016)

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; <http://www.copyright.com/>