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Self-supporting run flat tyres

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1 Scope of application

This document specifies the technical requirements, special marks, and test methods for self-supporting run-flat tyres.

This document applies to new self-supporting run-flat passenger radial tyres.

2 Normative references

The following documents contain the provisions which, through normative reference in this document, constitute the essential provisions of this document. For the dated referenced documents, only the versions with the indicated dates are applicable to this document; for the undated referenced documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 2978 Size designation, dimensions, inflation pressure and load capacity for passenger car tyres

GB/T 3487 Rims for passenger car (GB/T 3487-2015, ISO 4000-2.2013, MOD)

GB/T 4502 Laboratory test methods for passenger car tyres capabilities (GB/T 4502-2016, ISO 10191.2010, MOD)

GB/T 6326 Tyre terms and definitions (GB/T 6326-2014, ISO 4223-1.2002, NEQ)

GB/T 8170 Rules of rounding off for numerical values and expression and judgment of limiting values

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HG/T 2177 Appearance quality of tyres

3 Terms and definitions

The terms and definitions defined in GB/T 6326 and the following apply to this document.

3.1 self-supporting run-flat tyres

It is a pneumatic tyre that is designed to run under normal inflation and still be able to travel a certain distance at a certain speed, without any other accessory accessories, in a depleted state.

Note. Self-supporting run-flat tyres are divided into two categories, those that have passed the durability test of 6.1 are Class I, and those that have passed the durability test of 6.2 are Class II.

3.2 flat tyre running mode

The running state of pneumatic tires under the inflation pressure of 0 kPa~70 kPa.

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4.1 Class I self-supporting run-flat tyres shall meet the requirements of 6.1 and 6.3; the

specification mark shall be indicated according to 5.1 and the special mark shall be marked according to 5.2.

4.2 Class II self-supporting run-flat tyres shall comply with the requirements of 6.2 and

6.3, and shall be marked with special marks according to 5.3.

5.1 Class I self-supporting run-flat tyres are identified by the special specification

additional mark "F" added after the structure code "R", such as 195/55RF16, 205/45ZRF17, to be distinguished from ordinary car radial tires.

5.2 The special mark for Class I self-supporting run-flat tyres, which are applicable to

the test procedures specified in 6.1 and meet the performance requirements of 6.3, is shown in Figure 1.A permanent mark shall be marked on the sidewall of the tyre.

5.3 The special mark for Class II self-supporting run-flat tyres, which are applicable to

the test procedures specified in 6.2 and meet the performance requirements of 6.3, is

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shown in Figure 2.A permanent mark shall be marked on the sidewall of the tyre.

The test equipment and its accuracy shall comply with the relevant provisions of medium and high-speed durability testing machines in GB/T 4502, and the accuracy of the displacement sensor shall be +/-1 mm.

6.1.2.1 The appearance quality of the test tyre shall meet the requirements of HG/T

2177.

6.1.2.2 The test rim shall meet the requirements of GB/T 2978; the rim contour shall

meet the requirements of GB/T 3487, and both sides shall have humps (round or flat).

6.1.2.3 The test tyre and rim assembly inflated with an air pressure of 250 kPa shall be

parked for more than 3 h at the laboratory ambient temperature of 38 degrees C+/-3 degrees C.

6.1.2.4 The test speed shall be set to 75 km/h, and the test load shall be 65% of the load

capacity corresponding to the load index. The test drum shall be started with uniform acceleration, and the specified test speed shall be reached within 5 min.

6.1.2.5 After the specified test speed is reached, the test shall be continuous for 60 min

under the test load and speed.

6.1.2.6 The camber angle and sideslip angle of the test tyre shall be both 0°. If there are

special requirements, the sideslip angle can be +/-1°.

6.1.2.7 During the whole test process, the ambient temperature shall be kept within the

range of 38 degrees C+/-3 degrees C.

6.1.3.1 Pull out the valve core from the parked test tyre to completely deflate the test

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tyre. The valve core shall not be installed again.

6.1.3.1 on the high-speed durability testing machine, making it perpendicular to the

drum surface of the test drum, and apply the test load specified in 6.1.2.4 to the test wheel axle.

6.1.3.3 Carry out the test according to the test conditions specified in 6.1.2.4~6.1.2.7.

At the beginning of the test, read the distance (Rstart) from the center of the wheel axle to the drum surface, and calculate the corresponding section height (Zstart) according to 6.4.1, as shown in Figure 3.The test shall not be interrupted, and the tyre shall not be cooled artificially; the tyre pressure shall not be adjusted, and the test speed and test load shall be kept constant.

6.1.3.4 At the end of the test, read the distance (Rend) from the center of the wheel axle

to the drum surface, and calculate the corresponding section height (Zend) according to 6.4.1, as shown in Figure 3.

6.1.3.5 After the test is completed, disassemble the tyre after it cools naturally and

inspect its appearance.

6.2 Test method for the durability performance of Class II self-supporting run-flat

tyres in the run-flat state

6.2.1 Test equipment and accuracy

The test equipment and its accuracy shall comply with the relevant provisions of medium and high-speed durability testing machines in GB/T 4502, and the accuracy of the displacement sensor shall be +/-1 mm.

6.2.2.1 The appearance quality of the test tyre shall meet the requirements of HG/T

2177.

6.2.2.2 The test rim shall comply with the provisions on measuring rims in GB/T 2978;

the rim contour shall comply with the requirements of GB/T 3487, and both sides shall have

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