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**NATIONAL STANDARD OF THE
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GB/T 22039-2008

**The laser digital non-destructive inspection method for aircraft
tyres**

航空轮胎激光数字无损检测方法

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Foreword

Appendix A of this standard is an informative annex. The standard proposed by China Petroleum and Chemical Industry Association. This standard by the National Standardization Technical Committee aviation tires. This standard was drafted. Shuguang Rubber Industry Research and Design Institute. The main drafters. Zhang Ping, Sheng Baoxin. Aviation tires Digital Laser NDT method

1 Scope

GB/T 22039-2008 is the Chinese national standard on the laser digital non-destructive inspection method for aircraft tyres, in the field of rubber and plastic industries. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 18 June 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 February 2009. Classification: ICS 83.160.20, CCS G41. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the aviation tires laser digital NDT method principle, samples, testing equipment, testing conditions, the step of detecting The results of the analysis to determine the method and test report. This standard applies to digital laser aircraft tire NDT. Principle

2 This method utilizes a digital laser speckle technology dislocation by vacuum loading internal defects tire is deformed, with a specific wavelength of the laser source Irradiating

vacuum load before and after the tire surface, resulting spot on the grating, and then use a digital camera (CCD) direct uptake spot before and after deformation Image, computer digital image distortion before and after derivative overlay operation, the operation result is converted into a digital image display. by Observation of phase diagrams and video images of the features inside the tire markings identifying the presence of delamination, bubbles and other defects.

3 Sample

After curing the specimen should be parked at ambient temperature for more than 12h, surface-quality inspection and clean the surface of the tire.

4 Testing Equipment

Tire digital laser speckle dislocation Nondestructive Testing (its sensitivity should be greater than or equal to 1mm). The instrument includes a host (the vacuum chamber, the Lower bead means), digital laser speckle displacement detection system (digital cameras, sports bodies), image analysis and processing system. Recording medium with a hard Disk, removable disk or printer output.

5 Test conditions

5.1 clean laboratory requirements, relative humidity less than 70%, the test environment temperature controlled at 10 °C ~ 40 °C.

5.2 submission of the tire should ensure that internal and external surfaces clean and dry. If two narrow bead spacing can be properly flared, lined bead dilator, standing Detection can be carried out after 30min.

5.3 Check the load degree of vacuum, according to technical requirements of the selected equipment factory.

6 Detection step

6.1 to be detected aircraft tires are numbered in numerical order the registration number on the tire tread.

6.2 Opening detector power adjustment device so that it is in the initial state.

6.3 Setting parameters, including the degree of vacuum, number of detections and other sectors.

6.4 The tire load detector detects, through the display monitor the testing process, test results stored in the hard disk or removable disk, you can use The printer will print out.

6.5 After each test the tire automatically exit detector.

6.6 According to test results, do the inspection records.

7 Results of detection and determination method

7.1 determination of defects Carefully observe the display on the screen dislocation speckle pattern, if the picture is evenly distributed, is clear, then the inside of the tire without defects; if the image appears Snowflake-shaped geometry, butterfly-shaped stripes or white stripes, then the interior of the tire where the presence of delamination, bubbles and other defects. Tire defect-free