Chinastandards.org

ICS 43.120
CCS T 40

T

ASSOCIATION STANDARD

T/CSAE 50-2016

Dent Resistance Test Standard of Automobile Outer Panel

汽车外覆盖件抗凹性能测试标准

(English Translation)

Issued on: May 26, 2016 **Implemented on: May 26, 2016**

Issued by: China Society of Automotive Engineers

Preview: page 1 of 5 shown, 11 in the full document. Complete English PDF, instant download:
https://chinastandards.org/standards/t-csae-50-2016

Chinastandards.org

Table of Contents

Foreword
1 Scope
2 Normative references
3 Terms and definitions
3.1 Automotive exterior cover
3.2 Anti-concave performance
3.3 Anti-concave stiffness
3.4 Anti-concave stability
3.5 Dent
3.6 Depression
3.7 Instability depression
3.8 Unstable depression load
3.9 Hard instability depression
3.10 Soft instability depression
3.11 Quasi-static loading
3.12 Surface Accessories
3.13 Preloading
3.14 Post loading
3.15 Initial stiffness
3.16 Secondary stiffness
3.17 Final stiffness
4 Test samples
4.1 Sample requirements
4.2 Test area
5 Test device
5.1 Bench composition
5.2 Benchmark Platform
5.3 Frame column
5.4 Loading mechanism
5.5 Indenter
5.6 Motion Control
5.7 Sensor and data acquisition

Preview: page 2 of 5 shown, 11 in the full document. Complete English PDF, instant download:
https://chinastandards.org/standards/t-csae-50-2016

6 Test preparation
6.1 Environmental conditions
6.2 Sample inspection
6.3 Measurement point preparation
7 Test steps
7.1 Sample arrangement and constraint method
7.2 Quasi-static anti-concave test process
8 Test data processing
8.1 Single load method data processing
8.2 Incremental loading method data processing
9 Test report

Foreword

In order to meet the needs of China's automotive product design and development, the domestic automotive industry automotive outer cover anti-concave performance test method is regulated.

This specification is specifically formulated.

1 Scope

This specification specifies the relevant definitions, principles, test equipment, test procedures, and tests for the test methods for the anti-concave performance of automotive exterior covers.

Data processing method.

This specification applies to passenger cars and light commercial vehicles, including body-in-white and related paint parts.

2 Normative references

The following documents are indispensable for the application of this specification. For dated references, only the date of the date indicated Applicable to this document. For undated references, the latest edition applies to this document.

SAE J2575-2004 Standardized Dent Resistance Test Procedure

Preview: page 3 of 5 shown, 11 in the full document. Complete English PDF, instant download:
https://chinastandards.org/standards/t-csae-50-2016

Chinastandards.org

3 Terms and definitions

The following terms and definitions apply to this specification.

3.1 Automotive exterior cover

A car cover is a space-shaped surface or inner surface made of a metal sheet covering an engine, a chassis, and a cab or a body.

Parts. According to the function and location, it can be divided into three types. outer cover, inner cover and skeleton cover. The outer cover mainly includes the outer panel of the door, Front fender, side outer panel, hood outer panel, top cover outer panel, trunk (or tailgate) inner and outer panels, etc.

3.2 Anti-concave performance

Anti-concave performance refers to the ability of the outer cover of the car to resist concave deflection and local deformation and maintain shape under the action of external load.

The force mainly includes three aspects, namely, anti-concave stiffness, anti-concave stability and residual deformation.

3.3 Anti-concave stiffness

The anti-concave stiffness refers to the ability of the cover to resist the deflection of the depression. The following methods can be used to test and evaluate. 1. A certain external load the magnitude of the deflection displacement of the depression generated below; 2. The magnitude of the external load when a certain deflection is generated; 3. When the external load acts the slope value of the Displacement-Load curve.

3.4 Anti-concave stability

When the external load reaches a certain level and the load is constant or slightly changed, the ability of the outer cover of the automobile to resist elastic deformation is suddenly lost.

The occurrence of instability, that is, the oil can effect, is manifested as the phenomenon of "big pass" and "quick turn", and the ability of the outer cover of the car to resist instability.

It is called anti-concave stability.

3.5 Dent

After unloading, permanent plastic deformation occurs at the loading point of the specimen.

Preview: page 4 of 5 shown, 11 in the full document. Complete English PDF, instant download:
https://chinastandards.org/standards/t-csae-50-2016

Chinastandards.org

3.6 Depression

The depression refers to the non-permanent deformation (elastic deformation of the material) that occurs locally on the outer cover of the body when subjected to force, resulting in the curvature of the cover.

The original design is reversed.

3.7 Instability depression

Oil-canning refers to the local reversal of the curvature of the sample collected during the loading process of the outer cover of the automobile.

Often accompanied by sound.

3.8 Unstable depression load

The unstable sag load is the minimum load that occurs the oil can effect, that is, the load-displacement curve is from the linear part to the nonlinear part.

The amount of load when the offset is displayed.

3.9 Hard instability depression

When the hard instability depression refers to the occurrence of the unstable depression, the surface curvature of the outer cover of the automobile is reversed faster than the movement speed of the pressure head, and the load-displacement the curve appears as a drop in load, but the displacement continues to increase. As shown in Figure 1.

3.10 Soft instability depression

Soft instability depression refers to the occurrence of unstable depression, the surface curvature of the outer cover of the car is reversed faster than the speed of the indenter, surface and pressure the head remains in contact and the load-displacement curve appears as a slope decrease, but is always positive. As shown in Figure 1.

Figure 1 Oil can effect type

3.11 Quasi-static loading

Quasi-static loading is a process of generating depressions at low speeds. The loading speed is generally required to be no more than 127 mm/min. Recommended the loading speed is 50 mm/min.

TC SAE XX-XXXX

Preview: page 5 of 5 shown, 11 in the full document. Complete English PDF, instant download:
https://chinastandards.org/standards/t-csae-50-2016