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Safety Belt Strap

汽车安全带织带

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Safety Belt Strap

1 Scope

This document specifies the technical requirements, test methods, inspection rules, as well as marking, packaging, transportation and storage, etc. of safety belt strap.

This document is applicable to the design, development, production, test and acceptance inspection of strap used for automobile safety belt.

2 Normative References

The content of the following documents constitutes indispensable clauses of this document through normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 250 Textiles - Tests for Color Fastness - Grey Scale for Assessing Change in Color

GB/T 251 Textiles - Tests for Color Fastness - Grey Scale for Assessing Straining

GB/T 1220 Stainless Steel Bars

GB/T 2828.1 Sampling Procedures for Inspection by Attributes - Part 1: Sampling Schemes Indexed by Acceptance Quality Limit (AQL)

GB/T 3920 Textiles - Tests for Color Fastness - Color Fastness to Rubbing

GB/T 3922 Textiles - Tests for Color Fastness - Color Fastness to Perspiration

GB 8410 Flammability of Automotive Interior Materials

GB/T 8427-2019 Textiles - Tests for Color Fastness - Color Fastness to Artificial Light: Xenon Arc

GB/T 30512 Requirements for Prohibited Substances on Automobiles

GB 38262 Flammability of Interior Materials for Buses

GB/T 39897-2021 Determination of Volatile Organic Compounds and Aldehydes and Ketones in Nonmetallic Parts of Vehicles

QC/T 236 Test Method for Automotive Interior Decorative Material Properties

FZ/T 60045-2014 Textile Trim Materials in the Interior of Automobiles - Test Method for Fogging Characteristics

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 strap

A flexible component used to restrain the occupant's body and transmit the force received to the seat belt anchorage point.

3.2 diagonal belt

A strap that goes diagonally across the chest from the hips to the other shoulder.

3.3 lap belt

A strap that goes across the front of the wearer's pelvic area.

3.4 continuous belt

A strap with the diagonal belt and the lap belt made of one piece.

4 Technical Requirements

4.1 General Requirements

4.1.1 The safety belt strap shall comply with the requirements of this document, and the product drawings shall be approved for manufacturing in accordance with the prescribed procedures.

4.1.2 The specifications of the strap thickness shall be determined by the supply-side and the demand-side through negotiation.

4.1.3 When the strap is tested in accordance with the provisions of 5.2, the width of the strap shall not be less than 46 mm.

4.2 Requirements for Properties

4.2.1 Tensile load

When the strap is tested in accordance with the provisions of 5.1.2, the tensile load of two specimens shall not be less than the provisions of Table 1. The difference in the tensile load between the two specimens shall not exceed 10% of the greater value of the measured tensile load.

4.2.7 Wear resistance

After the strap is tested in accordance with the provisions of 5.9, its tensile load shall not be less than 75% of the average tensile load measured in 5.1 and shall not be lower than 17,700 N (for the diagonal belt, it shall not be lower than 14,700 N). The difference in the tensile load between the two specimens shall not exceed 20% of the greater value of the measured tensile load.

4.2.8 Color fastness

4.2.8.1 Color fastness to dry rubbing

The color fastness of the strap to dry rubbing shall not be lower than Level 4 specified in GB/T 251.

4.2.8.2 Color fastness to wet rubbing

The color fastness of the strap to wet rubbing shall not be lower than Level 4 specified in GB/T 251.

4.2.8.3 Color fastness to perspiration

The color fastness of the strap to dry rubbing shall not be lower than Level 4 specified in GB/T 251.

4.2.8.4 Color fastness to light

The color fastness of the strap to light shall not be lower than Level 4 specified in GB/T 250.

4.2.9 Flammability

The flammability of the strap for Category-M_2 and Category-M_3 passenger cars shall comply with the relevant provisions of GB 38262, and the flammability of the strap for other types of vehicles shall comply with the relevant provisions of GB 8410.

4.2.10 Prohibited substances

The prohibited substances shall comply with the relevant provisions of GB/T 30512.

4.2.11 Dispersion of volatile organic components and aldehyde and ketone components

The dispersion of volatile organic components and aldehyde and ketone components from the strap shall not be greater than the limits in Table 3.

light for a time corresponding to the time required to fade blue wool standard 7 to grey scale 4.

c) After light treatment, the strap shall be stored in an environment with a temperature of 20 °C ± 5 °C and a relative humidity of 65% ± 5% for at least 24 hours, and shall be measured within 5 minutes of being removed from the treatment environment.

d) Each strap shall be clamped between the fixtures of the tensile machine, with a loading speed of 100 mm/min. Apply the load, until the strap breaks, and record the breaking load value.

5.6 Low-temperature Resistance

5.6.1 Test conditions

The strap shall be stored in an environment with a temperature of 20 °C ± 5 °C and a relative humidity of 65% ± 5% for at least 24 hours.

5.6.2 Test steps

The test shall be carried out in accordance with the following steps:

a) For each test, the strap treated in accordance with the provisions of 5.6.1 shall be used;

b) The strap shall be stored on a flat surface in a low-temperature chamber with a temperature of –30 °C ± 5 °C for at least 1.5 hours;

c) Fold the strap in half, press a 2 kg weight block that has been pre-cooled to –30 °C ± 5 °C on the folded part, and place it in the same low-temperature chamber for 30 minutes. After removing the weight block, the tensile load shall be measured within 5 minutes after the strap is removed from the low-temperature chamber;

d) The folded part of each strap shall be clamped between the fixtures of the tensile testing machine. The loading speed is 100 mm/min. Apply the load, until the strap breaks, and record the breaking load value.

5.7 High-temperature Resistance

5.7.1 Test conditions

The strap shall be stored in an environment with a temperature of 20 °C ± 5 °C and a relative humidity of 65% ± 5% for at least 24 hours.

5.7.2 Test steps

The test shall be carried out in accordance with the following steps:

a) For each test, the strap treated in accordance with the provisions of 5.7.1 shall be used;

b) The strap shall be stored at a high temperature of 80 °C ± 5 °C and a relative humidity of 65% ± 5% for 3 hours;

c) The tensile load shall be tested within 5 minutes after the strap is removed from the high-temperature chamber. Each strap shall be clamped between the fixtures of the tensile testing machine, and the loading speed is 100 mm/min. Apply the load, until the strap breaks, and record the breaking load value.

5.8 Humidity Resistance

5.8.1 Test conditions

The strap shall be stored in an environment with a temperature of 20 °C ± 5 °C and a relative humidity of 65% ± 5% for at least 24 hours.

5.8.2 Test steps

The test shall be carried out in accordance with the following steps:

a) For each test, the strap treated in accordance with the provisions of 5.8.1 shall be used;

b) The strap shall be completely immersed in distilled water with a temperature of 20 °C ± 5 °C and a small amount of wetting agent added for 3 hours (prepared by adding 1 g of wetting agent to 1 L of water). Any wetting agent (diethylene glycol is recommended) suitable for the strap fibers may be used;

c) The tensile load shall be measured within 10 minutes after the strap is taken out of the distilled water. Each strap shall be clamped between the fixtures of the tensile testing machine, and the loading speed is 100 mm/min. Apply the load, until the strap breaks, and record the breaking load value.

5.9 Wear Resistance

5.9.1 Test conditions

The strap shall be stored in an environment with a temperature of 20 °C ± 5 °C and a relative humidity of 65% ± 5% for at least 24 hours.

5.9.2 Test steps

The test shall be carried out in accordance with the following steps:

a) For each test, the strap treated in accordance with the provisions of 5.9.1 shall be used;

b) The structural characteristic dimensions of the test device shall comply with the requirements of Figure 1. The surface Rockwell hardness (HRB) of the hexagonal rod in the Figure is 97 ~ 101, the material is stainless steel, the edge fillet radius is 0.5 mm ± 0.1 mm, the distance between the two surfaces is 6.35 mm ± 0.03 mm, and the

In accordance with the method specified in GB/T 3920, carry out the test.

5.10.3 Color fastness to perspiration

In accordance with the method specified in GB/T 3922, carry out the test.

5.10.4 Color fastness to light

In accordance with the conditions of exposure cycle A1 in Table 2 of GB/T 8427-2019, carry out exposure. In accordance with the method specified in 8.3.3 of GB/T 8427-2019, carry out the test.

5.11 Flammability

The flammability of the safety belt strap of passenger cars shall be tested in accordance with the method specified in GB 38262. The flammability of the safety belt strap of other types of vehicles shall be tested in accordance with the method specified in GB 8410.

5.12 Prohibited Substances

The prohibited substances shall be tested in accordance with the method specified in GB/T 30512.

5.13 Dispersion of Volatile Organic Components and Aldehyde and Ketone Components

The dispersion of volatile organic components and aldehyde and ketone components shall be tested in accordance with the bag method specified in Appendix C of GB/T 39897-2021.

5.14 Odor

The odor shall be tested in accordance with the method specified in QC/T 236.

5.15 Fogging Characteristics

The fogging characteristics shall be tested in accordance with the method specified in 8.2 of FZ/T 60045-2014.

6 Inspection Rules

6.1 The strap can only exit the factory after passing the manufacturer’s inspection and shall be accompanied by product quality documents.

6.2 The inspection is divided into exit-factory inspection and type inspection.

6.3 Under one of the following circumstances, the manufacturer shall conduct type inspection of the products:

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