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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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Replacing GB 8410-1994

Flammability of automotive interior materials

汽车内饰材料的燃烧特性

(English Translation)

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1.Scope

1 Scope

This standard defines the technical requirements and test methods of horizontal flammability of automotive interior material.

This standard is applicable to the assessment of horizontal flammability of automotive interior material.

Since there are many differences BETWEEN the actual conditions of various automotive interior materials (spare parts position, layout, use condition, ignition source, etc.) AND the test conditions stipulated in this standard, this standard is not applicable to the assessment of all the actual interior flammability of automotive interior materials.

2.1 Burning rate

According to this standard, the ratio between burning distance and the time used to burn such distance, in unit of mm/min.

2.2 Composite material

Surfaces of layers of similar or different materials that are tightly connected by different methods like heat sealing, splicing and welding to form a composite material.

2.3 Exclusive material

An overall even material that consists of the same kind of material.

If different materials are intermittently connected together (like sewing, radio-frequency welding, riveting), the formed material shall not be regarded as composite material; each material shall be deemed as an exclusive material.

2.4 Exposed side

The spare parts shall be assembled towards the crew within the automobile.

2.5 Interior materials

The exclusive materials or composite materials used by automotive interior spare parts. They include. seating washer, seat backrest, seat-cover, seat belt, headrest, hand rest, mobile folding top, all decorative lining board (including lining board within the door, side lining board, rear lining board, lining board of the ceiling), meter panel, sundries box, indoor shelf board or rear window board, curtain, floor covering layer, sun shield, wheel casing cover, engine hood cover and any other indoor organic materials, like stuffing to absorb impact energy in case of collision, and buffer unit, etc.

3 Technical requirements

Flammability of automotive interior material must conform to following technical requirements.

Burning rate shall not be larger than 100mm/min.

4.1 Principle

Clamp the sample horizontally on the U-shape support. After igniting the free end of the sample with flame of a defined height in the combustion box, make sure if the flame on the sample went out or when it went out, as well as the burning distance and time used to burn such distance.

4.2.1 Combustion box

The combustion box is made of steel sheet, as shown in Figure 1 (structure) and Figure 2 (dimensions).

At the front of the combustion box, there is a heatproof glass observation window, which can cover the front as a whole or serve as a small window for observation.

At the bottom of the combustion box, there are ten $\Phi 19$ mm vent holes. And near the tops of the four walls, there are 13mm-wide vent slots. The combustion box is supported by four 10 mm-tall legs. At the top right centre of the combustion box, there is a thermometer opening. The centre is 20 mm from the inside of the back panel.

At one end of the combustion box, there is a lockable opening, which allows in the support with the sample. At the other end, there is a small door, above which there is a hole to let in the gas pipe, a base for supporting the gas lamp and a flame height indication board.

At the bottom of the combustion box, there is a tray for collecting melted drippings (see

Figure 3), which is located between two rows of vent holes but does not block them.

4.2.2 Sample support

The sample support is a frame made up of two U-shaped corrosion-resistant metal plates. See Figure 4 for dimensions.

The lower board of the support has 6 pins and the upper board of the support has corresponding pinholes to help hold the sample evenly. At the same time, the pins also serve as the starting point (mark 1) and end point (mark 2) of the burning distance.

Another kind of lower board of the support has not only 6 pins but also a $\Phi 0.25\text{mm}$ 25 mm-long heatproof metal support (Figure 5). This support shall be used for special purposes.

After installation, the bottom side of the sample shall be 178 mm above the bottom plate of the combustion box. The front end of the sample support shall be 22 mm from the inner surface of the combustion box. The two lengthwise outer sides of the test support shall be 50 mm from the inner surface of the combustion box (see Figure 2 and Figure 4).

4.2.3 Gas lamp

The gas lamp is a fire source for test use. Inner diameter of its nozzle is 9.5 mm; valve structure shall enable the easy control and adjustment of flame height.

When the gas lamp is put in the combustion box, the center of nozzle opening shall be 19mm lower than the center of free end of the sample (refer to Figure 2).

4.2.4 Fuel gas

To guarantee the comparability of test results, the fuel gas used for gas lamp shall preferably be the liquefied gas; other flammable gases with thermal value after combustion of 35 MJ/m³ to 38 MJ/m³ can also be adopted, like natural gas and city gas, etc. Liquefied gas is recommended for arbitration test.

4.2.5 Metal comb

Length of the metal comb shall be at least 110mm, with 7 to 8 smooth rounded teeth within every 25mm.

4.2.6 Stopwatch

Accuracy of the stopwatch for measuring time shall not be lower than 0.5s.

4.2.8 Steel ruler

Measuring range of the steel ruler shall be above 400mm. Accuracy shall be 1mm.

4.2.9 Ventilating cabinet

The combustion box shall be placed in the ventilating cabinet. Inner volume of the ventilating cabinet shall be 20 - 110 times that of the combustion box. Size of length, width and height of the ventilating cabinet shall not exceed 2.5 times that of the other two.

4.3.1 Shape and dimension

For shape and dimension of the standard sample, refer to Figure 6. Thickness of the sample equals to that of the spare parts, but shall not be lower than 13mm.

When flammability performances of different kinds of materials are compared, the samples must be with the same size (length, width, thickness). Generally, when sampling, it shall ensure that the cross sections along the length of the samples are the same.

In case that the shape and size of the spare parts are not sufficient to produce standard sample with defined size, following sample with minimum size shall be guaranteed and record shall be made.

- a) If width of the spare parts is between 3mm to 60mm, its minimum length shall be 356mm. Under this condition, width of the sample shall be approximate to that of the spare parts as near as possible.
- b) If width of the spare parts is above 60mm, its minimum length shall be 138mm.
- c) If width of the spare parts is between 3mm to 60mm and its length is less than 356mm; or width of the spare parts is above 60mm and its length is less than 138mm, this standard will not be applicable for test. Sample with a width of less than 3mm shall not be tested according to the standard, either.

4.3.2 Sampling

Sample at least 5 pieces from the tested spare parts. For materials with different burning speed along the different distances, sampling shall be carried out at different distances; and five or more pieces of the samples shall be tested in the combustion box respectively. Sampling methods are as follows.

- a) When the material is supplied as whole width, sample shall be with full width and 500mm in length at least. Cut the materials at 100mm away the edge. Then sample evenly with equidistant spaces on the rest part.
- b) If shape and size of the spare parts conform to the sampling requirements, samples shall be cut off from the spare parts.