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**NATIONAL STANDARD OF THE
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Road vehicles - Plates and labels

道路车辆 标牌和标签

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1 Scope

This standard specifies the classification, the performance requirements and the test methods of the plates and labels used on road vehicles to state vehicle information.

It applies to plates and labels of every kind used on road vehicles to state manufacturing information, warning information, operating and indicating information and similar content.

It does not apply to vehicle markings formed directly on the vehicle or on a vehicle component itself by stamping, etching, casting, spraying or printing, or by being sewn onto the component itself.

It does not apply to markings on vehicles or components used during production, transport and handover, that is markings removable before the vehicle enters normal use.

Plates and labels of every kind used on vehicle parts and assemblies may be dealt with by reference to this standard.

2 Normative references

The following documents are indispensable to the application of this document. For dated references, only the edition bearing that date applies to this document. For undated references, the latest edition, including all amendments, applies.

GB/T 250 Textiles - Tests for colour fastness - Grey scale for assessing change in colour.

GB/T 3280 Cold rolled stainless steel plate, sheet and strip.

GB/T 13306 Plates.

3 Terms and definitions

3.1 Plate: a marking object of rigid construction, bearing vehicle information, fitted to the vehicle by riveting, welding, adhesive tape or a similar means. Plates are divided into metal

plates and non-metal plates.

3.2 Label: a marking object of flexible construction, bearing vehicle information, fitted to the vehicle by sticking or a similar means. By position of use, labels are divided into engine compartment labels, exposed exterior labels, non-exposed exterior labels, exposed interior labels, non-exposed interior labels and engine/transmission labels.

3.2.1 Engine compartment labels (A type): labels located inside the engine compartment and stuck to something other than the engine body itself. Note: for example labels stuck to sprayed sheet metal parts inside the engine compartment, to plastic trim covers, to the battery or to containers.

3.2.2 Exposed exterior labels (B type): labels located on the outside of the body, in a position where the sticking place is visible. Note: for example trailer hook labels, or roof rack and ski rack load labels.

3.2.3 Non-exposed exterior labels (C type): labels located at the joint of a movable body part, visible after the movable body part has been opened. Note: for example labels stuck on the door pillar or on the inner side of the door pillar, or fuel filler cap labels.

3.2.4 Exposed interior labels (D type): labels located inside the vehicle, visible when the component is in normal use, that is with a folding component in the stowed position, and exposed to sunlight, as well as labels located on the outer, visible surface of the sun visor. Note: for example airbag labels or seat belt labels on the sun visor.

3.2.5 Non-exposed interior labels (E type): labels visible inside the vehicle, or, for a folding component, visible when it is in the open position, that are not exposed to sunlight, as well as labels exposed only when the sun visor is lowered or a door is opened. Note: for example labels stuck to the inner surface of the sun visor, to the inner surface of a folding component, or luggage compartment labels.

3.2.6 Engine/transmission labels (F type): labels stuck directly to the metal body of the engine or of the transmission.

4 Performance requirements for plates and labels

4.1 Performance requirements for plates. The adhesion of the coating of a plate, the colour fastness to sunlight, the abrasion resistance, the salt spray resistance, the damp heat resistance and the mould resistance shall meet the relevant requirements of GB/T 13306.

4.2.1 Peel strength of plate adhesive tape. The peel strength may be evaluated either by 180 degree peel strength or by 90 degree peel strength, one of the two being chosen. The requirements under the different conditions are: a) peel strength at initial tack, after the test of 5.2.3.3, 180 degree peel strength at least 0.5 N/mm and 90 degree peel strength at least 0.4 N/mm; b) peel strength in the standard environment, after the test of 5.2.3.4, at least 1 N/mm and 0.8 N/mm respectively; c) peel strength at high temperature, after the test of

5.2.3.5, at least 0.4 N/mm and 0.3 N/mm; d) peel strength after heat ageing, after the test of 5.2.3.6, at least 0.8 N/mm and 0.8 N/mm; e) peel strength after warm water ageing, after the test of 5.2.3.7, at least 0.8 N/mm and 0.8 N/mm; f) peel strength after cyclic ageing, after the test of 5.2.3.8, at least 1 N/mm and 0.8 N/mm; g) peel strength after humidity ageing, after the test of 5.2.3.9, at least 0.8 N/mm and 0.8 N/mm.

4.2.2 Pull-off force. After the test of 5.2.4 the pull-off force shall be at least 125 N.

4.2.3 Dynamic shear strength. After the test of 5.2.5 a), the dynamic shear strength at initial tack shall be at least 0.2 N per square millimetre; after 5.2.5 b), in the standard environment, at least 0.3; after 5.2.5 c), at high temperature, at least 0.2; after 5.2.5 d), after heat ageing, at least 0.4; after 5.2.5 e), after warm water ageing, at least 0.3; after 5.2.5 f), after cyclic ageing, at least 0.3; after 5.2.5 g), after windscreen washer fluid ageing, at least 0.4, all in N per square millimetre.

4.2.4 Static shear strength. After the test of 5.2.6 the static holding time shall be at least 10 000 min.

4.3 General performance requirements for labels. 4.3.1 After the test of 5.3.2 the 180 degree peel strength shall be at least 0.44 N/mm. 4.3.2 Abrasion resistance: after the test of 5.3.3 the labels shall be sound in appearance, with no separation of the bond and no breakage, and the surface colour shall show no marked change compared with the sample before the test; the information on the label shall be clear and easy to identify and, if the label bears a bar code, the bar code shall be readable after the test. 4.3.3 Liquid resistance: after the test of 5.3.4 the labels shall be sound in appearance, with no separation of the bond, and the surface colour shall show no marked change compared with the sample before the test; the information shall be clear and easy to identify and any bar code shall be readable after the test. 4.3.4 Humidity resistance follows the same criteria after the test of 5.3.5. 4.3.5 Thermal cycling performance follows the same criteria after the test of 5.3.6.1. 4.3.6 Heat ageing performance follows the same criteria after the test of 5.3.7. 4.3.7 Colour fastness: after the test of 5.3.8 the colour difference produced on the label shall reach at least grade 4 of the grey scale specified in GB/T 250. 4.3.8 Artificial accelerated weathering performance follows the same criteria after the test of 5.3.9. 4.3.9 High pressure washing resistance follows the same criteria after the test of 5.3.10. 4.3.10 Hot shear bond strength: after the test of 5.3.11 the displacement of the label shall not exceed 5 mm, the type on the label shall not become distorted, the information shall be clear and easy to identify and any bar code shall be readable after the test.

4.4 Additional requirements for labels of special use. A footnote states that labels of special use, such as those identifying the identity or manufacturing history of a vehicle or of a part or assembly - the vehicle identification number label, the product plate, the engine marking and the like - shall also have anti-tampering and anti-counterfeiting performance where needed.

4.4.1 Anti-tampering performance. 4.4.1.1 Removal of the label: 4.4.1.1.1 removal shall destroy the label or make the information on it unrecognizable, so that the label destroys itself; after the test of 5.3.12 the label shall break so that it cannot be removed whole, or, without breaking, shall change so markedly in appearance - cracks, deformation and the like - that the marked information is no longer complete. 4.4.1.1.2 Once a label stuck to a painted surface has been removed, the appearance of the area where it was stuck shall change recognizably, so that an inspector can trace evidence of the original label in the original area; where this is achieved by fluorescent means, a fluorescent mark shall remain after removal. 4.4.1.2 Any alteration of the information on a label shall leave traces of the original information, or shall change the appearance of the label markedly.

4.4.2 Anti-counterfeiting performance. 4.4.2.1 The label shall be proof against counterfeiting. 4.4.2.2 The label material shall carry the manufacturer's marking or some other unique marking, and altering or removing that marking shall change the appearance of the label recognizably.

5 Test methods for plates and labels

5.1 Test method for plates. The test is carried out in accordance with GB/T 13306.

5.2.1 Test environment. Unless otherwise specified, all tests are carried out in the standard environment, 23 °C $\pm$ 2 °C and 50 % $\pm$ 5 % relative humidity, and the test tape and the test plate are kept in the standard environment for 4 h before being stuck together.

5.2.2 Sample preparation. Test plate: length 125 mm $\pm$ 1 mm, width 50 mm $\pm$ 1 mm, thickness 1.5 mm to 2.0 mm, in the material 06Cr19Ni10 specified in GB/T 3280. Alternatively the outer painted panel or the electroplated panel of the vehicle area where the plate is actually stuck may be taken as the test plate. Before the tape is stuck to the test plate, the surface of the plate is cleaned with degreased gauze and a cleaning agent. Tape: the tape dimensions follow the specific requirements of each test; at least 3 samples are prepared for each test and the test result is the average of the results of the samples. The tape used is double-sided tape supplied in a roll with release paper on one side; the side without release paper is called the open face and is the side stuck to the plate, while the side covered by the release paper is called the covering face and is the side stuck to the body or to the electroplated part.

5.2.3.1 180 degree peel strength test. In the standard environment a tape sample 25 mm $\pm$ 1 mm wide and 200 mm $\pm$ 1 mm long is prepared. To keep the tape from being stretched out of shape while it is peeled, a polyester film 20 μ m to 60 μ m thick is attached to the open face; to secure the bond between polyester film and tape, primer is first applied to the bonding surface of the film and the film is attached to the tape only after the primer has dried. The covering face of the tape carrying the polyester film is stuck to the test plate, and a 2 kg roller 50 mm wide is then run over the surface once out and back at 300 mm/min, to make the bond complete. Under the various conditions of 5.2.3.3 to 5.2.3.9 the