

**Kraftfahrt-
Bundesamt**



Test requirements for signs, adhesive labels and printed identification

According to the regulations of StVZO
(German Road Traffic Licensing Regulations)

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0. Scope of application

The following test requirements can be used in order to provide verification regarding the durability of the labelling of a component to be approved with the tested adhesive labels in the context of establishing reports to obtain national type-approval for parts (parts ABE) in accordance with § 22 StVZO in connection with § 20 StVZO or national type-approval for parts (ABG) in accordance with § 22a StVZO. They refer to a use of adhesive labels based on the technically common usage conditions. In the event of extraordinary usage conditions (e.g. extreme thermal, chemical or mechanical load), arrangements should be made in advance with KBA to avoid delays in obtaining the approval.

The test requirements described below can also be consulted for vehicles and trailers in connection with requirements for factory labels according to § 59 (1) StVZO for national type-approval (vehicle ABE) in accordance with § 20 StVZO .

The suitability of an adhesive label can be verified with a positive test report. The technical service can use such test report as a basis for its confirmation for the suitability of the adhesive label in a report to obtain a parts ABE or an ABG. The test report regarding the suitability of the adhesive label does not have to be attached to the report to obtain the parts ABE or ABG. However, the Kraftfahrt-Bundesamt (KBA) can request the test report at any time.

An adhesive label is not considered a technical unit in terms of § 22 (1) StVZO. Obtaining a parts ABE for an adhesive label is therefore not possible.

1. Applicability

These test requirements can be applied for:

- Signs made of metal plates and sheets,
- Signs made of plastic panels,
- Film signs made of metal films with a thickness of up to 0.1 mm,
- Film signs made of plastic films with a thickness of up to 0.15 mm,
- Film signs made of plastic film laminated with metal foil at a thickness of the metal foil of 0.05 mm and a total thickness of up to 0.15 mm,

which are attached by way of

- two-component glues,
- air-hardening glues,
- other glues.

Two-component glues are principally required to glue signs made of massive metal plates and sheets.

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2. General requirements

Adhesive labels based on this scope of application have to have an easily legible and permanent lettering and must be affixed permanently.

The legibility of the information and the stability of the application may not change even if the signs applied according to the instructions are exposed to fuels and oils as well as other liquids occurring during normal operation (see 3.2). The adhesive labels have to withstand normal vibrations, abrasion, cold, warmth as well as effects of the weather.

"Well legible" is considered signage, which can be read under normal lighting conditions without technical aids.

Film labels may not be reusable after removal.

3. Test conditions

3.1 General

Testing occurs with adhesive label specimens with complete lettering on material intended to be used as the base. The instructions of the signage manufacturer have to be observed.

A separate test piece has to be used for each of the following examinations with the exception of 3.7. Prior to the execution of the individual tests, the adhesive labels have to be stored at room temperature for a minimum of 72 hours.

3.2 Consistency against the impact of liquids

The adhesive labels may not be removable without damaging them and the lettering has to remain complete and legible under the impact of the following test liquids:

Test liquid	Test temperature (°C)	Test time (h)
Water (distilled water)	50	1
Caustic soda (1 %)	20 ± 2	0,5
Sulphuric acid (5 %)	20 ± 2	0,5
Gasoline (Super according to DIN) ¹⁾	20 ± 2	0,25
Motor oil (HD-oil) ¹⁾	20 ± 2	1
Diesel fuel ¹⁾	20 ± 2	0,5
Tensides (amphoteric, anionic, non-ionic) each 5 % in water	20 ± 2	0,5

During the test, the specimens have to be fully submerged in the test liquid. A separate test specimen has to be used for each of the above-mentioned tests.

¹⁾ For adhesive labels, which are exclusively used in the area and under conditions of the passenger compartment, verification under use of this medium is not required.

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3.3 Age resistance

After a test of 120 hours according to DIN EN 6270-2, exposure in condensation water within environmental chamber "AHT" and a test of one cycle according to DIN EN 6270-2, AHT 2.0 S, exposure in alternating condensation water climates with sulphur dioxide containing atmosphere, the adhesive labels must not be removable without damage; the inscription must not be damaged.

3.4 Adhesion (stream jet test)

After 10 minutes of irradiation of the test specimen with 40°C warm water from a high-pressure cleaner with an operating pressure of 50 bar, at angles of 45° to the surface of the test specimen and a nozzle distance of 0.4 - 0.6m, the edges of the adhesive label must not come off.

3.5 Temperature resistance

The specimen is exposed to temperatures of -25°C and 100°C for a period of 24 hours each. The labels may not come off the surface either at -25°C or at 100°C without destruction.

3.6 Resistance to shock

Factory signs made of metal or plastic plates as well as sheet metal and the adhesive used must not crack under light blows with a small hammer (max. 200 g) at a temperature of -25°C.

3.7 Tear-off requirement

Following treatment according to 3.2 to 3.5, the adhesive labels have to be conditioned at room temperature for at least 48 hours.

Subsequently, they have to be carefully detached from the surface at one corner with a suitably sharp tool (e.g. razorblade) in a manner that these safety cut-outs are not damaged even in the case of adhesive labels with safety cut-outs at the edges. If this is not successful, the specimen has fulfilled the tear-off requirements.

If a test piece exists with an undamaged detached corner, this corner shall be gripped in such a manner that the subsequent tear-off test cannot cause tearing at possibly existing safety cut-outs. If this is not successful, the specimen has fulfilled the tear-off requirements.

In case of specimens with intact detached corners (with and without safety cut-outs at the edges), the labels may not detach at a force of 3.5 N per cm width of the label, which attacks vertically to the adhesive surface at one edge of the label.

Adhesive labels which can be removed from the surface manually with the assistance of a suitable sharp tool entirely and without destruction do not fulfil the tear-off requirements.

Furthermore, film labels may only be removable by destruction.

3.8 Abrasion resistance

Crockmeter-test against cotton friction fabric according to DIN EN ISO 105-X12, 100 cycles, contact pressure $9 + 0.2$ N, stroke $104 + 3$ mm, cylindrical friction pin \varnothing 16 mm, 1 cycle/3 seconds, adhesive label stuck to painted body panel. In case of samples with dimensions smaller than the required stroke, several samples have to be glued side by side without any overlap or gap.

The lettering has to remain without damage also after a test by sand trickling method according to DIN 52348.

UV resistance

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3.9 UV test in accordance with DIN ISO 4892-3, cycle number 1, has to be carried out over a period of 100 hours on adhesive labels which are exposed to daylight - inside or outside the vehicle.

The lettering on the adhesive label has to be "well legible" after the treatment according to paragraph 3.2, 3.3, 3.4, 3.5 and 3.8 according to the requirements under 2.

The conditions specified in 3.1 to 3.6 and 3.8 to 3.9 can also be used to verify the durability and "good readability" of a printed label.

4. Test result

The test result for adhesive label respectively refers to the type of an adhesive label according to manufacturer specifications and the features of the surface upon which the adhesive label was tested.

Compliance with the test requirements has to be determined in a suitable manner. The following methods are suitable

- the technical service conducts the test themselves,
- the technical service refers to the test report of a material test facility or comparable laboratory,
- the technical service verifies the tests of an adhesive sign manufacturer who has conducted the respective tests on own equipment.

The possibility to use a different method has to be coordinated with KBA.

Compliance with the requirements has to be confirmed by the technical service in the report for obtaining parts ABE or an ABG and for manufacturer's plates for motor vehicles and trailers with national type approval. In its confirmation, the technical service can refer to the test report. Even in the case of reference to a test report, this has to be documented as an attachment to the technical report only upon request.

These conditions apply analogously for other signs according to point 1.

5. Transferability of the results

The results obtained under the test conditions can only be transferred if the utilised components (surface, adhesive label and type of print) are identical. They have to be specified in the description form of the manufacturer for reasons of plausibility.

These conditions apply analogously for other signs according to point 1.

6. Abbreviations

ABG	national type-approval for parts in accordance with § 22a StVZO
parts ABE	national type-approval for parts in accordance with § 22 in connection with § 20 StVZO
StVZO	German Road Traffic Licensing Regulations

Legal notice

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