



DEPARTMENT OF TRANSPORTATION

NEWS

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

WASHINGTON, D. C. 20590

FOR RELEASE FRIDAY A.M.
January 8, 1971

NHTSA -- 7-71
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The Department of Transportation issued a new Federal Motor Vehicle Safety Standard today aimed at reducing the number of deaths and injuries caused by fires in motor vehicle interiors.

The new Standard No. 302, effective September 1, 1972, is designed to limit the flammability of interior materials in passenger cars, multipurpose passenger vehicles, trucks, and buses. It specifies the maximum burn rate requirement of 4 inches per minute for materials used in the occupant compartments of motor vehicles.

The National Highway Traffic Safety Administration said the occurrence of thousands of fires annually that begin in vehicle interiors provides ample justification for a safety standard on flammability of interior materials. When fires do occur from such sources as matches, cigarettes, or short circuits in interior wiring, there should be sufficient time for the driver to stop the vehicle, and if necessary, for occupants to leave it, before injury occurs.

Regarding the requirements for a 4-inch maximum burn rate, the Safety Administration said further study is planned on the feasibility of, and justification for, imposing more stringent requirements, such as a zero burn rate, or self-extinguishment, with a later effective date.

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The Standard applies to such components as seat cushions, seat backs, seat belts, headlining, convertible tops, arm rests, all trim panels including door, front, rear, and side panels, compartment shelves, head restraints, floor coverings, sun visors, curtains, shades, wheel housing covers, engine compartment covers, mattress covers, and any other interior materials, including padding and crash-deployed elements that are designed to absorb energy on contact by occupants in the event of a crash.

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Title 49—TRANSPORTATION**Chapter V—National Highway Safety
Bureau, Department of Transportation**

[Docket No. 8-8; Notice 4]

**PART 571—MOTOR VEHICLE SAFETY
STANDARDS****Flammability of Interior Materials in
Passenger Cars, Multipurpose Pas-
senger Vehicles, Trucks, and Buses**

This notice amends § 571.21 of Title 49 of the Code of Federal Regulations by adding a new motor vehicle safety standard, No. 302, Flammability of Interior Materials. Notices of proposed rule making on the subject were published on December 31, 1969 (34 F.R. 20434), and June 26, 1970 (35 F.R. 10460).

As stated in the notice of December 31, 1969, the occurrence of thousands of fires per year that begin in vehicle interiors provide ample justification for a safety standard on flammability of interior materials. Although the qualities of interior materials cannot by themselves make occupants safe from the hazards of fuel-fed fires, it is important, when fires occur in the interior of the vehicle from such sources as matches, cigarettes, or short circuits in interior wiring, that there be sufficient time for the driver to stop the vehicle, and if necessary for occupants to leave it, before injury occurs.

The question on which the public responses to the above notices differed most widely was the burn rate limit to be required. The rate proposed was 4 inches per minute, measured by a horizontal test. Some manufacturers suggested maximum burn rates as high as 15 inches per minute. The Center for Auto Safety, the Textile Fibers and By-Products Association, and the National Cotton Bating Institute, on the other hand, suggested essentially a zero burn rate, or self-extinguishment, requirement, with a vertical rather than a horizontal test. A careful study was made of the available information on this subject, including the burn rates of materials currently in use or available for use, recommendations or regulations of other agencies, and the economic and technical consequences of various possible rate levels and types of tests. A considerable amount of Bureau-sponsored research has been conducted and is continuing on the subject. On consideration of this data, the Bureau has decided to retain the 4-inch-per-minute burn limit, with the horizontal test, in this standard. It has been determined that suitable materials are not available in sufficient quantities, at reasonable costs, to meet a significantly more stringent burn rate by the effective date that is hereby established. The 4-inch rate will require a major upgrading of materials used in many areas, and a corresponding improvement in this aspect of motor vehicle safety. It is important that this standard not hinder manufacturers' efforts to comply with the crash protection requirements that are currently being imposed, and that in the Bureau's

judgment are of the greatest importance. Further study will be made, however, of the feasibility of, and justification for, imposing more stringent requirements with a later effective date.

As pointed out in several comments, the problem of toxic combustion by-products is closely related to that of burn rate. Release of toxic gases is one of the injury-producing aspects of motor vehicle fires, and many of the common ways of treating materials to reduce their burn rates involve chemicals that produce highly poisonous gases such as hydrogen chloride and hydrogen cyanide. The problem of setting standards with regard to combustion byproducts is difficult and complex, and the subject of continuing research under Bureau auspices. Until enough is known in this area to form the basis for a standard, and to establish the proper interaction between burn rate and toxicity, this uncertainty constitutes an additional reason for not requiring self-extinguishing materials.

The proposal specified a particular commercial gas for the test burner, and several comments suggested problems in obtaining the gas for manufacturer testing. As is the case with all the motor vehicle safety standards, the test procedures describe the tests that the regulated vehicles or equipment must be capable of passing, when tested by the Bureau, and not the method by which a manufacturer must ascertain that capability. Any gas with at least as high a flame temperature as the gas described in the standard would therefore be suitable for manufacturer testing. To make this point clearer, and to use a more readily available reference point, the standard has been reworded to specify a gas that "has a flame temperature equivalent to that of natural gas."

The dimensions of the enclosure within which the test is conducted have been changed from those proposed, in order to provide more draft-free conditions, and consequently more repeatable results. Smaller cabinets, furthermore, evidently are more generally available than larger ones. Again it should be noted that there is no necessity that manufacturers duplicate the dimensions of the test cabinet, as long as they can establish a reasonable basis for concluding that their materials will meet the requirements when tested in such a cabinet.

Several comments questioned the need for specifying the temperature and relative humidity under which the material is conditioned and the test is conducted. The foregoing discussions of the relation of the standard to manufacturer testing apply here also. The specification of temperature and relative humidity for conditioning and testing is made to preclude any arguments, in the face of a compliance test failure, that variations in test results are due to permitted variations in test conditions. The relative humidity specification has been changed from 65 percent, as proposed, to 50 percent. This humidity level represents more closely the conditions encountered

in use during fairly dry weather. While it is a slightly more stringent condition, it is one in wide use for materials testing, according to the comments, and is not, in the judgment of the Bureau, a large enough change in the substance of the proposal to warrant further notice and opportunity for comment.

Several comments suggested that the standard should specify the number of specimens to be tested, with averaging of results, as is commonly found in specification-type standards. The legal nature of the motor vehicle safety standards is such, however, that sampling and averaging provisions would be inappropriate. As defined by the National Traffic and Motor Vehicle Safety Act, the standards are minimum performance levels that must be met by every motor vehicle or item of motor vehicle equipment to which they apply. Enforcement is based on independent Bureau testing, not review of manufacturer testing, and manufacturers are required to take legal responsibility for every item they produce. The result, and the intent of the Bureau in setting the standards, is that manufacturers must establish a sufficient margin of performance between their test results and the standard's requirements to allow for whatever variances may occur between items tested and items produced.

The description of portions to be tested has been changed slightly, such that the surface and the underlying materials are tested either separately or as a composite, depending on whether they are attached to each other as used in the vehicle. In the proposal, surface and underlying materials were to be tested separately regardless of how used, an element of complexity found unnecessary for safety purposes.

In response to comments with respect to materials that burn at a decreasing rate, to which the application of the test is not clear, an additional criterion has been added. If material stops burning before it has burned for 60 seconds, and does not burn more than 2 inches, it is considered to meet the requirement.

In consideration of the foregoing, § 571.21 of Title 49, Code of Federal Regulations, is amended by the addition of Standard No. 302, Flammability of Interior Materials, as set forth below.

Effective date. September 1, 1972. Because of the extensive design changes that will be necessitated by this new standard, and the leadtime consequently required by manufacturers to prepare for production, it is found, for good cause shown, that an effective date later than 1 year from the issuance of this notice is in the public interest.

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51 (35 F.R. 4955))

Issued on December 29, 1970.

DOUGLAS W. TOMS,
Director.

§ 571.21 Federal Motor Vehicle Safety Standards.

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MOTOR VEHICLE SAFETY STANDARD NO. 302

FLAMMABILITY OF INTERIOR MATERIALS—

PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. Scope. This standard specifies burn resistance requirements for materials used in the occupant compartments of motor vehicles.

S2. Purpose. The purpose of this standard is to reduce the deaths and injuries to motor vehicle occupants caused by vehicle fires, especially those originating in the interior of the vehicle from sources such as matches or cigarettes.

S3. Application. This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S4. Requirements.

S4.1 The portions described in S4.2 of the following components of vehicle occupant compartments shall meet the requirements of S4.3: Seat cushions, seat backs, seat belts, headlining, convertible tops, arm rests, all trim panels including door, front, rear, and side panels, compartment shelves, head restraints, floor coverings, sun visors, curtains, shades, wheel housing covers, engine compartment covers, mattress covers, and any other interior materials, including padding and crash-deployed elements, that are designed to absorb energy on contact by occupants in the event of a crash.

S4.2 The portions of the components that shall meet the requirements of S4.3 are all of the following:

(a) The surface material taken separately if it is not bonded, sewed or mechanically attached to underlying material.

(b) A composite consisting of the surface material bonded, sewed or mechanically attached to underlying material, if such a composite is used in the component.

(c) Padding and cushioning materials taken separately, if those materials are not bonded, sewed or mechanically attached to surface materials.

S4.3 Material described in S4.1 and S4.2 shall not burn, or transmit a flame from across its surface, at a rate of more than 4 inches per minute. However, if a material stops burning before it has burned for 60 seconds from the start of timing, and has not burned more than 2 inches from the point where timing was started, it shall be considered to meet this requirement.

S5. Test procedure.

S5.1 Conditions.

S5.1.1 The test is conducted in a metal cabinet for protecting the test specimens from drafts. The interior of the cabinet is 15 inches long, 8 inches deep, and 14 inches high. It has a glass observation window in the front, a closable opening to permit insertion of the specimen holder, and a hole to accommodate tubing for a gas burner. For ventilation, it has a ½-inch clearance space around the top of the cabinet, ten ¼-inch-diameter holes in the base of the cabinet, and legs to elevate the bottom of the cabinet by three-eighths of an inch, all located as shown in Figure 1.

S5.1.2 Prior to testing, each specimen is conditioned for 24 hours at a temperature of 70° F. and a relative humidity of 50 percent, and the test is conducted under those ambient conditions.

S5.1.3 The test specimen is inserted between two matching U-shaped frames of metal stock 1-inch wide and 3/8 of an inch high. The interior dimensions of the U-shaped frames are 2 inches wide by 13 inches long. A specimen that softens and bends at the flaming end so as to cause erratic burning is kept horizontal by supports consisting of thin, heat-resistant wires, spanning the width of the U-shaped frame under the specimen at 1-inch intervals. A device that may be used for supporting this type of material is an additional U-shaped frame, wider than the U-shaped frame containing the specimen, spanned by 10-mil wires of heat-resistant composition at 1-inch intervals, inserted over the bottom U-shaped frame.

S5.1.4 A bunsen burner with a tube of 3/8-inch inside diameter is used. The gas adjusting valve is set to provide a flame, with the tube vertical, of 1 1/2 inches in height. The air inlet to the burner is closed.

S5.1.5 The gas supplied to the burner has a flame temperature equivalent to that of natural gas.

S5.2 Preparation of specimens.

S5.2.1 Each specimen of material to be tested is a rectangle 4 inches wide by 14 inches long, wherever possible. The thickness of the specimen is that of the material as used in the vehicle, except that where the material's thickness exceeds 1/2 inch the specimen is cut down to that thickness. Where it is not possible to obtain a flat specimen, because of component configuration, the specimen is cut to not more than 1/2 inch in thickness at any point, from the area with the least curvature, and in such a manner as to include the face side. The maximum available length or width of a specimen is used where either dimension is less than 14 inches or 4 inches respectively.

S5.2.2 Material with directional effects is oriented so as to provide the most adverse results.

S5.2.3 Material with a napped or tufted surface is placed on a flat surface

and combed twice against the nap with a comb having seven to eight smooth, rounded teeth per inch.

S5.3 Procedure.

(a) Mount the specimen so that both sides and one end are held by the U-shaped frame, and one end is even with the open end of the frame. Where the maximum available width of a specimen is not more than 2 inches, so that the sides of the specimen cannot be held in the U-shaped frame, place the specimen in position on wire supports as described in S5.1.3, with one end held by the closed end of the U-shaped frame.

(b) Place the mounted specimen in a horizontal position, in the center of the cabinet.

(c) With the flame adjusted according to S5.1.4, position the bunsen burner and specimen so that the center of the burner tip is three-fourths of an inch be-

low the center of the bottom edge of the open end of the specimen.

(d) Expose the specimen to the flame for 15 seconds.

(e) Begin timing (without reference to the period of application of the burner flame) when the flame from the burning specimen reaches a point 1 1/2 inches from the open end of the specimen.

(f) Measure the time that it takes the flame to progress to a point 1 1/2 inches from the clamped end of the specimen. If the flame does not reach the specified end point, time its progress to the point where flaming stops.

(g) Calculate the burn rate from the formula

$$B = 60 \times \frac{D}{T}$$

Where:

B = Burn rate in inches per minute,
D = Length the flame travels in inches, and
T = Time in seconds for the flame to travel D inches.

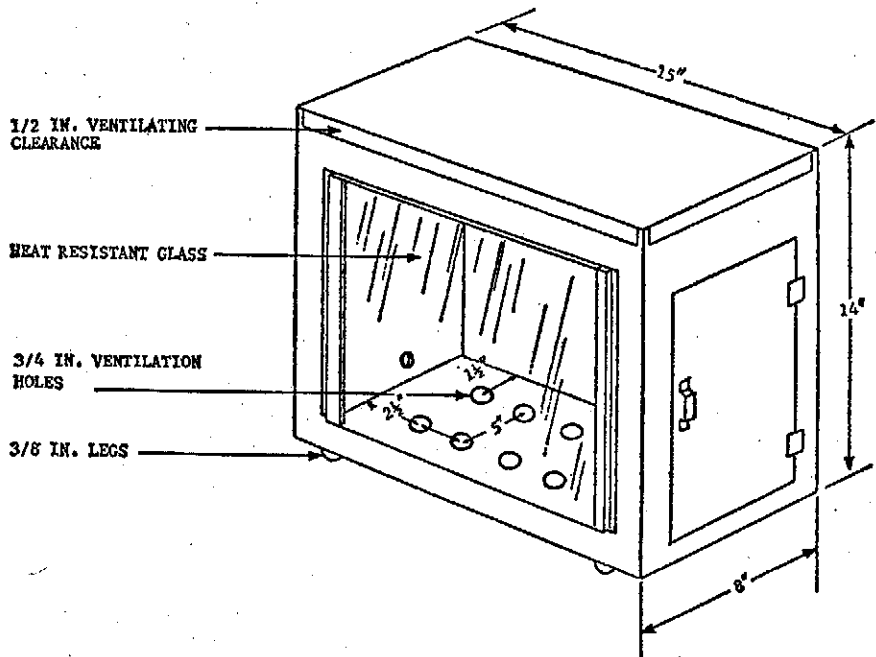


FIGURE 1

[F.R. Doc. 71-190; Filed, Jan. 7, 1971; 8:45 a.m.]