

Issued on: April 29, 1996.

Rodney E. Slater,

Federal Highway Administrator.

The FHWA hereby amends 49 CFR part 397 by revising the authority citation to read as follows:

PART 397—TRANSPORTATION OF HAZARDOUS MATERIALS; DRIVING AND PARKING RULES—[AMENDED]

Authority: 49 U.S.C. 322; 49 CFR 1.48. Subpart A also issued under 49 U.S.C. 31136, 31502. Subparts C, D, and E also issued under 49 U.S.C. 5112, 5125.

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National Highway Traffic Safety Administration

49 CFR Parts 564 and 571

[Docket No. 95-47; Notice 2]

RIN 2127-AF65

Replaceable Light Source Information; Federal Motor Vehicle Safety Standards Lamps, Reflective Devices, and Associated Equipment

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Final rule.

SUMMARY: This document amends the Federal motor vehicle safety standard on lighting to allow high intensity discharge (HID) light sources to be used in replaceable bulb headlamp systems, in addition to their presently allowed use in integral beam headlamp systems. Adoption of this amendment requires corresponding amendments to part 564, the regulation under which Docket No. 93-11 was established as a depository for replaceable light source information. However, if the life of the light source approaches that of the vehicle, as is the case with HIDs, interchangeability will no longer be so important. Therefore, NHTSA is adding Appendix B to part 564 which allows a manufacturer to submit fewer items of dimensional information if it can demonstrate that the rated laboratory life of its light source is not less than 2,000 hours.

DATES: Effective Date: The amendments to the Code of Federal Regulations, and the requirements of the amendments, are effective June 6, 1996.

Petition Date: Petitions for reconsideration must be received not later than June 21, 1996.

FOR FURTHER INFORMATION CONTACT: Kenneth O. Hardie, Office of Rulemaking (202-366-6987).

SUPPLEMENTARY INFORMATION: On June 19, 1995, NHTSA published a notice in

the Federal Register to initiate rulemaking that would amend Standard No. 108 so as to allow replaceable bulb headlamps to incorporate short arc discharge light sources (60 FR 31939).

As NHTSA noted in the NPRM, short arc discharge headlamp systems are commonly referred to as "high intensity discharge" (HID) systems. Presently, the only HID application in production for lamps covered by Standard No. 108 is in headlamps, and the only way HID headlamps can be used under Standard No. 108 is in an "integral beam headlighting system" (Section S7.4). Thus, today, HID headlamps are comprised of a headlamp body (including reflector and lens), a small transparent envelope containing a specific mixture of gases under high pressure (the discharge bulb), and an electronic ballast to convert low voltage direct current to a controlled output high voltage direct or alternating current to drive the discharge bulb.

However, by definition (S4), an integral beam headlamp (including those with HID light sources) is one with an "integral and indivisible optical assembly", and a headlamp that is "not a replaceable bulb headlamp * * *." In the event of damage to one component, such as the lens, the entire unit, ballast and all, must be replaced. The cost to replace an integral beam HID headlamp is substantially higher than the cost of replacing a more conventional headlamp. The initial HID headlamp permitted (as a result of NHTSA-initiated amendments to Standard No. 108 to facilitate their introduction) was an integral-type design. At the time, it was unknown how to define HID sources as replaceable bulb light sources. The agency is now furthering HID headlamp technology by defining HID's as "replaceable light sources", so that headlamp components may be individually replaced. This amendment to Standard No. 108 means that a vehicle manufacturer wishing to offer HID headlamps now has a choice between two types, integral and replaceable light source.

Comments in support of the NPRM were received from the American Automobile Manufacturers Association (AAMA), Ford Motor Co., Hella, Inc., Koito Manufacturing Co. Ltd., OSRAM Sylvania, Inc. (OSI), and Stanley Electronic Co., Inc. Comments opposing the proposal were received from the Insurance Institute for Highway Safety (IIHS) and Advocates for Highway and Auto Safety (Advocates).

Proposed Amendments to Standard No. 108

S4 Definitions. NHTSA proposed to add a definition of "filament" to read:

Filament means that part of the light source or light emitting element(s), such as a resistive element, the excited portion of a specific mixture of gases under pressure, or any part of other energy conversion sources, that generates radiant energy which can be seen.

No comments were received on this issue and the proposed definition is adopted.

Paragraph S7.7(i). The NPRM proposed amendments to paragraph S7.7(i). Under the final rule published on November 28, 1995 (60 FR 58522), transferring HB type light sources to part 564, paragraph S7.7(i) became paragraph S7.7(b). Under the final rule published today, paragraph S7.7(b) becomes S7.7(d). The following summary of the proposal adopts the nomenclature of the final rule, which does not significantly differ from the proposal.

Paragraph S7.7(d) discusses the procedures for measuring maximum power and luminous flux. This is followed by two new subparagraphs, the first of which, S7.7(d)(1), applies specifically to seasoning requirements for light sources with resistive element type filaments and luminous flux measurement requirements for HB Type bulbs. The second, S7.7(d)(2), applies to seasoning requirements for light sources using excited gas mixtures as filaments or discharge arcs and associated luminous flux measurement. As for seasoning of light sources using other energy conversion sources, NHTSA will address this issue when industry has identified such sources.

OSI recommended that the seasoning for resistive and excited-gas light sources (including ballasts) should be one percent of rated life, as set forth in SAE Recommended Practice J2009 FEB93 *Discharge Forward Lighting Systems* (hereafter "SAE J2009"). Ford also recommended that seasoning for excited gas light sources (including ballast) be in accordance with SAE J2009. Additionally, Ford recommended that seasoning for resistive element type filaments be in accordance with SAE J1383 APR85. NHTSA notes that its proposed amendments affecting "seasoning" are consistent with the OSI and Ford recommendations.

Ford found proposed paragraph S7.7(i) confusing and it suggested changes which it felt would clarify NHTSA's intent. NHTSA concurs, and has rewritten the provision as S7.7(b) (In addition to recommending specific

requirements for the measurement of luminous flux for a light source with a resistive element type filament, Ford did not object to the NHTSA proposal to specifically cite seasoning requirements for light sources using an excited gas mixture).

Regarding proposed paragraph S7.7(l)(7) which would require the date of manufacture to be placed on the light source, Ford asked that it not be adopted as it provides no safety benefit and because Standard No. 108 does not require date of manufacture marking for any other lamps or lighting equipment. NHTSA concurs, and the proposal is not adopted.

Readers should note that proposed new paragraph S7.7(l) is adopted as paragraph S7.7(e). New section S7.7(f) is added to state that, for light sources that use light generated by gaseous discharge lighting sources, seasoning shall be in accordance with section 4.0, and the "rated laboratory life" shall be determined in accordance with sections 4.3 and 4.9 of SAE J2009.

S8 Tests and Procedures for Integral Beam and Replaceable Bulb Headlighting Systems. In the NPRM, NHTSA proposed adding "specific gas mixture" type light sources in the tests specified in S8 to replace "non-filament type." There was no objection and S8 is amended as proposed.

Other Issues Associated with Short Arc Discharge Lighting Systems. The only regulatory requirement that NHTSA proposed that addressed the issue of electrical shock was the marking of the ballast with an appropriate warning. Stanley recommended the adoption of a universally agreed upon marking system such as specified by the International Standards Organization (ISO). However, NHTSA wishes to allow manufacturers wide latitude in choosing their warnings regarding electrical shock and has not followed Stanley's suggestion in the final rule.

Proposed Amendments to Part 564

General. Ford would replace all references to "filament" with "filament or discharge arc." NHTSA agrees, and this has been done when the text could specifically refer to either. Also as indicated previously, the definition of "filament" that was proposed to be added to Standard No. 108, and it applies to part 564 by virtue of Section 564.4 which incorporates definitions used in other NHTSA regulations.

Section 564.2 Purpose. Ford recommended that this section not be revised because both Appendix A and Appendix B have a common purpose; "they merely accomplish it by requiring

varying degrees of information detail dependent upon the rated laboratory life of the light source." NHTSA disagrees; the intended purposes of Appendix A and Appendix B are different. One purpose of the former is to assure that replacement light sources are available and interchangeable. This is not a purpose of Appendix B because long-life light sources need not be manufactured for interchangeability purposes by many different aftermarket suppliers. Because light sources with specifications filed under Appendix B are expected to last the life of the vehicle, component replacement would be necessitated primarily by damage. Thus it is unlikely that the low demand for replacement components would be met by other than manufacturers of the original equipment devices. This distinction from Appendix A requires two different statements of regulatory purposes in section 564.2.

Finally, Appendix B allows manufacturers to retain ballast design parameters that may include proprietary manufacturing specifications, whereas Appendix A requires disclosure of such aspects as they relate to interchangeability.

Paragraph 564.5(a). Under the proposal, relevant manufacturers must "furnish the information specified in appendix A or appendix B." Ford suggested that this implied that manufacturers could file under either Appendix when filing under Appendix B is allowable only for long-life light sources. NHTSA has made an editorial change to clarify that Appendix B is available only for long-life light sources, while both Appendices are available for long-life light source information.

Appendix B. Commenters concurred with NHTSA's proposed benchmark that not less than 2,000 hours of rated laboratory life is a suitable designation of a long-life light source. In accordance with the proposal, in the final rule the manufacturer of such a light source may provide the lesser amount of information that will be required by Appendix B, but, at its option, can make its submission under Appendix A. In either event, a replaceable light source which is the subject of information submitted to Docket No. 93-11 is required to comply with Standard No. 108.

Stanley commented that a clear definition of "life" was not provided in the NPRM, and recommended that "life" of a light source be defined in terms of luminous flux maintenance. NHTSA concurs that an explanation is desirable, since Standard No. 108 and Part 564 both indicate that manufacturers may optionally furnish

the information specified in Appendix B, if the "rated average laboratory life" is not less than 2,000 hours. The SAE has addressed this issue in sections 4.3 and 4.9 of SAE J2009. These sections specify procedures and tests to determine life of the total HID system measured in both hours and starting cycles. NHTSA is adopting the term used there, "rated laboratory life." In so doing, it also examined the definition of "rated average laboratory life" which appears in SAE Standard J1383 JUN90. It found that SAE J1383 JUN90 was suitable for incandescent light sources where lumen drop off occurs at a relatively steady rate over life, but that HID system lumens drop rapidly during the initial burning hours and then, later, tend toward a more level rate of drop.

In Koito's view, Appendix B is not necessary. It believes that all light source submittals to part 564, including HID's, and regardless of the rated laboratory life, should contain the information required in Appendix A. It indicated that the life in hours of an HID light source will vary with the ballasts combined with it. Therefore, life in hours for an HID light source is essentially meaningless if the original ballast is changed to another type of ballast. NHTSA understands this. It is for this reason that NHTSA is adopting the language proposed in the NPRM that Item III of Appendix B specifies the rated laboratory life of the light source/ballast combination instead of that of the light source alone. Item IV of Appendix B of this final rule reflects this requirement. Appendix B was specifically intended to accommodate all ballasts that are functionally interchangeable with a light source but different in design. New paragraph S7.7(e)(4) of Standard No. 108, adopted in this final rule, requires that each ballast filed with a light source bear permanent markings that indicate the rated laboratory life of the combination. Any part 564 submittal for a light source requiring ballasts for operation must include information that specifically identifies all ballasts that will be used with the light source. Substitution of a ballast other than that identified with the light source in part 564 is not permitted.

It is important that ballast information be submitted. NHTSA considers the electronic ballast along with the transparent envelope containing a specific mixture of gases under pressure (the discharge bulb) to be an integral part of the light source system, although the bulb and ballast may be separate components. Furthermore, in determining compliance with Standard No. 108, testing of the light source

without a designated ballast would be difficult if not impossible.

NHTSA has decided not to act upon Koito's recommendation that all light source submittals (including HID) be required to fulfill all informational requirements of Appendix A. The intent of Appendix A is to ensure that sufficient technical information is available to replacement light source manufacturers so that they may manufacture identical replacement light sources. NHTSA has decided that requiring the Appendix B submitter to provide all the information required in Appendix A is unnecessary if the manufacturer provides rated laboratory life data supporting a light source and ballast life of 2,000 hours or more.

Ford recommended that Section I of Appendix A be added to Appendix B ("Filament Position Dimensions and Tolerances Using Either Direct Filament Dimensions or the Three Dimensional Filament Tolerance Box"). Ford also recommended that Appendix B require specification of the electrode position dimensions and tolerances for light sources using excited gas mixtures as filaments. Ford stated that the mid-point of the electrode separation distance would provide a comparable dimension "A" of Figure 8 to be utilized in Standard No. 108's section S9 *Deflection test for replaceable light sources*. NHTSA concurs with this recommendation since, as Ford stated, the mid-point of the electrode separation distance would provide a comparable dimension "A" which is required to support the bulb deflection test for replaceable light sources (S9). NHTSA has accordingly amended Section I of Appendix B as adopted.

Finally, the reader should note that the conforming amendments to paragraphs 564.5(a) and (c) reflect the agency's recent amendment of paragraph S7.7 of Standard No. 108 and 564.5(a) and (c) to transfer HB type replaceable light sources to Docket No. 93-11 (November 28, 1995; 60 FR 58522).

Comments in Opposition

IIHS opposed the rulemaking action because HID light sources are more expensive to replace than other light sources and recommended that the agency not permit the use of increasingly expensive lighting systems on motor vehicles without conducting a parallel rulemaking to reinstate a no-damage 5 mph bumper standard. Advocates, too, believed that the replacement cost for HID headlamp systems ought to be a central consideration of this rulemaking. NHTSA notes that HID light sources are

permitted in integral beam lighting systems, and will continue to be so used even if they are not permitted in replaceable bulb systems. However, the proposal to allow them in such systems is being adopted because there are no safety disbenefits in allowing them. The use of replaceable light source HID lighting systems as an alternative to non-replaceable ones or to resistive element type filament lighting systems is an issue of the marketplace, not of safety.

Advocates disagreed with NHTSA that this rulemaking would reduce costs both to manufacturers and consumers. In its view, NHTSA's rationale for cost reduction is based upon the fact that HID headlamps might not have to be replaced for the life of the vehicle and consequently is not an adequate evaluation of the costs and benefits accruing to consumers from the institution of HID headlamp systems.

NHTSA's rationale for cost reduction is intended in the context of HID headlamp systems. In an integral beam system using HID's, all headlamp parts must be replaced when a component fails or is damaged, even for something as simple as a cracked lens. Allowing HID's to be used in replaceable bulb headlamp systems would permit separability and the replacement of individual components at significant cost savings to the consumer. Repair costs for damaged HID headlamps ought to be significantly reduced if lamp bodies, discharge bulbs and ballasts can be individually serviced, instead of being replaced as part of a headlamp assembly. In addition, it is probable that minor damage would be repaired (such as a cracked lens) that could degrade headlamp performance if there is an economic incentive not to defer correction until required to do so, either by failing performance or state motor vehicle inspection.

Advocates also argued that the rulemaking was mischaracterized as "non-significant." The rulemaking is properly characterized under DOT policies and procedures. The final rule prescribes an alternative, optional, headlighting system, and results in no additional costs or burdens upon any regulated person or upon the public.

Finally, Advocates disagreed with the agency's decision not to regulate ultraviolet radiation (UV) and electric shock, and recommended that a supplementary NPRM be issued addressing the possible threat to human health and safety through UV emissions and high voltages.

There appears to be no current need to do so, other than requiring a warning marking on the ballast. NHTSA

addressed these concerns in the preamble to the proposal (see 60 FR at 31942). In that discussion, NHTSA noted that SAE J2009 recognizes UV radiation and electric shock as potential safety hazards. To address the hazard of UV radiation, the lighting community has developed HID bulbs that include an additional transparent envelope which is a UV filter. Other innovative design solutions are being considered to prevent UV emissions. The need for high voltage shock safety is also recognized by the SAE document. These are design and testing issues for the manufacturer. NHTSA will monitor them and propose rulemaking if it appears to be required for health and safety.

Effective Date

Since the final rule does not impose any additional burden and is intended to afford an alternative to existing requirements, it is hereby found that an effective date earlier than 180 days after issuance of the final rule is in the public interest. The final rule (i.e., the amendments to the Code of Federal Regulations and the requirements specified therein) is effective 30 days after its publication in the Federal Register.

Rulemaking Analyses

Executive Order 12866 and DOT Regulatory Policies and Procedures

This rulemaking action has not been reviewed under Executive Order 12866. It has been determined that the rulemaking action is not significant under Department of Transportation regulatory policies and procedures. The effect of the rulemaking action is to allow an alternative headlighting system. It will not impose any additional burden upon any person. The final rule will reduce costs both to manufacturers and consumers. Because ballasts will no longer have to be integral with the light source, manufacturers may use a simpler, less expensive connector. Consumers may replace separate elements of an HID-replaceable light source headlamp system as compared with the present regulation which requires replacement of the whole unit. Impacts of the rule are, therefore, so minimal as not to warrant preparation of a full regulatory evaluation.

Regulatory Flexibility Act

The agency has also considered the effects of this rulemaking action in relation to the Regulatory Flexibility Act. I certify that this rulemaking action would not have a significant economic

effect upon a substantial number of small entities. Motor vehicle and lighting equipment manufacturers are generally not small businesses within the meaning of the Regulatory Flexibility Act. Further, small organizations and governmental jurisdictions will not be significantly affected as the price of new motor vehicles will not be impacted. Accordingly, no Regulatory Flexibility Analysis has been prepared.

Executive Order 12612 (Federalism)

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 12612 on "Federalism." It has been determined that the rulemaking action does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

National Environmental Policy Act

NHTSA has analyzed this rulemaking action for purposes of the National Environmental Policy Act. The rulemaking action will not have a significant effect upon the environment as it does not affect the present method of manufacturing motor vehicle lighting equipment.

Civil Justice Reform

This rulemaking action will not have any retroactive effect. Under 49 U.S.C. 30103, whenever a Federal motor vehicle safety standard is in effect, a state may not adopt or maintain a safety standard applicable to the same aspect of performance which is not identical to the Federal standard. Under 49 U.S.C. 30163, a procedure is set forth for judicial review of final rules establishing, amending, or revoking Federal motor vehicle safety standards. That section does not require submission of a petition for reconsideration or other administrative proceedings before parties may file suit in court.

Paperwork Reduction Act

The reporting and record keeping requirement associated with part 564 have been approved by the Office and Management and Budget in accordance with 44 U.S.C. chapter 35. The OMB control number is 2127- 0563.

List of Subjects in 49 CFR Parts 564 and 571

Imports, Motor vehicle safety, Motor vehicles.

In consideration of the foregoing, 49 CFR parts 564 and 571 are amended as follows:

PART 564—REPLACEABLE LIGHT SOURCE INFORMATION

1. The authority citation for part 564 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, 30166; delegation of authority at 49 CFR 1.50.

2. Section 564.1 is revised to read as set forth below.

§ 564.1 Scope.

This part requires the submission of dimensional, electrical specification, and marking/designation information, as specified in Appendix A and Appendix B of this part, for original equipment replaceable light sources used in motor vehicle headlighting systems.

3. Section 564.2 is revised to read as set forth below.

§ 564.2 Purposes.

The purposes of this part are achieved through its Appendices:

(a) The purposes of Appendix A of this part are to ensure

(1) The availability to replacement light source manufacturers of the manufacturing specifications of original equipment light sources so that replacement light sources are interchangeable with original equipment light sources and provide equivalent performance, and

(2) That redesigned or newly developed light sources are designated as distinct, different, and noninterchangeable with previously existing light sources.

(b) The purposes of Appendix B of this part are to ensure

(1) That original equipment light sources are replaceable and that replacement light sources provide equivalent performance, and

(2) That redesignated or newly developed light sources are designated as distinct, different, and noninterchangeable with previously existing light sources.

4. Section 564.5 (a), (b), (c), (d) introductory text and (d)(1) are revised to read as set forth below.

§ 564.5 Information filing; agency processing of filings.

(a) Each manufacturer of a motor vehicle, original equipment headlamp, or original equipment headlamp replaceable light source, which intends to manufacture a replaceable light source as original equipment or to incorporate a replaceable light source in its headlamps or motor vehicles, shall furnish the information specified in Appendix A. If the rated laboratory life of the light source is not less than 2,000

hours, the manufacturer shall furnish the information specified in either Appendix A or Appendix B of this part. Information shall be furnished to: Associate Administrator for Safety Performance Standards, National Highway Traffic Safety Administration, 400 Seventh Street SW, Washington, D.C. 20590. Attn: *Replaceable Light Source Information* Docket No. 93-11 (unless the agency has already filed such information in Docket No. 93-11).

(b) The manufacturer shall submit such information not later than 60 days before it intends to begin the manufacture of the replaceable light source to which the information applies, or to incorporate the light source into a headlamp or motor vehicle of its manufacture. Each submission shall consist of one original set of information and 10 legible reproduced copies, all on 8½ by 11-inch paper.

(c) The Associate Administrator promptly reviews each submission and informs the manufacturer not later than 30 days after its receipt whether the submission has been accepted. Upon acceptance, the Associate Administrator files the information in Docket No. 93-11. The Associate Administrator does not accept any submission that does not contain all the information specified in Appendix A or Appendix B of this part, or whose accompanying information indicates that any new light source which is the subject of a submission is interchangeable with any replaceable light source for which the agency has previously filed information in Docket No. 93-11.

(d) A manufacturer may request modification of a light source for which information has previously been filed in Docket No. 93-11, and the submission shall be processed in the manner provided by § 564.5(c). A request for modification shall contain the following:

(1) All the information specified in Appendix A or Appendix B of this part that is relevant to the modification requested,

* * * * *

5. Part 564 is amended by revising the heading for section I and adding Paragraph D to Section I of Appendix A to read as set forth below.

Appendix A—Information to be Submitted for Replaceable Light Sources

I. Filament or Discharge Arc Position Dimensions and Tolerances Using Either Direct Filament or Discharge Arc Dimensions or the Three Dimensional Filament or Discharge Arc Tolerance Box.

* * * * *

D. For a light source using excited gas mixtures as a filament, necessary fiducial information and specifications including electrode position dimensions and tolerance information that provide similar location and characteristics information required by paragraphs A, B, and C of this section I for light sources using a resistive type filament.

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6. Part 564 is amended by revising Section IX of Appendix A to read as set forth below.

Appendix A—Information to be Submitted For Replaceable Light Sources

* * * * *

IX. All other information, dimensions or performance specifications necessary for interchangeability, replaceability, or system test purposes not listed in sections I through VIII. If a ballast is required for operation, a complete listing of the requirements and parameters between the light source and ballast, and ballast and the vehicle shall also be provided.

7. Part 564 is amended by adding Appendix B to read as set forth below.

Appendix B—Information to be Submitted for Long Life Replaceable Light Sources of Limited Definition

I. Filament or Discharge Arc Position Dimensions and Tolerances Using Either Direct Filament or Discharge Arc Dimensions or the Three Dimensional Filament Discharge Arc Tolerance Box.

A. Lower beam filament or discharge arc dimensions or filament or discharge arc tolerance box dimensions and relation of these to the bulb base reference plane and centerline.

1. Axial location of the filament or discharge arc centerline or the filament or discharge arc tolerance box relative to the bulb base reference plane.

2. Vertical location of the filament or discharge arc centerline or the filament or discharge arc tolerance box relative to the bulb base centerline.

3. Transverse location of the filament or discharge arc centerline or the filament or discharge arc tolerance box relative to the bulb base centerline.

4. Filament or discharge arc tolerance box dimensions, if used.

B. Upper beam filament or discharge arc dimensions or the filament or discharge arc tolerance box dimensions and relation of these to the bulb base reference plane and centerline.

1. Axial location of the filament or discharge arc centerline or the filament or discharge arc tolerance box relative to the bulb base reference plane.

2. Vertical location of the filament or discharge arc centerline or the filament

or discharge arc tolerance box relative to the bulb base centerline.

3. Transverse location of the filament or discharge arc centerline or the filament or discharge arc tolerance box relative to the bulb base centerline.

4. Filament or discharge arc tolerance box dimensions, if used.

C. If the replaceable light source has both a lower beam and upper beam filament or discharge arc, the dimensional relationship between the two filament or discharge arc centerlines or the filament or discharge arc tolerance boxes may be provided instead of referencing the upper beam filament or discharge arc centerline or filament or discharge arc tolerance box to the bulb base centerline or reference plane.

D. For a light source using excited gas mixtures as a filament, necessary fiducial information and specifications including electrode position dimensions, and tolerance information that provide similar location and characteristics information required by paragraphs A, B, and C of this section I for light sources using a resistive type filament.

II. Bulb Base Interchangeability Dimensions and Tolerance.

A. Angular locations, diameters, key/keyway sizes, and any other interchangeability dimensions for indexing the bulb base in the bulb holder.

B. Diameter, width, depth, and surface finish of seal groove, surface, or other pertinent sealing features.

C. Diameter of the bulb base at the interface of the base and its perpendicular reference surface.

D. Dimensions of features related to retention of the bulb base in the bulb holder such as tabs, keys, keyways, surface, etc.

III. Bulb Holder Interchangeability Dimensions and Tolerances.

A. Mating angular locations, diameters, key/keyway sizes, any other interchangeability dimensions for indexing the bulb base in the bulb holder.

B. Mating diameter, width, depth, and surface, or other pertinent sealing features.

C. Mating diameter of the bulb holder at the interface of the bulb base aperture and its perpendicular reference surface.

D. Mating dimensions of features related to retention of the bulb base in the bulb holder such as tabs, keys, keyways, surface, or any other characteristics necessary for mating dimensions.

IV. Electrical Specifications for Each Light Source that Operates With a

Ballast and Rated Life of the Light Source/Ballast Combination.

A. Maximum power (in watts).

B. Luminous Flux (in lumens).

C. Rated laboratory life of the light source/ballast combination (not less than 2,000 hours).

V. Applicable to Light Sources that Operate With a Source Voltage Other Than 12.8 Volts Direct Current, and When a Proprietary Ballast Must Be Used With the Light Source.

A. Manufacturer's part number for the ballast.

B. Any other characteristics necessary for system operation.

VI. Bulb Markings/Designation—ANSI Number, ECE Identifier, Manufacturer's Part Number, Individual or in Any Combination.

VII. All other identification, dimensions or performance specifications necessary for replaceability or systems test not listed in sections I through VI.

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

1. The authority citation for part 571 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.50.

2. Section 571.108 is amended by:

(a) adding a definition of "Filament" in alphabetical order to section S4, deleting the definition of "Seasoning" in Section S4, and revising the definition of "Replaceable light source" in section S4 to read as set forth below,

(b) revising paragraph S7.7 (a), (b), (c), and (d), and adding new paragraphs S7.7 (e), (f), and (g) to read as set forth below, and

(c) revising section S8 to read as set forth below:

§ 571.108 Motor Vehicle Safety Standard No. 108 Lamps, Reflective Devices, and Associated Equipment.

* * * * *

54. * * *

Filament means that part of the light source or light emitting element(s), such as a resistive element, the excited portion of a specific mixture of gases under pressure, or any part of other energy conversion sources, that generates radiant energy which can be seen.

* * * * *

Replaceable light source means an assembly of a capsule, base, and terminals that is designed to conform to the requirements of Appendix A or Appendix B of part 564 *Replaceable Light Source Information* of this Chapter.

* * * * *

S7.7 * * *

(a) If other than an HB Type, the light source shall be marked with the bulb marking designation specified for it in compliance with Appendix A or Appendix B of part 564 of this chapter. The base of each HB Type shall be marked with its HB Type designation. Each replaceable light source shall also be marked with the symbol DOT and with a name or trademark in accordance with paragraph S7.2.

(b) The measurement of maximum power and luminous flux that is submitted in compliance with Appendix A or Appendix B of part 564 of this chapter shall be made in accordance with this paragraph. The filament or discharge arc shall be seasoned before measurement of either. Measurement shall be made with the direct current test voltage regulated within one quarter of one percent. The test voltage shall be 12.8v. The measurement of luminous flux shall be in accordance with the Illuminating Engineering Society of North America, LM-45, *IES Approved Method for Electrical and Photometric Measurements of General Service Incandescent Filament Lamps* (April 1980); shall be made with the black cap installed on Type HB1, Type HB2, Type HB4, and Type HB5, and on any other replaceable light source so designed; and shall be made with the electrical conductor and light source base shrouded with an opaque white cover, except for the portion normally located within the interior of the lamp housing. The measurement of luminous flux for the Types HB3 and HB4 shall be made with the base covered with a white cover as shown in the drawings for Types HB3 and HB4 filed in Docket No. 93-11. (The white cover is used to eliminate the likelihood of incorrect lumen measurement that will occur should the reflectance of the light source base and electrical connector be low).

(c) The capsule, lead wires and/or terminals, and seal on each Type HB1, Type HB3, Type HB4, and Type HB5 light source, and on any other replaceable light source which uses a seal, shall be installed in a pressure chamber as shown in Figure 25 so as to provide an airtight seal. The diameter of the aperture in Figure 25 on a replaceable light source (other than an HB Type) shall be that dimension furnished for such light source in compliance with Appendix A or

Appendix B of part 564 of this chapter. An airtight seal exists when no air bubbles appear on the low pressure (connector) side after the light source has been immersed in water for one minute while inserted in a cylindrical aperture specified for the light source, and subjected to an air pressure of 70kPa (10 P.S.I.G.) on the glass capsule side.

(d) The measurement of maximum power and luminous flux that is submitted in compliance with section VII of Appendix A of part 564 of this chapter, or section IV of Appendix B of part 564 of this chapter, shall be made with the direct current test voltage regulated within one quarter of one percent. The test voltage shall be 12.8v. The measurement of luminous flux shall be in accordance with the Illuminating Engineering Society of North America, LM 45; *IES Approved Method for Electrical and Photometric Measurements of General Service Incandescent Filament Lamps* (April 1980). The filament of a replaceable light source shall be seasoned before such measurement. The white covers are used to eliminate the likelihood of incorrect lumens measurement that will occur should the reflectance of the light source base and electrical connector be low.

(1) For a light source with a resistive element type filament, seasoning of the light source shall be made in accordance with section 2.9 of SAE Standard J1383 *APR85 Performance Requirements for Motor Vehicle Headlamps*. The measurement of luminous flux shall be made with the black cap installed on Type HB1, Type HB2, Type HB4, and Type HB5 light sources, and on any other replaceable light source so designed, and shall be made with the electrical conductor and light source base shrouded with an opaque white colored cover, except for the portion normally located within the interior of the lamp housing. The measurement of luminous flux for Type HB3 and Type HB4 shall be made with the base covered with the white cover shown in the drawings for Types HB3 and HB4 filed in Docket No. 93-11.

(2) For a light source using excited gas mixtures as a filament or discharge arc, seasoning of the light source system, including any ballast required for its operation, shall be made in accordance with section 4.0 of SAE Recommended Practice J2009 FEB93 *Discharge Forward Lighting Systems*. With the test

voltage applied to the ballast input terminals, the measurement of luminous flux shall be made with the black cap installed, if so designed, and shall be made with an opaque white colored cover, except for the portion normally located within the interior of the lamp housing.

(e) If a ballast is required for operation, each ballast shall bear the following permanent markings:

(1) Name or logo of ballast manufacturer;

(2) Ballast part number or unique identification;

(3) Part number or other unique identification of the light source for which the ballast is designed;

(4) Rated laboratory life of the light source/ballast combination, if the information for the light source has been filed in Appendix B of part 564 of this chapter;

(5) A warning that ballast output voltage presents the potential for severe electrical shock that could lead to permanent injury or death;

(6) Ballast output power in watts and output voltage in rms volts AC or DC; and

(7) The symbol 'DOT'."

(f) For light sources that use excited gas mixtures as a filament or discharge arc, the "rated laboratory life" shall be determined in accordance with sections 4.3 and 4.9 of SAE Recommended Practice J2009 FEB93 *Forward Discharge Lighting Systems*.

(g) After the force deflection test conducted in accordance with S9, the permanent deflection of the glass envelope shall not exceed 0.13 mm in the direction of the applied force.

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S8 *Tests and Procedures for Integral Beam and Replaceable Bulb Headlighting Systems*. When tested in

accordance with the following procedures, each integral beam headlamp shall meet the requirements of paragraph S7.4, and each replaceable bulb headlamp shall meet the requirements of paragraph S7.5. Ballasts required to operate specific gas mixture light sources shall be included in the tests specified in paragraphs S8.1 and S8.4 though S8.7.

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Ricardo Martinez,
Administrator.

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