

§ 86.094-13

40 CFR Ch. I (7-1-04 Edition)

under the conditions set forth in subpart I of this part and measured and calculated in accordance with those procedures.

(3) *Evaporative emissions* (total of non-oxygenated hydrocarbons plus methanol) from 1994 and later model year heavy-duty vehicles equipped with methanol-fueled diesel engines shall not exceed:

(i) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 lbs, 3.0 grams per test.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 lbs, 4.0 grams per test.

(4)(i) For vehicles with a Gross Vehicle Weight Rating of up to 26,000 lbs, the standards set forth in paragraph (b)(3) of this section refer to a composite sample of evaporative emissions collected under the conditions set forth in subpart M and measured in accordance with those procedures.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 26,000 lbs, the standard set forth in paragraph (b)(3)(ii) of this section refers to the manufacturers, engineering design evaluation using good engineering practice (a statement of which is required in § 86.091-23(b)(4)(ii)).

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1994 or later model year methanol-fueled diesel, or any naturally-aspirated diesel heavy-duty engine (optional for 1994 through 1996 model year natural gas- and liquefied petroleum gas-fueled engines). For petroleum-, natural gas- and liquefied petroleum gas-fueled engines only; this provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in subpart I or N of this

part to ascertain that such test engines meet the requirements of paragraphs (a), (b), and (c) and (d) of this section.

(Secs. 202, 203, 206, 207, 208, 301a, Clean Air Act, as amended; 42 U.S.C. 7521, 7522, 7525, 7541, 7542, 7601a)

[50 FR 10654, Mar. 15, 1985, as amended at 54 FR 14466, Apr. 11, 1989; 57 FR 19538, May 7, 1992; 58 FR 15799, Mar. 24, 1993; 59 FR 48497, Sept. 21, 1994; 62 FR 47120, Sept. 5, 1997]

§ 86.094-13 Light-duty exhaust durability programs.

(a)(1) This section describes the various durability programs available to manufacturers for determining exhaust deterioration factors (DFs) for the certification of 1994 and beyond model year light-duty vehicles and light-duty trucks. While this section describes many of the important elements of these durability programs, it is not intended as an exhaustive list of all requirements applicable either to these programs or to the certification process.

(2) The durability programs consist of various elements, such as a statement of applicability, a service accumulation method, vehicle/component selection methods, durability data vehicle compliance requirements, in-use verification requirements, optional elements, data reporting requirements, and additional requirements. Cross references to other sections in this subpart are indicated where appropriate.

(b) The following table summarizes the durability programs available to all manufacturers of light-duty vehicles and light-duty trucks. The Tier 1 and Tier 0 standards cited in the table are those specified in § 86.094-8 (for light-duty vehicles) and § 86.094-9 (for light-duty trucks). The durability programs described in this section are separate and distinct alternatives, such that determination of an exhaust deterioration factor under one program does not require compliance with the requirements of a different durability program.

Class	Standards	Durability program name	Optional elements
Light-duty Vehicles	Tier 1	Standard AMA	Carryover. Extrapolation. Substitute AMA.

Class	Standards	Durability program name	Optional elements
Light-duty Trucks	Tier 0	Production AMA	Carryover. Extrapolation. Substitute AMA.
		Alternative Service Accumulation	Carryover.
		Standard AMA	Carryover. Substitute AMA.
	Tier 1 & Tier 0	Production AMA	Carryover. Substitute AMA.
		Alternative Service Accumulation	Carryover.
		Standard Self-Approval	Carryover.
		Alternative Service Accumulation	Carryover.

(c) *Standard AMA durability program—*
 (1) *Applicability.* The standard AMA durability program is applicable to light-duty vehicles in model years 1994 and beyond.

(2) *Service accumulation method.* The method shall be mileage accumulation performed on whole durability data vehicles, using the Durability Driving Schedule (commonly referred to as the AMA schedule) specified in appendix IV to this part. The provisions of § 86.094–26(a), which include vehicle weight requirements, the duration of mileage accumulation, and the specification of emission tests to be performed during the mileage accumulation, shall apply. Scheduled and unscheduled maintenance may be performed on the vehicle in accordance with the provisions of § 86.094–25.

(3) *Vehicle/component selection method.* Durability data vehicles shall be selected by the Administrator as required in § 86.090–22(a) and in accordance with the provisions of § 86.094–24(c)(1). Typically, the Administrator selects one durability data vehicle to represent each engine-system combination. The selection of durability data vehicles is also governed by § 86.091–7(a)(2)(i)(A), which generally requires that vehicles used for certification must be representative of production vehicles.

(4) *Durability data vehicle compliance requirements.* Durability data vehicle compliance requirements for the Standard AMA Durability Program are contained in § 86.094–28(a). These include the method of calculating deterioration factors, line crossing criteria, and related requirements.

(5) *In-use verification.* Manufacturer testing of in-use vehicles subsequent to certification is not a requirement of

the Standard AMA Durability Program.

(6) *Optional elements—*(i) *Extrapolation.* Manufacturers selecting the Standard AMA Durability Program may petition the Administrator for the use of extrapolated mileage accumulation data according to the provisions of § 86.094–26(a)(4) for use in certifying light-duty vehicles to the Tier 1 standards of § 86.094–8. If use of extrapolated data is approved, deterioration factors are determined by the method of linear extrapolation described in § 86.094–28(a)(4)(i).

(ii) *Substitute AMA.* Manufacturers selecting the Standard AMA Durability Program may petition the Administrator under § 86.094–26(a)(2)(ii) to substitute a different whole-vehicle mileage accumulation schedule for the Durability Driving Schedule (standard AMA) specified in appendix IV to this part.

(iii) *Carryover and carryacross.* Manufacturers selecting the Standard AMA Durability Program may petition the Administrator for the use of carryover or carryacross mileage accumulation data according to the provisions of § 86.094–24(f). If use of carryover or carryacross data is approved, deterioration factors are determined by the method of linear extrapolation described in § 86.094–28(a)(4)(i).

(7) *Data reporting requirements.* Data reporting requirements for the Standard AMA Durability Program are contained in §§ 86.094–21, 86.094–23(b)(1)(i), and 86.094–26 (a)(6)(ii) and (a)(7).

(d) *Production AMA durability program—*(1) *Applicability.* The production AMA durability program is applicable to light-duty vehicles in model years 1994 and beyond.

(2) *Service accumulation method.* The method shall be mileage accumulation performed on whole durability data vehicles, using the Durability Driving Schedule (commonly referred to as the AMA schedule) specified in appendix IV to this part. The provisions of § 86.094-26(a), which include vehicle weight requirements, the duration of mileage accumulation, and the specification of emission tests to be performed during the mileage accumulation, shall apply. Scheduled and unscheduled maintenance may be performed on the vehicle in accordance with the provisions of § 86.094-25.

(3) *Vehicle/component selection method.* Durability data vehicles shall be selected by the Administrator as required in § 86.090-22(a) and in accordance with the provisions of § 86.094-24(h). Typically, the Administrator selects several random production durability data vehicles, up to a maximum of three vehicles per engine family group.

(4) *Durability data vehicle compliance requirements.* Durability data vehicle compliance requirements for the Production AMA Durability Program are contained in § 86.094-28(a)(7). These include the method of calculating deterioration factors, line crossing criteria, and related requirements.

(5) *In-use verification.* The Production AMA Durability Program includes no requirement for manufacturer testing of in-use vehicles subsequent to certification.

(6) *Optional elements—(i) Extrapolation.* Manufacturers selecting the Production AMA Durability Program may petition the Administrator for the use of extrapolated mileage accumulation data according to the provisions of § 86.094-26(a)(4) for use in certifying light-duty vehicles to the Tier I standards of § 86.094-8. If use of extrapolated data is approved, deterioration factors are determined by the method of linear extrapolation described in § 86.094-28(a)(7)(ii)(B).

(ii) *Substitute AMA.* Manufacturers selecting the Production AMA Durability Program may petition the Administrator under § 86.094-26(a)(2)(ii) to substitute a different whole-vehicle mileage accumulation schedule for the Durability Driving Schedule (standard

AMA) specified in appendix IV to this part.

(iii) *Carryover and carryacross.* Manufacturers selecting the Production AMA Durability Program may petition the Administrator for the use of carryover or carryacross mileage accumulation data according to the provisions of § 86.094-24(h)(1)(v). If use of carryover or carryacross data is approved, deterioration factors are determined by the method of linear extrapolation described in § 86.094-28(a)(7)(ii)(B).

(7) Data reporting requirements for the Production AMA Durability Program are contained in §§ 86.094-21, 86.094-23(b)(1)(i), and 86.094-26 (a)(6)(ii) and (a)(7).

(8) *Additional requirements.* (i) For engine families subject to the procedures of the Production AMA Durability Program, the manufacturer shall submit deterioration factors to the Administrator for approval to use them for certification. The Administrator shall approve the use of deterioration factors that:

(A) The manufacturer attests are representative of the durability performance of its vehicles in actual field use when maintained according to the manufacturer's maintenance instructions (as limited under § 86.094-25(a)); and

(B) Are equal to or greater than the deterioration factors that EPA determines under paragraph (d)(8)(ii) of this section.

(ii) EPA shall determine minimum deterioration factors for engine families subject to the Production AMA Durability Program. This determination shall be based on a procedure of grouping engine families (see § 86.094-24(a)) in order to use historical certification data to determine deterioration factors for each engine family group. The historical data shall be updated yearly through the testing of production durability data vehicles. Test vehicle requirements under these procedures are contained in § 86.094-24 (h) and compliance requirements are contained in § 86.094-28(a)(7).

(iii) *Request procedures.* (A) A manufacturer wishing to participate in the Production AMA Durability Program must submit to the Administrator, for

each model year, a written request describing the engine families that the manufacturer elects to be included in the program.

(B) The Administrator may declare ineligible any engine family for which the Administrator determines there is unreasonable risk in determining a deterioration factor using the methods of the Production AMA Durability Program. Furthermore, the Administrator may limit the number of engine families within the manufacturer's product line that are eligible for the Production AMA Durability Program.

(C) Upon approval of the manufacturer's request to participate, the Administrator and the manufacturer may enter into a written agreement prescribing the terms and conditions of the program. This agreement shall be equitable as compared to agreements entered into with other manufacturers. The agreement shall specify:

(1) The engine families to be included in the program and the engine family groups that have been established by the provisions of § 86.094-24(a) (8) and (9);

(2) The procedures for the selection of production durability data vehicles specified under the provisions of § 86.094-24(h); and

(3) The procedures for the determination of minimum exhaust emission deterioration factors for each engine family group.

(iv) *Withdrawal from Production AMA Durability Program.* (A) Subject to the conditions of paragraphs (d)(8)(iv) (B) through (F) of this section, a manufacturer may, at any time, withdraw all of its product line or separate engine family groups from this program. Only entire engine family groups may be withdrawn.

(B) Once any engine family in an engine family group is certified using deterioration factors determined in the Production AMA Durability Program, the manufacturer shall operate and test the production durability data vehicles specified in § 86.094-24(h) in accordance with the procedures of this part.

(C) The Administrator shall notify the manufacturer if a nonconformity of a category of vehicles within the engine family group is indicated by the

production durability data. For the purpose of this paragraph, a nonconformity is determined to exist if:

(1) Any emission data vehicle within an engine family of the model year most recently certified under the production AMA Durability Program is projected to exceed an emission standard by applying deterioration factors generated by a production durability data vehicle within the same engine family; or

(2) Any of the most recent model year's production durability data vehicle configurations tested under paragraph (d)(8)(iv)(B) of this section line crosses as defined in § 86.094-28(a)(7)(ii)(C). For the purpose of this paragraph, data from identical vehicles will be averaged as under § 86.094-28(a)(4)(i) (A) and (B)

(D) If the Administrator notifies a manufacturer of such a nonconformity, the manufacturer shall submit, by a date specified by the Administrator, a plan to remedy the nonconformity which is acceptable to the Director, Office of Mobile Sources. For the purpose of this paragraph, the term "remedy the nonconformity" will have the same meaning as it does when it appears in section 207(c)(1) of the Clean Air Act (42 U.S.C. 7541(c)(1)).

(E) The manufacturer shall comply with the terms of the remedial plan approved by the Director, Office of Mobile Sources.

(F) If a manufacturer does not comply with the requirements of paragraph (d)(8)(iv) (B), (D), or (E) of this section, the Administrator may deem the certificate of conformity for the affected engine families void *ab initio*.

(e) *Alternative Service Accumulation Durability Program—(1) Applicability.* The Alternative Service Accumulation Durability Program is applicable to light-duty vehicles and light-duty trucks in model years 1994 and beyond.

(2) *Service accumulation method.* (i) The manufacturer shall propose a service accumulation method for the Alternative Service Accumulation Durability Program, for advance approval by the Administrator. The method shall be consistent with good engineering practice and be designed to accurately predict the deterioration of the

vehicle's emissions in actual use over its full useful life.

(ii) Manufacturers may propose service accumulation methods based upon whole-vehicle mileage accumulation, bench aging of individual components or systems, or a combination of the two approaches. Bench procedures should simulate the aging of components or systems over the applicable durability useful life as defined in § 86.094-2 and should simulate cycles and environments found in actual use. For this purpose, manufacturers may remove the emission-related components, in whole or in part, from the durability vehicle itself and deteriorate them independently. Vehicle testing for the purpose of determining deterioration factors may include the testing of durability vehicles that incorporate such bench-aged components.

(iii) Service accumulation shall be according to the method approved in advance by the Administrator.

(3) *Vehicle/component selection method.* The manufacturer shall propose a vehicle/component selection method for the Alternative Service Accumulation Durability Program for advance approval by the Administrator. The vehicle/component selection shall be according to the method approved in advance by the Administrator. The selection of durability data vehicles and components is also governed by § 86.091-7(a)(2)(i)(A), which generally requires that vehicles and components used for certification must be representative of production vehicles and components.

(4) *Durability data vehicle compliance requirements.* The manufacturer shall propose procedures for the calculation of deterioration factors and for the determination of vehicle compliance for advance approval by the Administrator. The Administrator may approve the use of such procedures if the manufacturer demonstrates that the resulting deterioration factors are likely to be representative of the in-use performance of the vehicles. The calculation of deterioration factors and the determination of vehicle compliance shall be according to the procedures approved in advance by the Administrator.

(5) *In-use verification.* Manufacturers selecting the Alternative Service Accumulation

Durability Program shall agree to perform an in-use verification program, which shall include testing on in-use vehicles certified under the program in the years subsequent to certification. The purpose of the in-use verification program is to confirm the adequacy of the manufacturer-designed components of the Alternative Service Accumulation Durability program. The manufacturer shall propose sample sizes, recruitment procedures, testing procedures, optional provisions for the cessation of testing in the event the in-use testing confirms the adequacy of elements of the Alternative Service Accumulation Durability Program, and remedies in the event the in-use testing fails to confirm the adequacy of elements of the Alternative Service Accumulation Durability program. These and other elements of in-use verification are subject to advance approval by the Administrator.

(6) *Optional element: Carryover and carryacross.* Manufacturers selecting the Alternative Service Accumulation Durability Program may petition the Administrator for the conditional use of carryover or carryacross mileage accumulation data according to the provisions of § 86.094-24(f). If use of carryover or carryacross data is approved, deterioration factors are determined by the method described in paragraph (e)(4) of this section.

(7) *Data reporting requirements.* (i) Data reporting requirements for the Alternative Service Accumulation Durability Program are contained in §§ 86.094-21, 86.094-23(b)(1)(i), and 86.094-26(a)(6)(ii) and (a)(7).

(ii) In addition to the reporting of deterioration factors determined under paragraph (e)(4) of this section, the manufacturer shall provide reliability data that shows to the Administrator's satisfaction that all emission-related components are designed to operate properly for the durability useful life of the vehicles in actual use (or such shorter intervals as permitted in section § 86.094-25).

(8) *Additional requirements.* (i) The manufacturer shall consolidate the approved versions for each of the required elements of the Alternative Service Accumulation Durability Program into a written agreement that documents

the details of the program and the manufacturer's responsibilities. The manufacturer shall submit this agreement for approval by the Administrator as part of the application for certification.

(ii) The manufacturer may amend the written agreement entered into pursuant to paragraph (e)(8)(i) of this section so long as the manufacturer demonstrates to the satisfaction of the Administrator that the proposed amendments to the agreement improve upon the in-use verification portion of the existing agreement. Such amendment to the Alternative Service Accumulation Durability Program agreement is subject to the prior approval of the Administrator.

(iii) The certification requirements described in § 86.094-30(a)(14) are applicable.

(f) *Standard Self-Approval Durability Program—(1) Applicability.* The Standard Self-Approval Durability Program is applicable to light-duty trucks in the 1994 and beyond model years.

(2) *Service accumulation method.* The manufacturer shall determine the form and extent of service accumulation used in the Standard Self-Approval Durability Program, according to the provisions of § 86.094-26(b)(2). The method shall be consistent with good engineering practice and be designed to evaluate the mechanisms that are expected to cause deterioration of the vehicle's emissions over its full useful life.

(3) *Vehicle/component selection method.* The manufacturer shall determine the vehicle/component selection method for use in the Standard Self-Approval Durability Program according to the provisions of § 86.094-24(c)(2). Manufacturers shall select the vehicles, engines, subsystems, or components for each engine-system so that their emissions deterioration characteristics may be expected to represent those of in-use vehicles, based on good engineering judgment. The selection of durability data vehicles or components is also governed by § 86.091-7(a)(2)(A), which generally requires that vehicles and components used for certification must be representative of production vehicles and components.

(4) *Durability data vehicle compliance requirements.* Durability data vehicle

compliance requirements for the Standard Self-approval Durability Program are contained in § 86.094-28(b). These include the method of calculating deterioration factors and related requirements.

(5) *In-use verification.* The Standard Self-Approval Durability Program includes no requirement for manufacturer testing of in-use vehicles subsequent to certification.

(6) *Data reporting requirements.* Data reporting requirements for the Standard Self-Approval Durability Program are contained in §§ 86.094-21, 86.094-23(b)(1)(ii), and 86.094-26(d).

(7) *Additional requirement.* The Administrator does not approve the test procedures for establishing exhaust emission deterioration factors. The manufacturer shall submit these procedures and determinations as required in § 86.094-21(b)(5)(i)(A).

(g) *Assigned deterioration factor durability program—(1) Applicability—(i) Small volume manufacturers.* The Assigned Deterioration Factor Durability Program is applicable to light-duty vehicles and light-duty trucks certified under the small volume manufacturer provisions of §§ 86.094-1(e) and 86.094-14(b).

(ii) *Small volume engine families.* The Assigned Deterioration Factor Durability Program is available to light-duty vehicles and light-duty trucks certified under the small volume engine family provisions of § 86.094-24(e)(2).

(2) *Determination of deterioration factors.* No service accumulation method or vehicle/component selection method is required. Deterioration factors are proposed by the manufacturer or assigned by the Administrator based on the provisions of § 86.094-14(c)(7)(i)(C).

(3) *In-use verification.* The Assigned Deterioration Factor Durability Program includes no requirement for manufacturer testing of in-use vehicles subsequent to certification.

(4) *Data reporting requirements.* Data reporting requirements for the Assigned Deterioration Factor Durability Program are contained in § 86.094-14(c)(4), (c)(6), and (c)(11)(ii).

[58 FR 4002, Jan. 12, 1993, as amended at 59 FR 36369, July 18, 1994; 62 FR 11082, Mar. 11, 1997; 62 FR 44875, Aug. 22, 1997]