**40 CFR 90.103 Exhaust emission standards.**

(a) Exhaust emissions for new Phase 1 and Phase 2 nonroad spark ignition engines at or below 19 kilowatts (kW), shall not exceed the following levels. Throughout this part, NMHC+$NO_X$ standards are applicable only to natural gas fueled engines at the option of the manufacturer, in lieu of HC+$NO_X$ standards.

**Table 1—Phase 1 Exhaust Emission Standards**

[Grams per kilowatt-hour]

| Engine displacement class | Hydrocarbons+oxides of nitrogen (HC+$NO_X$) | Hydrocarbons | Carbon monoxide | Oxides of nitrogen ($NO_X$) |
|---|---|---|---|---|
| I | 16.1 | | 519 | |
| II | 13.4 | | 519 | |
| III | | 295 | 805 | 5.36 |
| IV | | 241 | 805 | 5.36 |
| V | | 161 | 603 | 5.36 |

**Table 2—Phase 2 Class I-A, Class I-B, and Class I Engine Exhaust Emission Standards**

[grams per kilowatt-hour]

| Engine class | HC+$NO_X$ | NMHC+$NO_X$ | CO | Effective date |
|---|---|---|---|---|
| I | 16.1 | 14.8 | 610 | August 1, 2007; in addition, any Class I engine family initially produced on or after August 1, 2003 must meet the Phase 2 Class I standards before they may be introduced into commerce. |
| I-A | 50 | | 610 | 2001 Model Year. |
| I-B | 40 | 37 | 610 | 2001 Model Year. |

**Table 3—Phase 2 Class II Engine Exhaust Emission Standards by Model Year**

[grams per kilowatt-hour]

| Model Year | | | | | | |
|---|---|---|---|---|---|---|
| Engine Class | Emission requirement | 2001 | 2002 | 2003 | 2004 | 2005 and later |
| II | HC +$NO_X$ | 18.0 | 16.6 | 15.0 | 13.6 | 12.1 |
| | NMHC+$NO_X$ | 16.7 | 15.3 | 14.0 | 12.7 | 11.3 |
| | CO | 610 | 610 | 610 | 610 | 610 |

**TABLE 4—Phase 2 Handheld Exhaust Emission Standards by Model Year**

[grams per kilowatt-hour]

| Engine class | Emission requirement | Model year | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 and later |
| Class III | $HC+NO_X$ | 238 | 175 | 113 | 50 | 50 | 50 |
| | CO | 805 | 805 | 805 | 805 | 805 | 805 |
| Class IV | $HC+NO_X$ | 196 | 148 | 99 | 50 | 50 | 50 |
| | CO | 805 | 805 | 805 | 805 | 805 | 805 |
| Class V | $HC+NO_X$ | | | 143 | 119 | 96 | 72 |
| | CO | | | 603 | 603 | 603 | 603 |

(1) Each engine displacement class has a unique set of exhaust emission standards. Boundaries for each class are indicated in §90.116(b).

(2) Emission standards for classes III, IV, V may be used only if an engine meets at least one of the following requirements:

(i) The engine must be used in a piece of equipment that is carried by the operator throughout the performance of its intended function(s);

(ii) The engine must be used in a piece of equipment that must operate multipositionally, such as upside down or sideways, to complete its intended function(s);

(iii) The engine must be used in a piece of equipment for which the combined engine and equipment dry weight is under 14 kilograms, no more than two wheels are present on the equipment, and at least one of the following attributes is also present:

(A) The operator must alternately provide support or carry the equipment throughout the performance of its intended function(s);

(B) The operator must provide support or attitudinal control for the equipment throughout the performance of its intended function(s); and

(C) The engine must be used in a generator or pump;

(iv) The engine must be used to power one-person augers, with a combined engine and equipment dry weight under 20 kilograms;

(v) The engine must be used in a recreational application, with a combined total vehicle dry weight under 20 kilograms;

(vi) Where a piece of equipment otherwise meeting the requirements of paragraph (a)(2)(iii) or (a)(2)(iv) of this section exceeds the applicable weight limit, emission standards for class III, IV or V, as applicable, may still apply if the equipment exceeds the weight limit by no more than the extent necessary to allow for the incremental weight of a four stroke engine or the incremental weight of a two stroke engine having enhanced emission control acceptable to the Administrator. Any manufacturer utilizing this provision to exceed the subject weight limitations shall maintain and make available to the Administrator upon request, documentation to substantiate that the exceedance of either weight limitation is a direct result of application of a four stroke or enhanced two stroke engine having the same, less or very similar power to two stroke engines that could otherwise be used to power the equipment and remain within the weight limitations.

(3) Notwithstanding paragraph (a)(2) of this section, two stroke engines used to power lawnmowers or other nonhandheld equipment may meet Phase 1 Class III, IV or V standards and requirements, as appropriate, through model year 2002 subject to the provisions of §90.107(e), (f) and (h). Such engines shall not be included in any computations of Phase 2 averaging, banking, or trading credits or eligible production.

(4) Notwithstanding paragraph (a)(2) of this section, two-stroke engines used to power snowthrowers may meet class III, IV, or V standards.

(5) Notwithstanding paragraph (a)(2) of this section, engines used exclusively to power products which are used exclusively in wintertime, such as snowthrowers and ice augers, at the option of the engine manufacturer, need not certify to or comply with standards regulating emissions of HC, $NO_X$. HC+$NO_X$ or NMHC+$NO_X$ as applicable. If the manufacturer exercises the option to certify to standards regulating such emissions, such engines must meet such standards. If the engine is to be used in any equipment or vehicle other than an exclusively wintertime product such as a snowthrower or ice auger, it must be certified to the applicable standard regulating emissions of HC, $NO_X$. HC+$NO_X$ or NMHC+$NO_X$ as applicable.

(6) In lieu of certifying to the applicable Phase 2 standards, small volume engine manufacturers as defined in this part may, at their option, certify their engine families as Phase 1 engines until the 2010 model year for nonhandheld engine families excluding Class I-A and Class I-B engine families, until the 2008 model year for Class III and Class IV engine families, and until the 2010 model year for Class V engine families. Such engines shall not exceed the applicable Phase 1 standards and are excluded from the averaging, banking and trading program and any related credit calculations. Beginning with the 2010 model year for nonhandheld engine families, the 2008 model year for Class III and Class IV engine families, and the 2010 model year for Class V engine families, these engines must meet the applicable Phase 2 standards.

(7) In lieu of certifying to the applicable Phase 2 standards, manufacturers of small volume engine families, as defined in this part may, at their option, certify their small volume engine families as Phase 1 engines until the 2010 model year for nonhandheld engine families excluding Class I-A and Class I-B engine families, until the 2008 model year for Class III and Class IV engine families, and until the 2010 model year for Class V engine families. Such engines shall not exceed the applicable Phase 1 standards and are excluded from the averaging, banking and trading program and any related credit calculations. Beginning with the 2010 model year for nonhandheld engine families, the 2008 model year for Class III and Class IV engine families, and the 2010 model year for Class V engine families, these engines must meet the applicable Phase 2 standards.

(8) Notwithstanding the standards shown in Table 3 of this section, the $HC+NO_X$($NMHC+NO_X$) standard for Phase 2 Class II side valve engine families with annual production of 1000 or less shall be 24.0 g/kW-hr (22.0 g/kW-hr) for model years 2010 and later. Engines produced subject to this provision may not exceed this standard and are excluded from the averaging, banking and trading program and any related credit calculations.

(b) Exhaust emissions will be measured using the procedures set forth in subpart E of this part.

[60 FR 34598, July 3, 1995, as amended at 61 FR 58300, Nov. 13, 1996; 62 FR 42643, Aug. 7, 1997; 64 FR 15236, Mar. 30, 1999; 65 FR 24305, Apr. 25, 2000; 67 FR 68340, Nov. 8, 2002]