

State of California  
AIR RESOURCES BOARD

CALIFORNIA EXHAUST AND EVAPORATIVE EMISSION STANDARDS AND TEST  
PROCEDURES FOR NEW 2010 AND LATER OFF-ROAD LARGE SPARK-IGNITION  
ENGINES

(2010 and Later Test Procedure 1048)

Adopted: March 2, 2007

Amended: November 21, 2008

NOTE: This document is printed in a style to indicate changes from the existing provisions. All existing language is indicated by plain type. All additions to language are indicated by underlined text. All deletions to language are indicated by ~~strikeout~~. Only those sections containing the suggested modifications from the existing language are included. All other portions remain unchanged and are indicated by the symbol “\* \* \* \* \*” for reference.

**PART 1048 – CONTROL OF EMISSIONS FROM NEW, LARGE NONROAD SPARK-IGNITION ENGINES**

**Subpart A—Overview and Applicability**

\* \* \* \* \*

**§1048.101 What exhaust emission standards must my engines meet?**

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(a) (2) *Exhaust Emission Standards.* Exhaust emissions from off-road large spark-ignition engines manufactured for sale, sold, or offered for sale in California, or that are introduced, delivered or imported into California for introduction into commerce, must not exceed:

Exhaust Emission Standards  
(grams per brake horsepower-hour)  
[grams per kilowatt-hour]<sup>(1)</sup>

Model Year	Engine Displacement	Durability Period	HC + NO <sub>x</sub>	Carbon Monoxide
2010 and subsequent	≤ 1.0 liter	1,000 hours or 2 years	9.0 [12.0]	410 [549]
<u>2011 and subsequent</u>	<u>≤ 825 cc</u>	<u>1,000 hours or 2 years</u>	<u>6.0</u> <u>[8.0]</u>	<u>410</u> <u>[549]</u>
<u>2011 - 2014</u>	<u>&gt; 825 cc - ≤ 1.0 liter</u>	<u>1,000 hours or 2 years</u>	<u>4.8</u> <u>[6.5]</u>	<u>280</u> <u>[375]</u>
<u>2015 and subsequent</u>	<u>&gt; 825 cc - ≤ 1.0 liter</u>	<u>1,000 hours or 2 years</u>	<u>0.6</u> <u>[0.8]</u>	<u>15.4</u> <u>[20.6]</u>
2010 and subsequent <sup>(2)</sup>	> 1.0 liter	5000 hours or 7 years	0.6 [0.8]	15.4 [20.6]

- Note: (1) Pollutant emissions reported to ARB by manufacturers must be in grams per kilowatt-hour.  
 (2) Small volume manufacturers are required to comply with these emission standards in 2013.

For severe-duty engines, the HC+NO<sub>x</sub> standard is 2.7 g/kW-hr and the CO standard is 130.0 g/kW-hr. The following engines are not subject to the transient standards in this paragraph (a):

- A. High-load engines.
- B. Engines with maximum engine power above 560 kW.
- C. Engines with maximum test speed above 3400 rpm.
- D. Constant-speed engines and severe-duty engines.

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