



CALIFORNIA
AIR RESOURCES BOARD

**Small Off-Road Engine Evaporative Emission Control System
Certification Procedure**

CP-902

**Certification Procedure for Evaporative Emission Control Systems on
Engines With Displacement Greater Than 80 Cubic Centimeters**

**Adopted: July 26, 2004
Amended: September 18, 2017**

**CP-902
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Air Resources Board**

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A set of definitions common to all Certification and Test Procedures is in title 13, California Code of Regulations, section 2752 et seq.

For the purpose of this procedure, the term "ARB" refers to the California Air Resources Board, and the term "Executive Officer" refers to the ARB Executive Officer, or his or her authorized representative or designate.

1. GENERAL INFORMATION AND APPLICABILITY

This document describes the procedure for evaluating and certifying evaporative emission control systems on small off-road engines > 80 cc or equipment that use small off-road engines > 80 cc. By definition, evaporative emission control systems are fuel system components that are designed to reduce evaporative and permeation emissions. Fuel system components may include fuel tanks, fuel lines and any or all associated fittings, mechanisms to control fuel tank venting, tethered fuel caps, and any other equipment, components, or technology necessary for the control of evaporative and permeation emissions.

This Certification Procedure, CP-902, is proposed pursuant to section 43824 of the California Health and Safety Code (CH&SC) and describes the process required to certify evaporative emission control systems on small off-road engines (SORE) or equipment that use small off-road engines to evaporative emission standards. Small off-road engines are defined in title 13, California Code of Regulations (CCR), section 2401 et seq.

1.1 Requirement to Comply with Applicable Codes and Regulations

Certification of a evaporative emission control system by the Executive Officer does not exempt the same from compliance with other applicable codes and regulations such as state and federal safety codes and regulations.

2. EVAPORATIVE EMISSION STANDARDS

The diurnal emission and design standards for small off-road engines with displacement greater than 80 cc are specified in title 13, Cal. Code Regs., section 2754.

3. OPTIONAL EVAPORATIVE EMISSION STANDARDS

Optional evaporative emission standards are emission targets that are more stringent than the normal evaporative emission standards. Manufacturers that certify to these optional standards are allowed to affix a unique label to their engines or equipment that identifies them as low polluting. Title 13, Cal. Code Regs., section 2757 identifies the optional evaporative emission standards.

4. CERTIFICATION OVERVIEW

4.1 Summary

For certification purposes, small off-road engines (SORE) are grouped into three categories. The first category includes all walk-behind mowers with displacements greater than 80 cc to less than 225 cc. The second includes all other engines with displacements greater than 80 cc to less than 225 cc. The third category includes engines with displacements greater than or equal to 225 cc. Executive Orders certifying the evaporative emission control system on engines or equipment are valid for only one model-year of production. New Executive Orders in each subsequent model year must be obtained for each evaporative family.

Evaporative emission control systems may be grouped into evaporative families for certification and other implementation purposes (e.g., testing, recall). An evaporative family includes engine or equipment models that share similar fuel systems, engine designs, and evaporative emission control features such that the equipment can be expected to exhibit similar diurnal emission rates. Attachment 1 of this procedure defines the classification criteria and codes for determining evaporative families. Any engine certified as a complete (both exhaust and evaporative emissions) unit can be certified using one common exhaust and evaporative family name. At the applicant's option, the two letters identifying the evaporative control system can be part of the family name or be placed elsewhere on the emission label.

Applicants that certify evaporative emission control systems under this procedure shall submit all test results from all emissions-related tests performed on the units tested for certification, including test results from invalid tests or from any other tests, whether or not they were conducted according to TP-901, TP-902, or SAE J1737 (Stabilized May 2013), SAE J30, SAE J1527, or SAE J2996. Applicants certifying to diurnal emission standards must test a minimum of one engine model or equipment for every evaporative family for which certification is requested or submit test results or Executive Order numbers for the fuel tank, fuel lines, and carbon canister. The engine or equipment model selected for testing must be of a configuration that is expected to yield the highest diurnal emission rate relative to the applicable diurnal emission standard within an evaporative family, and shall contain a

complete and functional evaporative emission control system. The evaporative emission control system shall include all emission control systems and components that are specified in the certification application. The test procedure used to determine compliance with applicable diurnal emission standards is TP-902.

The ARB may direct an applicant to conduct a retest if the original test results indicate marginal (within 5% of the standard) compliance. The retest must be performed on the same engine and/or equipment that generated the original test results. The retest may be performed omitting the preconditioning and durability portions of the test procedure if the test engine or equipment has continuously contained fuel subsequent to the original test. Any anti-tampering devices that will be installed on production engines for protection against unauthorized adjustments of emission-related adjustable parameters must be approved by ARB. The certification label and the location where the label is affixed to the production engine must be approved by the ARB. The applicant's emission warranty statement provided with each production engine must also be approved by ARB.

For each evaporative family, the applicant must submit to ARB an application for certification containing all the required information and/or test data in the ARB-specified format. The ARB is required to approve or disapprove an application within 90 days after receipt of the complete application.

4.2 Certification Responsibilities

Under this procedure, an applicant is required to obtain ARB certification for evaporative emission control systems on small off-road engines or equipment that use small off-road engines. Those applying for certification are held liable for complying with all of ARB's certification and emission warranty requirements.

4.3 Certification Testing

Diurnal emission testing shall be conducted according to TP-902 and the results submitted to ARB as part of the certification application. If, after review of the application for certification including all test data submitted by the applicant, and any other pertinent data or information the Executive Officer determines is necessary, the Executive Officer determines that the application has satisfied the conditions set forth in these procedures, the Executive Officer may approve the application and issue an Executive Order.

4.4 Data Carryover

Subject to approval by the Executive Officer, certification test data of an evaporative family may be carried over, in lieu of new tests, to subsequent

model years, provided there have been no changes to the evaporative emission control system or to any evaporative emission control system component(s). Emissions data for one evaporative family may not be used to certify another evaporative family.

5. GENERAL INSTRUCTIONS – EVAPORATIVE EMISSION CONTROL SYSTEM CERTIFICATION

These instructions provide guidance regarding the preparation, submission and revision of small off-road engine evaporative emission control system certification applications for 2007 and subsequent model year small off-road engines with displacement greater than 80 cc. Only information essential for certification is required in this format. Other information required by the test procedures (e.g., test equipment build records, test and maintenance records, etc.) must be maintained by the applicant and made available to the ARB within **30 days** upon request. An application submitted in accordance with these instructions would enable an expedited review and approval by the ARB. This Section covers the following subject matter:

- Where To Submit Applications for Certification
- Letter of Intent
- Emission Label
- Engineering Description of Evaporative Emission System
- Emission Warranty
- Test Procedures
- Modified Test Procedures
- Adjustable Parameters and Anti-Tampering Devices
- Certification Test Fuels
- Amendments to the Application
- Running Changes and Field Fixes
- Confidentiality
- Summary of Certification Process
- Submission of an engine or equipment unit

5.1 Where to Submit Applications For Certification

Unless otherwise specified by the Executive Officer, all certification applications and correspondence shall be forwarded to:

Emissions Compliance, Automotive Regulations and Science Division
Air Resources Board
9480 Telstar Avenue, Suite 4
El Monte, California 91731-2988
Attn: Division Chief

5.2 Letter of Intent

An applicant shall submit a Letter of Intent (LOI) prior to the initial model year submission of the applicant's certification application(s) indicating the applicant's intent to seek evaporative emission control system certification. Such LOI shall list the evaporative families for which the applicant will apply for certification and the date of expected submission for each application. An applicant's LOI for evaporative emission control systems may be combined with that required in *California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off Road Engines; Engine-Testing Procedures (Part 1054)*, adopted October 25, 2012.

5.3 Emission Label

An evaporative emission control system label meeting the requirements of title 13, Cal. Code Regs., section 2759 shall be included in an application for certification.

5.4 Engineering Description of Evaporative Emission Control System

An engineering description of the technology used to control evaporative emissions shall be included in an application for certification. The description shall include the method used to control running loss emissions.

5.5 Emission Warranty

A copy of the applicant's emission warranty statement for the small off-road engine evaporative emission control system and/or components must be submitted for ARB review and approval. The warranty requirements and statement are specified in title 13, Cal. Code Regs., sections 2760 and 2764, respectively.

5.6 Test Procedures

The test procedures used to determine compliance with the evaporative emission standards are SAE J1737 (Stabilized May 2013), SAE J30, SAE J1527, or, only for fuel lines with inner diameter 4.75 mm or less, SAE J2996, TP-901, and TP-902.

5.7 Modified Test Procedures

Any modifications to the prescribed test equipment and/or test procedures due to unique engine or equipment designs, laboratory equipment arrangements, facility limitations, etc. must be approved in advance by the Executive Officer and described in the certification application. Alternative test procedure approval shall be granted on a case-by-case basis, only after all necessary

comparison testing has been conducted. The applicant shall demonstrate equivalency between the reference test procedure and the proposed alternative test procedure according to the procedure in "Method 301 – Field Validation of Pollutant Measurement Methods from Various Waste Media," which is in Appendix A to 40 CFR Part 63 and is incorporated by reference herein. The use of unapproved test equipment or procedures may result in rejection of generated test data by the Executive Officer.

5.8 Adjustable Parameters and Anti-Tampering Devices

An applicant shall utilize good engineering practice to prevent unauthorized or in-use adjustments of any adjustable parameter of an evaporative emission control system. These may include the use of anti-tampering devices. Samples of a manufacturer's proposed anti-tampering measure to prevent unauthorized or in-use adjustments or other such devices, shall be submitted in advance of the application to ARB for approval. In-use adjustments of adjustable parameters of an evaporative emission control system are allowed if the adjustments do not invalidate a system's compliance. All adjustable parameters and the corresponding ARB approval number must be reported in the application. If the parameter or method of tamper-resistance is subsequently modified, a new ARB approval will be required.

5.9 Certification Test Fuel

The fuel for emission testing must meet the specifications in the test procedures and title 13, Cal. Code Regs., section 2754. Testing with unauthorized fuel will result in rejection of the test results.

5.10 Amendments to the Application

Any revisions to an application due to typographical errors, corrections, running changes or field fixes, new test data, or additional information must be submitted to ARB. If the changes affect the evaporative emissions of the evaporative family, the entire application shall be resubmitted to ARB. For the other parts of the application, only the revised information on the affected application pages must be submitted, together with the following for identification purposes as applicable:

- Applicant or Holder Name
- Model year
- Evaporative family
- Engine family
- Process code (e.g., correction, running change)
- Engine displacement
- Comments field (describing the update or change)
- The fields that have been changed or corrected.

5.11 Running Changes and Field-Fixes

Any factory change to an evaporative family during the model-year production that could potentially affect the evaporative emissions must be approved by ARB via a running change request in a revised certification application. In addition, any post assembly line change that could potentially affect the evaporative emissions (e.g., at factory warehouses, distribution centers, dealers) must be approved by ARB via a field fix request in a revised certification application; a field fix request typically occurs after the model-year production has ended. Running changes and field fixes not approved by ARB will invalidate the certification of any affected evaporative family and subject the Holder to ARB enforcement actions. If the change affects an emission-related part or results in a new model in the evaporative family exhibiting the highest diurnal emission rate relative to the applicable diurnal emission standard, new test data and engineering evaluations shall be submitted in a revised certification application to demonstrate that the evaporative family will remain in compliance. If the change does not result in a new model in the evaporative family exhibiting the highest diurnal emission rate relative to the applicable diurnal emission standard, only the affected pages and information fields of the certification application need to be submitted.

5.12 Confidentiality

Any information that is designated by an applicant as confidential shall be handled in accordance with the procedures specified in title 17, Cal. Code Regs., sections 91000-91022.

5.13 Summary of Certification Process

The applicant shall prepare a summary of the certification process for each certified evaporative family. It shall contain documentation of the successful completion of all applicable portions of the requirements contained in this Certification Procedure including but not limited to the following:

- All problems encountered throughout the certification process,
- The types of testing performed, and
- The frequency and/or duration of any testing, as appropriate.

Any other pertinent information about the evaluation process shall be contained in the summary.

5.14 Submission of an engine or equipment unit

Upon the request of the Executive Officer, an applicant shall submit for inspection or testing an engine or equipment unit from an evaporative family with the certification application, when available.

6. APPLICATION FORMAT INSTRUCTIONS

An application for certification shall contain the following information:

- Application type (e.g., new, running change)
- Model year
- Full corporate name of the applicant
- U.S. EPA-assigned manufacturer code
- Engine family name
- Evaporative family name
- Applicant contact information
 - Name
 - Title
 - Company name
 - Address
 - Phone number
 - Fax number
 - Email address
- Production plant contact information
 - Name
 - Title
 - Company name
 - Address
 - Phone number
 - Fax number
 - Email address
- Projected model year production volume in California
- Projected model year production volume in U.S.
- Proof the applicant has met the bond requirements of title 13, Cal. Code Regs., section 2774
- Date of expected introduction into California commerce
- All results from all emissions-related tests performed on the units tested for certification, including test results from invalid tests or from any other tests, whether or not they were conducted according to TP-901, TP-902, or SAE J1737 (Stabilized May 2013), SAE J30, SAE J1527, or SAE J2996. The Executive Officer may require an applicant to send other information to confirm that testing according to TP-901, TP-902, or SAE J1737 (Stabilized May 2013), SAE J30, SAE J1527, or SAE J2996, as applicable, was valid.
- Description of any special test equipment
- List of equipment types in the evaporative family

- Description of each engine and equipment model in the evaporative family
 - Model number
 - Fuel cap information
 - Model number
 - Description of fuel tank tether
 - Description of indication of establishment of vapor seal
 - Innovative Product approval, if applicable
 - Description of each fuel tank model in the evaporative family
 - Model number
 - Total capacity (L)
 - Nominal capacity (L)
 - Internal surface area (m²)
 - Executive Order number, if applicable, or the following:
 - Tank materials, including pigments, plasticizers, UV inhibitors, or other additives that are expected to affect control of emissions
 - Gasket material
 - Production method
 - Permeation barrier
 - Engineering drawings (may be simplified)
 - Description of each fuel line model in the evaporative family
 - Model number
 - Diameter (mm)
 - Length (mm)
 - Executive Order number, if applicable, or the following:
 - Materials and methods used to construct the line
 - Permeation barrier
 - Engineering drawings
 - Description of each carbon canister model in the evaporative family
 - Innovative Product approval or Executive Order number, if applicable, or the following:
 - Model number
 - Nominal capacity (mL)
 - Butane working capacity (g)
 - Maximum fuel tank nominal capacity to be used with each canister
 - Type of carbon
 - Recommended purge rate
 - Engine or equipment unit volume (m³), accurate to at least 3 significant figures, as sold to an ultimate purchaser
 - If unknown, list as zero
 - Engine Class
 - Fuel system type (e.g., carburetor, fuel injection)
 - EMEL, if applicable
- Emission label or approval number
- Emission warranty statement or approval number
- List of evaporative emission warranty parts
- Description of changes to emission label or emission warranty

- Description of evaporative emission control system
- Description of criteria used to determine which models in the evaporative family exhibit the highest diurnal emission rates relative to the applicable diurnal emission standards
- Description of any Quality Assurance/Quality Control (QA/QC) protocols used by the applicant to ensure production evaporative emission control systems and their components in the evaporative family comply with the applicable emission standards throughout their useful life

7. DOCUMENTATION OF CERTIFICATION

Documentation of certification shall be in the form of an Executive Order.

The certification Executive Order shall include, at a minimum, the following items.

- A list of equipment types in the evaporative family
- A list of approved engines or equipment model(s) in the evaporative family.
- A list of components certified for use with the evaporative family including component specifications.
- Applicable evaporative emission standards and test procedures.
- Applicable operating parameters and limitations.
- Highest tested diurnal emission rate (g organic material hydrocarbon equivalent·day⁻¹) of the unit tested for certification, if applicable.
- Highest tested final permeation rate (g ROG·m⁻²·day⁻¹) of the fuel tank samples tested for certification, as calculated in section 14 of TP-901, if applicable.
- Highest tested permeation rate (g ROG·m⁻²·day⁻¹) of the fuel line samples tested for certification, as calculated in SAE J1737 (Stabilized May 2013), SAE J30, SAE J1527, or SAE J2996, if applicable.
- Working capacity (g organic material hydrocarbon equivalent) of the carbon canister as measured in Attachment 1 to TP-902.
- Warranty period(s).
- Factory testing requirements, if applicable.

**Attachment 1
SORE Evaporative Family Classification Criteria**

<i>Venting Control</i>		<i>Tank Barrier</i>	
<u>Type</u>	<u>Code</u>	<u>Type</u>	<u>Code</u>
Canister	C	Metal	M
Sealed Tank	S	Treated HDPE or PE	P
		Coextruded	C
		Selar	L
		Nylon	N
		Acetal	A
Other	O	Other	O

An applicant must group engine and equipment models into one or more evaporative families based on the above criteria and coding.

For example:

A 2006 model year mower with the following characteristics:

- sealed tank venting control system
- fluorinated HDPE fuel tank

The evaporative family code would begin with the U.S. EPA-assigned three-character manufacturer code and include "SP". Additional alphanumeric characters may be added to the evaporative family code as necessary to distinguish between evaporative families using the same venting control and fuel tank barrier type.

A Holder must list all the models of engines and equipment they produce into distinct evaporative families. Engine and equipment models falling under a particular evaporative family code may be certified or approved with one application.