
**Distillation of Gasoline Spreadsheet
Example Key for Requirements at
40 CFR 80.47(h) and 80.47(l)**

Compliance Division
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Introduction: On April 28, 2014, EPA promulgated new Performance Based Analytical Test Method Approach (PBATMA) requirements for distillation of gasoline (please see the Federal Register 79 FR 23414).

Beginning January 1, 2016, for distillation of gasoline, a test facility must self-qualify Voluntary Consensus Standards Body (VCSB) test method to show that it has met the precision requirements codified in the regulations at 40 CFR 80.47(h). A test facility must also self-qualify that it has met the qualification criteria for accuracy by conducting an ASTM D6708 assessment as codified in the regulations at 40 CFR 80.47(l). The regulations also specify criteria for the designated test method reference installation used to qualify accuracy of method defined test methods used to measure method defined fuel parameter at 40 CFR 80.47(k). If your test facility was utilizing the designated primary test method, ASTM D5599, codified in the regulations at 40 CFR 80.46(d)(1) prior to October 28, 2013, the regulations provide for an exemption in meeting these precision and accuracy self-qualification requirements.

The following spreadsheet template key applies to any party self-qualifying in meeting the PBATMA requirements at 40 CFR 80.47(h) and 40 CFR 80.47(l). This guidance deals only with the self-qualification of analytical test methods at a testing facility for measuring distillation of gasoline.

The discussions of the applicable regulations in this document are not verbatim. The reader is encouraged to read and become familiar with the applicable regulations of Subpart I of 40 CFR Part 80. These instructions are intended to help a test facility self-qualify a VCSB analytical test method for the measurement of distillation of gasoline.

Applicable Dates: These requirements for method qualification under § 80.47 become effective on January 1, 2016.

Note: Please see below for instructions on use of this spreadsheet template key along with its associated spreadsheet template for distillation of gasoline which is provided by the Agency for determining compliance with the precision criteria of § 80.47(h) and the ASTM D6708-13 accuracy assessment requirements of § 80.47(l). We encourage parties to use this spreadsheet template key and its associated spreadsheet template for distillation of gasoline as an affirmative defense in meeting the Performance Based Analytical Test Method Approach requirements at 40 CFR 80.47(h) and 40 CFR 80.47(l).

Instructions for use of spreadsheet template key for evaluating method precision and accuracy.

I. Precision demonstration for distillation of gasoline.

Precision Criteria, § 80.47(h)(1) - the maximum allowable standard deviation computed from the results of a minimum of 20 tests made over 20 days (seven or fewer tests per week and two or fewer tests per day) on samples using good laboratory practices taken from a single homogeneous commercially available gasoline must be less than or equal to 0,3 times the reproducibility "R" divided by 2.77, where "R" equals the ASTM reproducibility of ASTM D86-07 (Example: A gasoline having an initial boiling point of 26 degrees Celsius: Maximum allowable standard deviation of 20 tests $\leq 0.3 \cdot (8.5 \text{ degrees Celsius} / 2.77) = 2.55 \text{ degrees Celsius}$). The 20 results must be a series of tests with a sequential record of analysis and no emissions.¹

It should be noted § 80.47(h)(1) contains precision criterion for the distillation parameters of E10, E50, E90 and the final boiling point. For conciseness sake, this spreadsheet template key only covers the initial boiling point precision demonstration, however the spreadsheet template does cover distillation precision criteria for the distillation parameters of E10, E50, E90 and the final boiling point for gasoline.

In addition, the formula in cell "B15" for the E10, E50 and E90 distillation precision demonstrations must be adjusted to account for the average slope of the distillation curve in order to determine the precision criterion for E10, E50 and E90.

A. In the workbook entitled "Non-mandatory VCSB distillation content gasoline test method template", locate the worksheet entitled, "Distillation Precision Demonstration". Enter precision demonstration data in the light shaded green areas of the worksheet.

Notes:

1. Test results must be reported in degrees Celsius (°C) to the number of significant digits specified in the method description or, if no such precision is indicated, to as many digits to the right of the decimal point as appear on the instrument readout up to three.
2. The date and time of each test measurement must be reported.
3. Please include the laboratory sample test identification number for each test result.

B. After entering the data into the light shaded green area of the "Distillation Precision Demonstration" worksheet, go to the "File" menu at the top of the screen and select "Save" to save your data. Once all the data are entered into the "Distillation Precision Demonstration" worksheet, the standard deviation of the data set (located in cell B16), and an indication as to whether the applicable Distillation precision criterion are met for the initial boiling point, as well as, E10, E50, E90, and the final boiling point in the applicable precision demonstration worksheets, will be determined by the worksheet. The indication of "PASSED" or "FAILED" is located in cell B15 in the worksheet, after the question, "Is IBP Precision Criterion Met?". If the worksheet is missing required data, an indication of "REQUIRED DATA MISSING" will appear after this question. There is a QC data entry check for each test result in column E (i.e., if data is entered in a test result cell, an indication of "OK" will appear next to that cell, but if no data is entered in a test result cell, an indication of "DATA REQUIRED IN CELL #" will appear next to that cell). **Note:**

¹ A laboratory may exclude a given sample or test result only if the exclusion is for a valid reason under good laboratory practices and it maintains records regarding the sample and test results and the reason for excluding them.

If the applicant wishes to include more than the 20 minimum tests, please report the additional data by adding rows to the spreadsheet.²

II. ASTM D6708-13 Accuracy demonstration for Distillation of gasoline.

- A. Include information reported in the test method documentation to the user of the Voluntary Consensus Standards Body (VCSB) organization test method, including a description of the technology and/or instrumentation that makes the method functional.
- B. Include information reported in the test method that demonstrates the test facility is using a VCSB test method ASTM D6708 assessment. Indicate by typing "Yes" in cell "B15",
- C. Include the correlation equation to utilize for reporting purposes for the fuel parameter in cell "B17". If the ASTM D6708 assessment between the candidate VCSB alternative test method and the VCSB designated primary method results in a "null" comparison, that type the work "null" in cell "B17" indicating the ASTM D6708 assessment has determine the alternative test method provides equivalent results to its respective designated primary test method.

- III. 40 CFR 80.47(q). Record retention requirements for approved test methods. Each individual test facility must retain records related to the establishment of accuracy and precision values, all test method documentation, and any quality control test and analysis under title 40 CFR sections 80.47 for five years.

EPA Contact:
Joe Sopata
(202) 343-9034
Email: sopata.joe@epa.gov

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² Additional rows may be inserted to accommodate the extra data points. If these rows are added in the middle (say around row 25), the equations that analyze the data will be automatically adjusted. If difficulties are encountered in doing this, please call for help.