

10 CSR 10-6.040 Reference Methods

(1) The percent sulfur in solid fuels shall be determined as specified by American Society of Testing and Materials (ASTM) D4239 - 12 *Standard Test Method for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion*, as approved and published February 1, 2012. This standard is incorporated by reference in this rule, as published by American Society for Testing and Materials (ASTM) International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. This rule does not incorporate any subsequent amendments or additions.

(2) The heat content or higher heating value (HHV) of solid fuels shall be determined by use of the Adiabatic Bomb Calorimeter as specified by ASTM D5865 - 12 *Standard Test Method for Gross Calorific Value of Coal and Coke*, as approved and published December 1, 2012. This standard is incorporated by reference in this rule, as published by American Society for Testing and Materials (ASTM) International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. This rule does not incorporate any subsequent amendments or additions.

(3) The heat content or HHV of liquid hydrocarbons shall be determined as specified by ASTM D240 - 09 *Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter*, as approved and published July 1, 2009. This standard is incorporated by reference in this rule, as published by American Society for Testing and Materials (ASTM) International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. This rule does not incorporate any subsequent amendments or additions.

(4) The methods for determining the concentrations of the following air contaminants shall be as specified in 40 CFR 50, Appendices A-R or equivalent methods as specified in 40 CFR 53. The provisions of 40 CFR 50, Appendices A-R and 40 CFR 53, promulgated as of July 1, 2013, and *Federal Register* Notice 78 FR 40000-40011, promulgated July 3, 2013, shall apply and are hereby incorporated by reference in this rule, as published by the Office of the Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408. This rule does not incorporate any subsequent amendments or additions.

(A) The concentration of sulfur dioxide shall be determined as specified in 40 CFR 50, Appendix A-*Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method)* or an equivalent method as approved by 40 CFR 53.

(B) The concentration of total suspended particulate shall be determined as specified in 40 CFR 50, Appendix B—*Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method)*.

(C) The concentration of carbon monoxide in the ambient air shall be determined as specified in 40 CFR 50, Appendix C—*Measurement Principle and Calibration Procedure for the Measurement of Carbon Monoxide in the Atmosphere (Non-Dispersive Infrared Photometry)* or equivalent methods as approved by 40 CFR 53.

(D) The concentration of ozone in the ambient air shall be determined as specified in 40 CFR 50, Appendix D—*Measurement Principle and Calibration Procedure for the Measurement of Ozone in the Atmosphere* or equivalent methods as approved by 40 CFR 53.

(E) *Reserved*

(F) The concentration of nitrogen dioxide in the ambient air shall be determined as specified in 40 CFR 50, Appendix F—*Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence)* or equivalent methods as approved by 40 CFR 53.

(G) The concentration of lead in the ambient air shall be determined as specified in 40 CFR 50, Appendix G—*Reference Method for the Determination of Lead in Suspended Particulate Matter Collected From Ambient Air* or in 40 CFR 50, Appendix Q—*Reference Method for the Determination of Lead in Particulate Matter as PM₁₀ Collected From Ambient Air* or equivalent methods as approved by 40 CFR 53.

(H) Compliance with the one (1) hour ozone standard shall be determined as specified in 40 CFR 50, Appendix H—*Interpretation of the 1-Hour Primary and Secondary National Ambient Air Quality Standards for Ozone*.

(I) Compliance with the eight (8) hour ozone standards shall be determined as specified in 40 CFR 50, Appendix I—*Interpretation of the 8-Hour Primary and Secondary National Ambient Air Quality Standards for Ozone*.

(J) The concentration of particulate matter 10 micron (PM₁₀) in the ambient air shall be determined as specified in 40 CFR 50, Appendix J—*Reference Method for the Determination of Particulate Matter as PM₁₀ in the Atmosphere*, or an equivalent method as approved in 40 CFR 53.

(K) Compliance with particulate matter 10 PM_{10} standards shall be determined as specified in 40 CFR 50, Appendix K—*Interpretation of the National Ambient Air Quality Standards for Particulate Matter*.

(L) The concentration of particulate matter 2.5 micron ($PM_{2.5}$) in the ambient air shall be determined as specified in 40 CFR 50, Appendix L—*Reference Method for the Determination of Fine Particulate Matter as $PM_{2.5}$ in the Atmosphere*, or an equivalent method as approved in 40 CFR 53.

(M) Compliance with particulate matter 2.5 ($PM_{2.5}$) standards shall be determined as specified in 40 CFR 50, Appendix N—*Interpretation of the National Ambient Air Quality Standards for $PM_{2.5}$* .

(N) Compliance with the eight (8)-hour ozone standards shall be determined as specified in 40 CFR 50, Appendix P—*Interpretation of the Primary and Secondary National Ambient Air Quality Standards for Ozone*.

(O) Compliance with the lead standards shall be determined as specified in 40 CFR 50, Appendix R—*Interpretation of the National Ambient Air Quality Standards for Lead*.

(5) The concentration of hydrogen sulfide (H_2S) in the ambient air shall be determined by scrubbing all sulfur dioxide (SO_2) present in the sample and then converting each molecule of H_2S to SO_2 with a thermal converter so that the resulting SO_2 is detected by an analyzer as specified in 40 CFR 50, Appendix A—*Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method)* or an equivalent method approved by 40 CFR 53, in which case the calibration gas used must be National Institute of Standards and Technology traceable H_2S gas.

(6) The concentration of sulfuric acid mist in the ambient air shall be determined as specified in the *Compendium Method IO-4-2, Determination of Reactive Acidic and Basic Gases and Strong Acidity of Fine-Particles (<2.5 μm)*, Center for Environmental Research Information, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH 45268, EPA/625/R-96/010a.

(A) The concentration of total sulfur shall be determined as specified in section (4) of this rule by sampling for sulfur dioxide without removing other sulfur compound interferences.

(B) The concentration of sulfur dioxide shall be determined as specified by section (4) of this rule.

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(C) The concentration of hydrogen sulfide shall be determined as specified by section (5) of this rule.

(7) The percent sulfur in liquid hydrocarbons shall be determined as specified by ASTM D2622 - 10 *Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry*, as approved and published February 15, 2010. This standard is incorporated by reference in this rule, as published by American Society for Testing and Materials (ASTM) International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. This rule does not incorporate any subsequent amendments or additions.

(8) The amount of solvent present in earth filters and distillation wastes shall be determined as specified by ASTM D322 - 97(2012) *Standard Test Method for Gasoline Diluent in Used Gasoline Engine Oils by Distillation*, as approved and published November 1, 2012. This standard is incorporated by reference in this rule, as published by American Society for Testing and Materials (ASTM) International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959.

This rule does not incorporate any subsequent amendments or additions.

EPA Rulemakings

CFR: 40 C.F.R. 52.1320(c)
 FRM: 80 FR 11577 (3/4/15)
 PRM: 80 FR 11610 (3/4/15)
 State Submission: 11/20/14
 State Final: 10 C.S.R 10-6 (10/31/14) effective 11/30/14
 APDB File: MO-365 EPA-R07-OAR-2015-0005; effective 5/4/15
 Description: This revision updates the state requirements to the latest federal equivalency methods (FEMs) by incorporating by reference EPA's latest codified actions for measuring lead, nitrogen dioxide, particulate matter less than 2.5 microns (PM_{2.5}), particulate matter less than 10 microns (PM₁₀), particulate matter between 10 and 2.5 microns (PM_{10-2.5}). In addition, through incorporation by reference, a new Federal Reference Method (FRM) for measuring lead in total suspended particulate matter was added and designated as a new FEM. Finally, administrative amendments were made throughout the rule relating to the wording used when referring to the determination of concentration of pollutants.

CFR: 40 C.F.R. 52.1320(c)
 FRM: 80 FR 11577 (3/4/15)
 PRM: 80 FR 11610 (3/4/15)
 State Submission: 11/6/13
 State Final: 10 C.S.R 10-6 () effective 11/30/13
 APDB File: MO-356; EPA-R07-OAR-2015-0005; effective 5/4/15
 Description: This revision updates the state requirements to the latest federal equivalency methods (FEMs) by incorporating by reference EPA's latest codified actions for ambient monitoring of nitrogen dioxide and fine particulate matter and two FEMs for laboratory analysis of lead. In addition, a number of American Society for Testing and Materials (ASTM) standards in the rule were updated to reflect the latest version available for determining parameters such as fuel sulfur and heat content.

CFR: 40 C.F.R. 52.1320(c)
 FRM: 77 FR 58309 (9/20/12)
 PRM: 77 FR 58352 (9/20/12)
 State Submission: 9/21/2010
 State Final: 10 C.S.R 10-6 (4/30/10); effective 5/30/2010
 APDB File: MO-297
 Description: Effective November 19, 2012, this revision updates Federal reference methods for the new 2008 8-hour ozone standard and the 2008 Pb standard. In addition it removes the incorporation by reference of these reference methods from 10 CSR 10-6.070 to this rule.

CFR: 40 C.F.R. 52.1320(c)
 FRM: 71 FR 70468 (12/05/2006)
 PRM: 71 FR 70476 (12/05/2006)
 State Submission: 03/30/2006
 State Final: 10 C.S.R. 10-6 (01/29/2006); effective 02/28/2006
 APDB File: MO-242; EPA-R07-OAR-2006-0900
 Description: This revision updates adopted Federal reference methods for the new 8-hour ozone and PM_{2.5} NAAQS finalized on July 18, 1997, and mandated by the CAA.

CFR: 40 C.F.R. 52.1320(c)
 FRM: 66 FR 52359 (10/15/2001)
 PRM: 66 FR 52367 (10/15/2001)
 State Submission: 07/24/2001
 State Final: 10 C.S.R. 10-6 (06/30/2001)
 APDB File: MO-191
 Description: Sections (5), (6) and (7) were revised to adopt current EPA methods.

CFR: 40 C.F.R. 52.1320(c)(66)(i)(A)
 FRM: 54 FR 31524 (7/31/89)
 PRM: None
 State Submission: 5/12/88
 State Proposal: 13 MR 110 (1/19/88)
 State Final: 13 MR 602 (4/18/88)
 APDB File: MO-67
 Description: The EPA approved revisions to the regulation which: (1) adopted a reference method for PM₁₀, and (2) made other administrative changes.

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CFR: 40 C.F.R. 52.1320(c)(47)
FRM: 49 FR 44996 (11/14/84)
PRM: None
State Submission: 8/14/84
State Proposal: 9 MR 328 (2/1/84), 9 MR 670 (4/2/84)
State Final: 9 MR 425 (3/1/84), 9 MR 1134 (7/2/84)
APDB File: MO-53
Description: The EPA approved revisions which updated the references to ambient sampling methods.

CFR: 40 C.F.R. 52.1320(c)(25)(iii)
FRM: 46 FR 20172 (4/3/81)
PRM: 45 FR 84099 (12/22/80)
State Submission: 9/2/80
State Proposal: 5 MR 385 (4/1/80)
State Final: 5 MR 1149 (9/2/80)
APDB File: MO-12
Description: The EPA approved a revision which added a solvent test method.

CFR: 40 C.F.R. 52.1320(c)(13)(ii)
FRM: 45 FR 17145 (3/18/80)
PRM: 44 FR 52001 (9/6/79)
State Submission: 8/28/78
State Proposal: 2 MR 513 (9/1/77)
State Final: 3 MR 91 (2/1/78)
APDB File: MO-03
Description: The EPA approved a new regulation establishing reference methods for determining the sulfur content and heat content of fuels and methods for determining the ambient concentrations of air contaminants.

Difference Between the State and EPA-Approved Regulation

None.