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Method 203C—Visual Determination of Opacity of Emissions From Stationary Sources for Instantaneous Limitation Regulations

1.0 Scope and Application

What is Method 203C?

Method 203C is an example test method suitable for State Implementation Plans (SIPs) and is applicable to the determination of the opacity of emissions from sources of visible emissions for regulations with an instantaneous opacity limitation. An instantaneous opacity limitation is an opacity limit which is never to be exceeded.

Method 203C is virtually identical to EPA's Method 9 of 40 CFR Part 60, Appendix A, except for 5-second reading intervals and the data-reduction procedures, which have been modified for instantaneous limitation regulations. The certification procedures for this method are virtually identical to Method 9. An example visible emission observation form and instructions for its use can be found in reference 7 of Section 17 of Method 203A.

2.0 Summary of Method

The opacity of emissions from sources of visible emissions is determined visually by an observer certified according to the procedures in Section 10 of Method 203A.

3.0 Definitions [Reserved]

4.0 Interferences [Reserved]

5.0 Safety [Reserved]

6.0 Equipment and Supplies

The equipment and supplies used are the same as Section 6.0 of Method 203A.

7.0 Reagents and Standards [Reserved]

8.0 Sample Collection, Preservation, Storage, and Transport

What is the Test Procedure?

The qualified observer must use the following procedures for visually determining the opacity of emissions.

8.1 Procedures for Emissions From Stationary Sources. These are the same as Section 8.1 of Method 203A.

8.1.1 Position. Same as Section 8.1.1 of Method 203A.

8.1.2 Field Records. Same as Section 8.1.2 of Method 203A.

8.1.3 Observations. Make opacity observations at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. Do not look continuously at the plume, instead, observe the plume momentarily at *5-second* intervals.

8.1.3.1 Attached Steam Plumes. Same as Section 8.1.3.1 of Method 203A.

8.1.3.2 Detached Steam Plumes. Same as Section 8.1.3.2 of Method 203A.

8.2 Recording Observations. You must record opacity observations to the nearest 5 percent at 5-second intervals on an observational record sheet. Each observation recorded represents the average of emissions for the 5-second period. The overall time for which recordings are made must be of a length appropriate to the applicable regulation for which opacity is being measured.

9.0 Quality Control [Reserved]

10.0 Calibration and Standardization

The calibration and standardization procedures are the same as Section 10 of Method 203A.

11.0 Analytical Procedures [Reserved]

12.0 Data Analysis and Calculations

12.1 Data Reduction for Instantaneous Limitation Regulations. For an instantaneous limitation regulation, a 1-minute averaging time will be used. You must divide the observations recorded on the record sheet into sets of consecutive observations. A set is composed of the consecutive observations made in 1 minute. Sets need not be consecutive in time, and in no case must two sets overlap. You must reduce opacity observations by dividing the sum of all observations recorded in a set by the number of observations recorded in each set.

12.2 Reduce opacity observations by averaging 12 consecutive observations recorded at 5-second intervals. Divide the observations recorded on the record sheet into sets of 12 consecutive observations. For each set of 12 observations, calculate the average by summing the opacity of the 12 observations and dividing this sum by 12.

13.0 Method Performance

The results of the “Collaborative Study of Opacity Observations at Five-second Intervals by Certified Observers” are almost identical to those of previous studies of Method 9 observations taken at 15-second intervals and indicate that observers can make valid observations at 5-second intervals. The average difference of all observations from the transmissometer values was 8.8 percent opacity, which shows a fairly high negative bias. Underestimating the opacity of the visible emissions is more likely than overestimating the opacity of the emissions.

14.0 Pollution Prevention [Reserved]

15.0 Waste Management [Reserved]

16.0 Alternative Procedures [Reserved]

17.0 References

The references are the same as references 1–7 in Method 203A in addition to the following:

1. Office of Air Quality Planning and Standards. “Collaborative Study of Opacity Observations at Five-second Intervals by Certified Observers.” Docket A-84-22, IV-A-2. Emission Measurement Branch, Research Triangle Park, N.C. September 1990.

18.0 Tables, Diagrams, Flowcharts, and Validation Data