

**ENVIRONMENTAL PROTECTION
AGENCY**

40 CFR Part 60

[EPA-HQ-OAR-2021-0664; FRL-8511-02-OAR]

RIN 2060-AV30

**Review of Standards of Performance
for Automobile and Light Duty Truck
Surface Coating Operations**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is finalizing amendments to the new source performance standards for Automobile and Light Duty Truck Surface Coating Operations pursuant to the review required by the Clean Air Act. The EPA determined that revisions to the NSPS were needed to reflect the degree of emission limitation achievable through the application of the best system of emission reduction (BSER). The EPA is therefore finalizing, as proposed, in a new NSPS subpart MMa, revised volatile organic compound (VOC) emission limits for prime coat, guide coat, and topcoat operations for affected facilities that commence construction, modification, or reconstruction after May 18, 2022. In addition, in the new NSPS subpart, the EPA is finalizing the proposed amendments: the addition of work practices to minimize VOC emissions; revision of the plastic parts provision; updates to the capture and control devices and the associated testing and monitoring requirements; revision of the transfer efficiency provisions; new test methods and alternative test methods; revision of the recordkeeping and reporting requirements, including the addition of electronic reporting; removing exemptions for periods of startup, shutdown, and malfunction; and other amendments to harmonize the new NSPS subpart and Automobile and Light Duty Truck Surface Coating National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. The EPA is also finalizing the proposed electronic reporting requirements in the NSPS subpart MM, applicable to sources that commence construction, reconstruction, or modification after October 5, 1979, and on or before May 18, 2022.

DATES: This final rule is effective on May 9, 2023. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of May 9, 2023.

ADDRESSES: The U.S. Environmental Protection Agency (EPA) has established a docket for this action under Docket ID No. EPA-HQ-OAR-2021-0664. All documents in the docket are listed on the <https://www.regulations.gov/> website. Although listed, some information is not publicly available, e.g., Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through <https://www.regulations.gov/>.

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SUPPLEMENTARY INFORMATION:

Preamble acronyms and abbreviations. Throughout this preamble the use of “we,” “us,” or “our” is intended to refer to the EPA. We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

ALDT Automobile and Light Duty Truck
ANSI American National Standards Institute
ASTM American Society for Testing and Materials
ASME American Society of Mechanical Engineers
BACT best available control technology
BID background information document
BSER best system of emission reduction
CAA Clean Air Act
CBI Confidential Business Information
CDX Central Data Exchange
CEDRI Compliance and Emissions Data Reporting Interface
CEMS continuous emission monitoring system
CEPCI Chemical Engineering Plant Cost Index
CPMS Continuous Parametric Monitoring System
EDP electrodeposition
EIA economic impact analysis
EPA Environmental Protection Agency
ERT Electronic Reporting Tool
FID flame ionization detector
FR Federal Register
GC gas chromatography
GHG greenhouse gas
IBR incorporation by reference
ICR information collection request
LAER lowest available control technology
kg/lacs kilograms per liter of applied coating solids

km kilometer
kwh kilowatt hours
mtCO₂e metric tons of carbon dioxide equivalents
NAICS North American Industry Classification System
NESHAP National Emission Standard for Hazardous Air Pollutant
NMOC nonmethane organic compound(s)
Non-EDP non-electrodeposition
NSPS New Source Performance Standards
NSR New Source Review
NTTAA National Technology Transfer and Advancement
OMB Office of Management and Budget
lb/gal acs pounds per gallon of applied coating solids
PM particulate matter
PRA Paperwork Reduction Act
PSD Prevention of Significant Deterioration
RACT reasonably available control technology
RFA Regulatory Flexibility Act
RIN Regulatory Information Number
RTO regenerative thermal oxidizer
SSM startup, shutdown, and malfunction
scf standard cubic feet
TE transfer efficiency
THC total hydrocarbon
tpy tons per year
UMRA Unfunded Mandates Reform Act
U.S.C. United States Code
VCS Voluntary Consensus Standards
VOC volatile organic compound(s)

Organization of this document. The information in this preamble is organized as follows:

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I. General Information

A. Does this action apply to me?

The source category that is the subject of this final action is automobile and light duty truck (ALDT) surface coating operations regulated under CAA section 111 NSPS. The 2022 North American Industry Classification System (NAICS) codes for the ALDT manufacturing industry are 336111 (automotive manufacturing), 336112 (light truck and utility vehicle manufacturing), and 336211 (manufacturing of truck and bus bodies and cabs and automobile bodies). The NAICS codes serve as a guide for readers outlining the types of entities that this final action is likely to affect. We estimate that 60 facilities engaged in ALDT manufacturing will be affected by this final action. The NSPS requirements finalized in this action and codified in 40 CFR part 60, subpart MMA are directly applicable to affected facilities that begin construction, reconstruction, or modification after May 18, 2022, which is the date of publication of the proposed NSPS subpart MMA in the **Federal Register**. The requirements in 40 CFR part 60, subpart MM are applicable to affected facilities that begin construction, reconstruction, or modification after October 5, 1979, but that begin construction, reconstruction, or modification no later than May 18, 2022. Federal, state, local, and tribal government entities will not be affected by this final action. If you have any questions regarding the applicability of this action to a particular entity, you should carefully examine the applicability criteria found in 40 CFR

part 60, subparts MM and MMA, and consult the person listed in the **FOR FURTHER INFORMATION CONTACT** section of this preamble, your state or local air pollution control agency with delegated authority for the NSPS, or your EPA Regional Office.

B. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this final action is available on the internet at <https://www.epa.gov/stationary-sources-air-pollution/automobile-and-light-duty-truck-surface-coating-operations-new>. Following publication in the **Federal Register**, the EPA will post the **Federal Register** version of the final rule and key technical documents at this same website.

C. Judicial Review and Administrative Review

Under Clean Air Act (CAA) section 307(b)(1), judicial review of this final action is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit by July 10, 2023. Under CAA section 307(b)(2), the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce the requirements.

Section 307(d)(7)(B) of the CAA further provides that “[o]nly an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment (including any public hearing) may be raised during judicial review.” This section also provides a mechanism for the EPA to convene a proceeding for reconsideration, “[i]f the person raising an objection can demonstrate to the Administrator that it was impracticable to raise such objection within [the period for public comment] or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule.” Any person seeking to make such a demonstration should submit a Petition for Reconsideration to the Office of the Administrator, U.S. Environmental Protection Agency, Room 3000, WJC South Building, 1200 Pennsylvania Ave. NW, Washington, DC 20460, with a copy to both the person(s) listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A),

U.S. Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Washington, DC 20460.

II. Background

A. What is the statutory authority for this final action?

The EPA’s authority for this final rule is CAA section 111, which governs the establishment of standards of performance for stationary sources. Section 111(b)(1)(A) of the CAA requires the EPA Administrator to list categories of stationary sources that in the Administrator’s judgment cause or contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare. The EPA must then issue performance standards for new (and modified or reconstructed) sources in each source category pursuant to CAA section 111(b)(1)(B). These standards are referred to as new source performance standards or NSPS. The EPA has the authority to define the scope of the source categories, determine the pollutants for which standards should be developed, set the emission level of the standards, and distinguish among classes, types, and sizes within categories in establishing the standards.

CAA section 111(b)(1)(B) requires the EPA to “at least every 8 years review and, if appropriate, revise” new source performance standards. However, the Administrator need not review any such standard if the “Administrator determines that such review is not appropriate in light of readily available information on the efficacy” of the standard. When conducting a review of an existing performance standard, the EPA has the discretion and authority to add emission limits for pollutants or emission sources not currently regulated for that source category.

In setting or revising a performance standard, CAA section 111(a)(1) provides that performance standards are to reflect “the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.” The term “standard of performance” in CAA section 111(a)(1) makes clear that the EPA is to determine both the best system of emission reduction (BSER) for the regulated sources in the source category and the degree of emission limitation achievable through application of the BSER. The EPA must then, under CAA section

111(b)(1)(B), promulgate standards of performance for new sources that reflect that level of stringency.

CAA section 111(h)(1) authorizes the Administrator to promulgate “a design, equipment, work practice, or operational standard, or combination thereof” if in his or her judgment, “it is not feasible to prescribe or enforce a standard of performance.” CAA section 111(h)(2) provides the circumstances under which prescribing or enforcing a standard of performance is “not feasible,” such as, when the pollutant cannot be emitted through a conveyance designed to emit or capture the pollutant, or when there is no practicable measurement methodology for the particular class of sources. Except as authorized under CAA section 111(h), CAA section 111(b)(5) precludes the EPA from prescribing a particular technological system that must be used to comply with a standard of performance. Rather, sources can select any measure or combination of measures that will achieve the standard.

Pursuant to the definition of new source in CAA section 111(a)(2), standards of performance apply to facilities that begin construction, reconstruction, or modification after the date of publication of the proposed standards in the **Federal Register**. Under CAA section 111(a)(4), “modification” means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted. Changes to an existing facility that do not result in an increase in emissions are not considered modifications. Under the provisions in 40 CFR 60.15, reconstruction means the replacement of components of an existing facility such that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility; and (2) it is technologically and economically feasible to meet the applicable standards. Pursuant to CAA section 111(b)(1)(B), the standards of performance or revisions thereof shall become effective upon promulgation.

B. How does the EPA perform the NSPS review?

As noted in section II.A of this preamble, CAA section 111 requires the EPA to, at least every 8 years, review and, if appropriate, revise the standards of performance applicable to new, modified, and reconstructed sources. If the EPA revises the standards of

performance, they must reflect the degree of emission limitation achievable through the application of the BSER considering the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements. CAA section 111(a)(1).

In reviewing an NSPS to determine whether it is “appropriate” to review and revise the standards of performance, the EPA evaluates the statutory factors, which may include consideration of the following information:

- Expected growth for the source category, including how many new facilities, reconstructions, and modifications may trigger NSPS in the future.
- Pollution control measures, including advances in control technologies, process operations, design or efficiency improvements, or other systems of emission reduction, that are “adequately demonstrated” in the regulated industry.
- Available information from the implementation and enforcement of current requirements indicating that emission limitations and percent reductions beyond those required by the current standards are achieved in practice.
- Costs (including capital and annual costs) associated with implementation of the available pollution control measures.
- The amount of emission reductions achievable through application of such pollution control measures.
- Any non-air quality health and environmental impact and energy requirements associated with those control measures.

In evaluating whether the cost of a particular system of emission reduction is reasonable, the EPA considers various costs associated with the particular air pollution control measure or a level of control, including capital costs and operating costs, and the emission reductions that the control measure or particular level of control can achieve. The Agency considers these costs in the context of the industry’s overall capital expenditures and revenues. The Agency also considers cost-effectiveness analysis as a useful metric, and a means of evaluating whether a given control achieves emission reduction at a reasonable cost. A cost-effectiveness analysis allows comparisons of relative costs and outcomes (effects) of 2 or more options. In general, cost effectiveness is a measure of the outcomes produced by resources spent. In the context of air pollution control options, cost effectiveness typically refers to the annualized cost of implementing an air pollution control option divided by the

amount of pollutant reductions realized annually.

After the EPA evaluates the statutory factors, the EPA compares the various systems of emission reductions and determines which system is “best,” and therefore represents the BSER. The EPA then establishes a standard of performance that reflects the degree of emission limitation achievable through the implementation of the BSER. In doing this analysis, the EPA can determine whether subcategorization is appropriate based on classes, types, and sizes of sources, and may identify a different BSER and establish different performance standards for each subcategory. The result of the analysis and BSER determination leads to standards of performance that apply to facilities that begin construction, reconstruction, or modification after the date of publication of the proposed standards in the **Federal Register**. Because the new source performance standards reflect the best system of emission reduction under conditions of proper operation and maintenance, in doing its review, the EPA also evaluates and determines the proper testing, monitoring, recordkeeping and reporting requirements needed to ensure compliance with the emission standards.

C. What is the ALDT surface coating source category regulated in this final action?

Pursuant to the CAA section 111 authority described earlier in this preamble, the EPA listed the ALDT surface coating source category under CAA section 111(b)(1). 44 FR 49222, 49226 (August 21, 1979). The EPA first promulgated NSPS for ALDT surface coating operations on December 24, 1980 (45 FR 85415; December 24, 1980). The 1980 ALDT NSPS are codified in 40 CFR part 60, subpart MM and are applicable to sources that commence construction, modification, or reconstruction after October 5, 1979 (ALDT NSPS MM). The ALDT NSPS MM regulate VOC emissions from surface coating operations located at automobile and light duty truck assembly plants. Subpart MM was amended in a series of actions and the last amendment was promulgated in 1994 (59 FR 51383; October 11, 1994).

The ALDT surface coating source category consists of each prime coat operation, each guide coat operation, and each topcoat operation in an automobile or light duty truck assembly plant. Subpart MM requires a monthly compliance demonstration with the VOC emission limit established for each surface coating operation:

- For prime coat operations:
 - For electrodeposition (EDP) prime coat: 0.17 to 0.34 kilograms VOC/liter applied coating solids (kg VOC/l acs) (1.42 to 2.84 lbs VOC/gallon (gal) acs) depending on the solids turnover ratio (R_T); for R_T greater than 0.16, the limit is 0.17 kg VOC/l acs (1.42 lb VOC/gal acs); for turnover ratios less than 0.04, there is no emission limit.
 - For non-EDP (spray applied) prime coat: 0.17 kg VOC/l acs (1.42 lb VOC/gal acs);
 - For guide coat operations: 1.40 kg VOC/l acs (11.7 lb VOC/gal acs); and
 - For topcoat operations: 1.47 kg VOC/l acs (12.3 lb VOC/gal acs).

Subpart MM provides default transfer efficiencies (TE) for various surface coating application methods for the monthly compliance calculation. The default TE values in subpart MM also account for the recovery of purge solvent. The monthly compliance calculation also includes control device VOC destruction efficiency as determined by the initial or the most recent control device performance test. The control devices identified in the ALDT NSPS MM include thermal and catalytic oxidizers. In addition, subpart MM requires continuous monitoring of thermal and catalytic oxidizer operating temperatures. Quarterly or semiannual reporting is required to report emission limit exceedances and negative reports are required for no exceedances. Surface coating operations for plastic body components or all-plastic automobile or light-duty truck bodies on separate coating lines are exempted from the ALDT NSPS MM. However, the attachment of plastic body parts to a metal body before the body is coated does not cause the metal body coating operation to be exempted. Additional detail on the ALDT surface coating source category and ALDT NSPS MM requirements are provided in the proposal (87 FR 30141; May 18, 2022).

The EPA estimates that the ALDT NSPS MM currently affects surface coating operations at 44 ALDT assembly plants operating in the U.S. ALDT NSPS MM sources and will be subject to the electronic reporting amendments being finalized by this action. The EPA also expects that an additional 16 ALDT assembly plants will commence construction, reconstruction, or modification of the affected surface coating operations over the next 8 years (after May 18, 2022). These new sources will be subject to the new ALDT NSPS MMA being finalized in this action.

The EPA proposed the current review of the ALDT NSPS MM on May 18, 2022 (87 FR 30141; May 18, 2022). We received 5 comment letters from the

affected industry, the industry association, environmental groups, and a state environmental agency during the comment period. In addition, we met with the affected industry and the industry association on December 8 and 13, 2022. A summary of the more significant comments we timely received regarding the proposed rule and our responses are provided in this preamble. A summary of all other public comments on the proposal and the EPA's responses to those comments is available in the document titled, *Summary of Public Comments and Responses on Proposed Rule: New Source Performance Standards for Automobile and Light Duty Truck Surface Coating Operations (40 CFR part 60, subpart MM) Best System of Emission Reduction Review, Final Amendments*, Docket ID No. EPA-HQ-OAR-2021-0664. Additional information provided by the affected industry and the industry association in meetings held on December 8 and 13, 2022, to support their written comments and meeting minutes are provided in separate memoranda available in the docket. A "track changes" version of the regulatory language that incorporates the changes in this final action for ALDT NSPS MM is also available in the docket. In this action, the EPA is finalizing decisions and revisions pursuant CAA section 111(b)(1)(B) review for the ALDT surface coating source category after our consideration of all the comments received.

D. What changes did we propose for the ALDT surface coating NSPS?

The EPA proposed the results of the CAA 111(b)(1)(B) review of the ALDT NSPS, 40 CFR part 60, subpart MM on May 18, 2022 (87 FR 30141; May 18, 2022). The EPA proposed to codify the revisions to the ALDT NSPS MM in a new NSPS subpart, MMA. In the new subpart MMA, the EPA proposed requirements that apply to sources that commence construction, reconstruction, or modification after May 18, 2022. The revisions proposed to be codified in subpart MMA were: revised VOC emission limits for the prime coat, guide coat, and topcoat operations; the addition of work practices to minimize VOC emissions; revision of the plastic parts provision; updates to the capture and control devices and the associated testing and monitoring requirements; revision of the transfer efficiency provisions; revision of the recordkeeping and reporting requirements; the addition of electronic reporting; clarification of the requirements for periods of startup, shutdown, and malfunction (SSM); new

test methods and incorporation by reference (IBR) of alternative methods; minor corrections and clarifications; and other amendments to harmonize the new NSPS subpart requirements with the Automobile and Light Duty Truck Surface Coating National Emission Standards for Hazardous Air Pollutants, 40 CFR part 63, subpart III (ALDT NESHAP) requirements.

The EPA also proposed electronic reporting requirements in subpart MM, which applies to affected sources that commenced construction, reconstruction, or modification after October 5, 1979, and on or before May 18, 2022.

III. What actions are we finalizing and what is our rationale for such decisions?

The EPA is finalizing revisions to the NSPS for the ALDT surface coating source category pursuant to CAA section 111(b)(1)(B) review. The EPA is promulgating the NSPS revisions in a new subpart, 40 CFR part 60, subpart MMA. Subpart MMA is applicable to affected sources constructed, modified, or reconstructed after May 18, 2022. This action also finalizes revisions to ALDT NSPS subpart MM. Subpart MM is applicable to affected sources that are constructed, modified, or reconstructed after October 5, 1979, but on or before May 18, 2022.

The final requirements in subpart MMA include the following revisions that the EPA proposed: VOC emission limits for the prime coat, guide coat, and topcoat operations; work practices to minimize VOC emissions; plastic parts provision; capture and control devices and the associated testing and monitoring requirements; transfer efficiency provisions; recordkeeping and reporting requirements; electronic reporting; requirements for periods of SSM; test methods and IBR of alternative methods; and other requirements to harmonize the new NSPS subpart MMA requirements with the Automobile and Light Duty Truck Surface Coating National Emission Standards for Hazardous Air Pollutants, 63 subpart III (ALDT NESHAP) requirements.

The final requirements also include the addition of electronic reporting requirements in subpart MM, which applies to affected sources that commenced construction, reconstruction, or modification after October 5, 1979, but on or before May 18, 2022.

A. Emission Limits

The EPA is finalizing VOC emission limits in new subpart MMA for each

prime coat operation, each guide coat operation, and each topcoat operation in an automobile or light duty truck assembly plant, calculated monthly. For the prime coat operation, we are finalizing the proposed numeric limit with the addition of a solids turnover ratio (R_T) in response to comments. For the guide coat and topcoat operations we are finalizing the proposed numeric limits.

- For prime coat operations:
 - Electrodeposition (EDP) prime coat, 0.027 to 0.055 kilograms VOC/liter applied coating solids (kg VOC/l acs) (0.23 to 0.46 lbs VOC/gal acs) depending on the solids turnover ratio (R_T) when R_T is between 0.04 and 0.16; For R_T greater than 0.16, the limit is 0.027 kg VOC/l acs (0.23 lb VOC/gal acs); for turnover ratios less than 0.04, there is no emission limit.

- Non-EDP (spray applied) prime coat, 0.028 kg VOC/l acs (0.23 lb VOC/gal acs).

- For guide coat operations, 0.35 kg VOC/l acs (2.92 lb VOC/gal acs); and
- For topcoat operations, 0.42 kg VOC/l acs (3.53 lb VOC/gal acs).

For prime coat operations, the final VOC emission limit reflects the EPA's determination that use of waterborne prime coat applied by EDP with control of the curing oven emissions with thermal oxidation that is capable of achieving 95 percent destruction or removal efficiency (DRE) represents the updated BSER for this surface coating operation. The final emission limit for EDP prime coat operations in subpart MMA includes the R_T , which is a factor in determining compliance with the VOC emission limit for the prime coat in the current subpart MM. EPA determined the final emission limit for the prime coat operation was cost effective.

For guide coat operations, the final VOC limit reflects the EPA's determination that use of waterborne or solvent borne guide coats applied by spray application with control of the waterborne flash off area or control of the solvent borne booth and oven with either a carbon adsorber concentrator and an RTO or just an RTO, with the RTO achieving 95 percent DRE of the captured emissions represents the updated BSER for this surface coating operation. The final emission limit for guide coat operations in subpart MMA is based on facilities that are subject to and achieve the emission limit of 0.35 kg VOC/l acs (2.92 lb VOC/gal acs) by using either: (1) waterborne guide coat with control of the flash off area with a carbon adsorber concentrator and an RTO but no control of the booth; or (2) solvent borne guide coat and control of

the booth and oven with either a carbon adsorber concentrator and an RTO or just an RTO, with the RTO achieving 95 percent DRE of the captured emissions. The EPA determined the final emission limit for the guide coat operation was cost effective.

For topcoat operations, the final VOC limit reflects the EPA's determination that the use of waterborne basecoats and solvent borne clearcoats applied by spray application with control of the waterborne basecoat booth and/or the flash off area and control of the solvent borne clearcoat booth, flash off area, and topcoat oven with an RTO or a combination of a concentrator and an RTO, with the RTO achieving 95 percent DRE of the captured emissions represents the updated BSER for this surface coating operation. The final emission limit for topcoat operations in subpart MMA is based on facilities that are subject to and achieve the emission limit of 0.42 kg VOC/l acs (3.53 lb VOC/gal acs) by using: (1) waterborne basecoat with control of the booth and/or the flash off area with a combination of a concentrator and an RTO; and (2) solvent borne clearcoat with control of the automated sections of the clearcoat booth, the clearcoat flash off area and the topcoat oven with an RTO or a combination of a concentrator and an RTO, with the RTO achieving 95 percent DRE of the captured emissions. The EPA determined the final emission limit for the topcoat operation was cost effective.

The EPA identified and considered more stringent emission limits in its review that were not selected for the proposed and final actions. The more stringent emission limits were not selected because the EPA determined they were based on coating technology that was not adequately demonstrated by the industry (*i.e.*, powder coating for the guide coat operation) or because the EPA determined they were not cost effective (*i.e.*, lower limits for the EDP prime coat and topcoat operations).

Pursuant to CAA section 111(b)(1)(B), the EPA conducted a BSER review of the requirements in 40 CFR part 60, subpart MM and presented the results of this review, along with our proposed determinations, in section IV.A of the proposed rule preamble (87 FR 30147; May 18, 2022). A detailed discussion of our review and proposed determinations are included in the memorandum titled, *Final Rule Best System of Emission Reduction Review for Surface Coating Operations in the Automobile and Light-Duty Truck Source Category (40 CFR part 60, subpart MM)*, available in the docket for this action. Based on our review, we

proposed revised VOC emission limits for each prime coat operation, each guide coat operation, and each topcoat operation in an automobile or light duty truck assembly plant. The final VOC emission limits are based on the proposed VOC emission limits and the revisions made in response to comments we received, as described here.

1. Prime Coat Operation

a. Proposed Emission Limit

For the prime coat operation, at proposal, the EPA evaluated 2 regulatory options based on facilities using an EDP prime coat dip tank system. Both options were more stringent than the ALDT NSPS MM limit for prime coat operations. The options were based on 19 facilities with 28 EDP prime coat operations that are currently subject to more stringent prime coat limits than the ALDT NSPS MM prime coat limit.

The first option was a numerical VOC emission limit of 0.028 kg VOC/l acs (0.23 lb VOC/gal acs) based on control of the curing oven emissions only with thermal oxidation (*e.g.*, an RTO) achieving 95 percent DRE of the captured emissions. This VOC emission limit is demonstrated by 13 of the 44 existing ALDT facilities and the EPA determined the cost effectiveness for this option to be \$6,800/ton of VOC reduced. The EPA considered this option to be cost-effective over the baseline level of control and to be consistent with one of the compliance options for EDP prime coat systems in the ALDT NESHAP.

The second option was a numerical VOC emission limit of 0.005 kg/l acs (0.040 lb VOC/gal acs) based on control of both the oven and the tank emissions with an RTO capable of achieving 95 percent DRE. Four plants control the emissions from the EDP prime coat dip tank in addition to the oven emissions with some form of thermal oxidation. At proposal, the EPA determined the second option to be not cost-effective and not reflective of BSER because the cost effectiveness of controlling the tank emissions was estimated to be \$91,100 per ton of VOC reduced. In addition, the EPA estimated the second option would only achieve an additional 3 tpy of VOC reductions over the first option and would have an estimated incremental cost effectiveness of \$46,000 per ton of VOC reduced compared to the first option. Due to the poor cost-effectiveness of this option relative to the baseline level of control and the likewise unfavorable incremental cost-effectiveness of this option when

compared to the first option, we rejected the second option as the BSER.

The EPA proposed the first option of 0.028 kg VOC/l acs (0.23 lb VOC/gal acs) with a cost effectiveness of \$6,800/ton of VOC reduced, which reflects the EPA's determination that control of the curing oven emissions with thermal oxidation that is capable of achieving 95 percent DRE represents the updated BSER for the prime coat operations. The proposed emission limit for the EDP prime coat operation did not include the solids turnover ratio (R_T), which is a factor in determining compliance with the VOC emission limit for the prime coat dip tank in the subpart MM. This factor was not proposed because it is not included in the facility permits with more stringent limits than the current prime coat operation VOC limits, which were the basis of our revised BSER determination (87 FR 30148, May 18, 2022). We also proposed a non-EDP limit of 0.028 kg VOC/l acs (0.23 lb VOC/gal acs) for spray application of the prime coat based on industry input.

b. How the Final Revisions to Prime Coat Limits Differ From the Proposed Revisions

As a result of comments received for the prime coat operation, in subpart MMA the EPA is finalizing a revised prime coat operation limit with the inclusion of the solids turnover ratio (R_T). The EPA is promulgating the following limits for the prime coat operation in 40 CFR 60.392a depending on the solids turnover ratio (R_T); for R_T greater than 0.16, the limit is 0.027 kg VOC/l acs (0.23 lb VOC/gal acs); for turnover ratios less than 0.04 (*i.e.*, periods of non-production), there is no emission limit; and when the solids turnover ratio is between 0.04 and 0.16 (inclusive), the emission limit is determined using the following equation:

Limit = $0.027 \times 350^{(0.160 - R_T)}$ kg of VOC per liter of applied coating solids. The EPA is also including the definition of solids turnover ratio in 40 CFR 60.391a.

c. Prime Coat Limits Comments and Responses

Comment: One commenter stated that the subpart MMA prime coat operation standards should reflect a modern E-coat system with VOC controls on emissions from the curing oven. According to the commenter, anything more would not be cost-effective and would only reduce insignificant amounts of VOC.

Response: As a result of the BSER determination for the prime coat operation, the EPA is finalizing, as

proposed, standards that reflect a modern EDP prime coat (E-coat) system with control of VOC emissions from the curing oven. The final prime coat operation standard reflects a numeric limit of 0.23 lb VOC/gal acs with a cost effectiveness of \$6,800/ton VOC reduced, as proposed. The EPA estimates the VOC emission reduction associated this final limit to be 40 tpy compared to the 1980 NSPS baseline level of control.

Comment: Two commenters asserted that the EPA must include the solids turnover ratio factor in the emission limit for prime coat operation. Regarding the decision to exclude the option of utilizing the solids turnover for prime coat compliance demonstrations, one commenter stated that the EPA needs to review the extensive data and supporting comments that served as the basis for the 1994 final rule that established the prime coat limits as a function of the solids turnover ratio. The commenter stated that the rationale was compelling then, and it is equally compelling now, and that the EPA has not adequately explained how prime coat downtime or reduced throughput would be accommodated under the newly proposed standard and why a change is needed. The commenter stated that eliminating consideration of the solids turnover ratio would be arbitrary and capricious. With the solids turnover ratio, the commenter stated, the prime coat limit of 0.23 lbs VOC/gal acs can be achieved when the solids turnover ratio is greater than or equal to 0.16. One commenter asserted that without the adjusted emission limit for low solid turnover ratios, the commenter could not achieve the existing NSPS limit.

Response: In the proposal the EPA noted that ALDT prime coat operation permit limits did not include a factor to account for the solids turnover ratio, and the EPA understood that to mean that facilities currently using the EDP prime coat process are now able to consistently maintain the solids turnover ratio (R_T) at a value equal to or greater than 0.16 (87 FR 30148, May 18, 2022). Therefore, we proposed a prime coat limit of 0.23 lbs VOC/gal acs based on sources' control of the curing oven emissions with thermal oxidation (*e.g.*, an RTO) achieving 95 percent DRE without the R_T factor. After consideration of the 1994 final rule (59 FR 51383, October 11, 1994) and in response to the commenters' argument, we are retaining the R_T factor to account for periods of non-production and reduced throughput. Thus, the EPA is promulgating the following limits in 40 CFR 60.392a depending on the solids

turnover ratio (R_T); for R_T greater than 0.16, the limit is 0.027 kg VOC/l acs (0.23 lb VOC/gal acs); for turnover ratios less than 0.04 (periods of non-production), there is no emission limit; and when the solids turnover ratio is between 0.04 and 0.16 (inclusive), the emission limit is determined using the following equation:

Limit = $0.027 \times 350^{(0.160 - R_T)}$ kg of VOC per liter of applied coating solids

2. Guide Coat Operation

a. Proposed Emission Limit

For the guide coat operation, at proposal the EPA evaluated four regulatory options. These regulatory options were more stringent than the ALDT NSPS MM limit of 1.40 kg VOC/l acs (11.7 lb VOC/gal acs). These options were based on 14 facilities with 31 guide coat operations subject to more stringent guide coat limits than the current ALDT NSPS MM guide coat limit (87 FR 30141; May 18, 2022). The guide coat emission limits found in permits for facilities using liquid coatings that were more stringent than the ALDT NSPS MM limit ranged from 0.060 to 1.21 kg VOC/l acs (0.050 to 10.11 lb VOC/gal acs) and 27 of the 31 guide coat operations were subject to limits less than or equal to 0.69 kg VOC/l acs (5.5 lb VOC/gal acs). Three of the 31 guide coat operations with limits more stringent than the ALDT NSPS MM are meeting a lower emission limit (less than 0.060 kg VOC/l acs (0.050 lb VOC/gal acs)) or have no emission limit based on the use of powder guide coat and no controls.

The first option evaluated at proposal for the guide coat operation was a numerical VOC emission limit of 0.57 kg VOC/l acs (4.8 lb VOC/gal acs) to reflect control of the guide coat oven with an RTO achieving 95 percent DRE and use of solvent borne or waterborne coating and no control of the guide coat spray booth or heated flash off area exhausts. The facilities using this system of emission reduction had limits in the range of 0.41 to 0.66 kg VOC/l acs (3.46 to 5.5 lb VOC/gal acs). This limit option was selected because it is the most common numerical limit for these facilities and matches the operating permit limit for 9 facilities with this control scenario. The EPA estimated that this option would reduce emissions from a typical guide coat operation by about 40 tpy of VOC at a cost of \$4,400 per ton of VOC reduced.

The second option evaluated was a VOC emission limit of 0.35 kg VOC/l acs (2.92 lb VOC/gal acs) to reflect control of the guide coat spray booth and oven with either a carbon adsorber and an

RTO or a concentrator and an RTO, with the RTO achieving 95 percent DRE of the captured emissions and the use of solvent borne guide coat. This VOC emission limit matches the 2020 presumptive best available control technology (BACT) emission limit for the guide coat operation identified by EPA Region 5, and 2 facilities are currently subject to this limit. The EPA estimated that this option would reduce emissions from a typical guide coat operation by about 50 tpy of VOC at a cost of \$4,900 per ton of VOC reduced.

The third option was a VOC emission limit of 0.036 kg VOC/l acs (0.30 lb VOC/gal acs) to reflect the use of a waterborne guide coat demonstrated by 1 facility employing the use of a 3-wet coating process. As described in the proposal, in a 3-wet process the guide coat and topcoat operations are combined, and the guide coat oven is replaced by a heated flash off area, resulting in lower emissions from the guide coat operation and a more efficient process in terms of time and energy savings for the facility. The process consists of a series of 2 separate booths with heated flash off areas for partial cure (one for the guide coat and one for the basecoat), followed by a clearcoat booth, a flash off area, and a topcoat oven (where the guide coat, the basecoat, and the topcoat are fully cured). Only one facility with 2 guide coat operations is subject to this VOC emission limit (0.036 kg VOC/l acs (0.30 lb VOC/gal acs)) and uses the 3-wet process for the guide coat operation. The costs associated with this option are for controlling the guide coat heated flash off area emissions with an RTO achieving 95 percent DRE of the captured emissions. The EPA estimated that this option would reduce emissions (from a typical guide coat operation) by about 73 tpy of VOC at a cost of \$3,250 per ton of VOC reduced. As discussed in the proposal, although this option is cost-effective when considering the cost of controls, the emission limit would be achievable only for guide coat operations as part of a 3-wet combined guide coat and topcoat operation. Further, it would be not cost-effective for the purposes of this BSER analysis due to the major capital investment associated with reconfiguring the guide coat operation so that it could become part of a 3-wet combined guide coat and topcoat operation.

The fourth option we considered was a numerical VOC limit of 0.016 kg VOC/l acs (0.13 lb VOC/gal acs) to reflect the use of a powder guide coat, instead of a liquid coating. One facility is subject to an emission limit of 0.016 kg VOC/l acs (0.13 lb VOC/gal acs), and 3

facilities either are subject to a lower emission limit than 0.016 kg VOC/l acs (0.13 lb VOC/gal acs) or have no emission limit based on the use of powder guide coat and no controls. As discussed in the proposal, operations using powder coatings are essentially non-emitting operations because the dry powder coating has no solvent. Therefore, guide coat operations using powder coatings emit virtually no VOCs from the booth, flash off area(s), or curing oven. The use of powder for the guide coat operation could eliminate all VOC emissions from a typical guide coat operation with no additional control costs and could be the best environmental outcome. However, the industry has experienced difficulties (including appearance and finish quality) with the application of powder coatings to ALDT vehicle bodies, so we considered this option to be not adequately demonstrated. Further, it would not be cost-effective for the purposes of this BSER analysis for a reconstructed or modified operation due to the major capital investment associated with switching the guide coat operation from a liquid coating application to a powder coating application.

After consideration of all guide coat options, the EPA proposed a revised VOC limit of 0.35 kg VOC/l acs (2.92 lb VOC/gal acs) for the guide coat operation based on Option 2, being the use of solvent borne guide coat and 95 percent control of the spray booth and oven with either a carbon adsorber and an RTO or a concentrator and an RTO, with the RTO achieving 95 percent DRE of the captured emissions, as the updated BSER for guide coat operation. This option also represents the lower range of emission limits for facilities using solvent borne guide coats and is demonstrated by 3 of 44 existing ALDT plants.

b. How the Final Revisions to Guide Coat Limits Differ From the Proposed Revisions

After considering the comments on the proposed revisions to the guide coat emission limit, the EPA is finalizing the guide coat operation VOC emission limit as proposed.

c. Guide Coat Comments and Responses

The EPA received comments on the guide coat operation that caused us to further evaluate the use of waterborne and solvent borne coatings and to investigate the controls used for each, as described in the EPA response in this section.

Comment: One commenter asserted that reliance on New Source Review

(NSR) BACT and LAER determinations in setting subpart MMA emissions standards would result in unreasonably constrained national standards. For example, according to the commenter, the proposed guide coat standard based on a BACT determination for solvent-based systems using add-on booth controls does not reasonably or adequately accommodate waterborne guide coat systems.

The commenter also provided determinations for 2 case studies for guide coat operations with BACT limits in ALDT plants located in the state of Indiana to support their claim that the proposed subpart MMA emissions standards for the guide coat operations are not cost-effective for sources using waterborne coatings. The commenter stated the standards must be adjusted to avoid the need to install cost-ineffective spray booth controls on waterborne guide coat lines.

Response: The EPA considered the VOC emission limits in ALDT plant title V permits in its BSER analysis, including those that were derived from BACT determinations. The EPA did not consider the limits that were derived from LAER determinations in its BSER analysis, except for limits that were determined to be both BACT and LAER. The EPA considered these VOC emission limits in its BSER review because they represented the best available control technology at the time, were developed by the individual ALDT plants, are inherently cost-effective, and were approved by state and local permitting authorities. However, as required by CAA section 111(b)(1)(B), the EPA conducted its own cost-effectiveness and other analyses to determine BSER, as described in the proposal (87 FR 30141, May 18, 2022).

The EPA disagrees that the proposed guide coat standard is based on a BACT determination for solvent-based systems using add-on booth controls that does not reasonably or adequately accommodate waterborne guide coat systems. In our review of guide coat operations, we generally found that most operations use solvent borne coatings. However, for guide coat operations with VOC emission limits lower than the 1980 ALDT NSPS limit, we found 8 operations using a waterborne coating (the rest use a solvent borne coating). For guide coat operations, we are clarifying the description included in the proposal for the 2 cost-effective options (Option 1 and Option 2) to distinguish between the use of waterborne basecoat and solvent borne coatings, as described here.

The first option for guide coat operations was represented by plants using either waterborne or solvent borne coatings achieving a numerical VOC emission limit of 4.8 lb VOC/gal acs (0.57 kg VOC/l acs). We found that plants achieving the 4.8 lb VOC/gal acs limit using waterborne guide coat had no control of the booth or flash off area (for 3-wet operations) or controlled the guide coat oven with an RTO achieving 95 percent DRE of the captured emissions (if not a 3-wet operation). Plants achieving the 4.8 lb VOC/gal acs limit using solvent borne guide coat generally control one of the following: the guide coat spray booth, the guide coat flash off area, or the guide coat oven (if not a 3-wet operation).

The second proposed option for guide coat operations was represented by plants using either waterborne or solvent borne coatings achieving a numerical VOC emission limit of 2.92 lb VOC/gal acs (0.35 kg VOC/l acs). We found that plants subject to and achieving the 2.92 lb VOC/gal acs limit used either: (1) waterborne guide coat and control of the flash off area with no control of the booth; or (2) solvent borne guide coat and control of the booth and oven with either a carbon adsorber and an RTO or a concentrator and an RTO, with the RTO achieving 95 percent DRE of the captured emissions.

During our review since proposal, we updated the cost effectiveness calculations for the guide coat operation by increasing the interest rate to 7 percent and the Chemical Engineering Plant Cost Index (CEPCI) to the 2021 index, to estimate the incremental cost effectiveness between two guide coat options and found it to be reasonable at \$6,670/ton VOC reduced. We determined this incremental cost effectiveness has a lower cost per ton of VOC reduced than the cost effectiveness for the prime coat operation (\$6,800/ton VOC reduced) and results in greater VOC emission reductions (147 tpy compared to 40 tpy for prime coat) when compared to the 1980 NSPS baseline level of control.

The EPA also collected compliance data from one ALDT plant cited by the commenter, Subaru of Indiana, covering the period from 2019 to 2021 and these data show that the waterborne guide coat operations are consistently achieving a daily emission rate of 2.1 to 2.2 lb VOC/gal acs. These achieved emission rates are about 75 percent of the proposed monthly emission rate of 2.92 lb VOC/gal acs. The waterborne guide coat operations at Subaru Indiana Automotive are subject to a BACT emission limit of 4.8 lb VOC/gal acs, and do not apply emission reductions

from any add-on controls to achieve compliance. These data support the EPA's proposed emission limit of 2.92 lb VOC/gal acs and the determination that this emission limit is achievable in a cost-effective manner for both waterborne and solvent borne guide coat systems.

Therefore, the EPA disagrees that the proposed standard does not reasonably or adequately accommodate waterborne guide coat systems and is finalizing the guide coat emission limit, as proposed. Additional detail is provided in the memorandum titled, *Final Cost and Environmental Impacts Memo for Surface Coating Operations in the Automobiles and Light-Duty Trucks Source Category (40 CFR part 60, subpart MMA)*, located in the docket for this action.

Comment: One commenter recommended a guide coat standard of 4.8 lb VOC/gal acs for new and reconstructed facilities. This standard has been achieved in the ALDT sector in cases where a waterborne guide coat is used with VOC controls on the oven, but no additional VOC controls on the booth. For modifications, the commenter recommended the EPA maintain in subpart MMA the subpart MM VOC emission limit for guide coat operations. The commenter stated that the EPA has not considered the cost-effectiveness to implement a lower standard in the event of a modification of a guide coat affected facility.

Response: As a result of the BSER review, the EPA has determined that a guide coat standard of 2.92 lb VOC/gal acs reflects BSER for new, reconstructed, and modified sources. We found this option to be achievable for both waterborne and solvent borne coating applications and the emission limit is consistent with the 2020 presumptive BACT emission limit identified by U.S. EPA Region 5. Contrary to the commenter's statement, we found that plants achieving the 4.8 lb VOC/gal acs limit used waterborne guide coat and no control of the booth or flash off area. This numeric limit would represent no change from the 1980 NSPS MM level of no control for waterborne guide coat operations (*i.e.*, the 1980 limit and the limit of 4.8 lb VOC/gal acs could both be achieved by plants with no add-control of the waterborne guide coat operations). Our analysis indicates that waterborne guide coat operations can achieve a limit of 2.92 lb VOC/gal acs by controlling the emissions from the waterborne guide coat flash off area. The EPA identified this as the difference between the 2 guide coat options with an incremental

cost effectiveness of \$6,670 per ton of VOC reduced.

During our review we identified no modifications (consistent with part 60 definitions and proposed subpart MMA exceptions) for guide coat operations. Instead, we found that guide coat systems are newly constructed or reconstructed (and not modified) at existing ALDT plants. Subpart MMA would not be triggered if the changes to an existing system do not meet either the part 60 definition of modification or the subpart MMA exceptions for modifications. For these reasons subpart MM did not include separate emission limits for guide coat modifications, and separate emission limits were not proposed for the new subpart MMA. The commenter also provided no data or information to support a separate emission limit for modifications. Therefore, we are finalizing the proposed standard for the guide coat operation, including for modifications.

Additional detailed on modifications for ALDT affected facilities is provided in the document titled, *Summary of Public Comments and Responses on Proposed Rule: New Source Performance Standards for Automobile and Light Duty Truck Surface Coating Operations (40 CFR part 60, subpart MM) Best System of Emission Reduction Review, Final Amendments, Docket ID No. EPA-HQ-OAR-2021-0664*.

3. Topcoat Operation

a. Proposed Emission Limit

The ALDT NSPS subpart MM topcoat limit is based on the application of topcoat in one booth. It is also based on no control of waterborne topcoats (*e.g.*, waterborne base coat and clearcoat) if used, or based on 95-percent control of the topcoat booth and oven VOC emissions if solvent borne topcoats (solvent borne base coat and clearcoat) are used with a thermal or catalytic oxidizer.

For the topcoat operation, at proposal, the EPA evaluated 2 regulatory options. These regulatory options were more stringent than the ALDT NSPS MM limit of 1.47 kg VOC/l acs (12.3 lb VOC/gal acs). These options were based on 20 facilities operating approximately 25 topcoat lines that are subject to more stringent topcoat limits than the topcoat VOC limit in the ALDT NSPS MM (87 FR 30150; May 18, 2022). The topcoat VOC emission limits more stringent than the current ALDT NSPS MM range from 0.28 to 1.44 kg VOC/l acs (2.32 to 12.0 lb VOC/gal acs). The regulatory options include the use of add-on controls for both waterborne and solvent borne basecoats and the use of add-on

controls for solvent borne clearcoats (the EPA is not aware of any facilities in the U.S. using waterborne clearcoats).

The first option evaluated in the ALDT NSPS review for the topcoat operation is a numerical topcoat limit of 0.62 kg VOC/l acs (5.20 lb VOC/gal acs) demonstrated by 6 facilities with 11 topcoat operations with control of the clearcoat spray booth and the topcoat oven with a concentrator, such as a carbon adsorber or rotary carbon adsorber, followed by a thermal oxidizer, usually an RTO achieving 95 percent DRE of the captured emissions. The EPA estimated this option would reduce VOC emissions from a typical topcoat operation by 110 tpy of VOC at a cost of \$5,200 per ton of VOC reduced.

The second option considered by the EPA for the topcoat operation is a numerical topcoat limit of 0.42 kg VOC/l acs (3.53 lb VOC/gal acs) demonstrated by 2 facilities operating 3 coating lines (corrected in this final action to reflect 3 facilities operating 4 coating lines) with control of the basecoat spray booth and/or the basecoat flash off area, as well as the clearcoat spray booth and topcoat oven. The add-on controls used by facilities include a thermal oxidizer, usually an RTO achieving 95 percent control of the captured emissions and a concentrator, such as a carbon adsorber or rotary carbon adsorber before the RTO (same as the first option). For this option, the emissions from the basecoat spray booth and/or the basecoat flash off area would also be routed to the concentrator before going to the RTO. This option also represents the lower range of emission limits for topcoat operations using solvent borne basecoat and clearcoats and it matches the 2020 presumptive BACT emission limit identified by EPA Region 5. The EPA estimated that this option would reduce emissions from a typical topcoat operation by 160 tpy of VOC at a cost of \$7,900 per ton of VOC reduced (corrected in this final action). The EPA proposed a revised VOC limit of 0.42 kg VOC/l acs (3.53 lb VOC/gal acs) for the topcoat operation based on Option 2.

After consideration of the 2 topcoat options, the EPA proposed option 2, a revised VOC limit of 0.42 kg VOC/l acs (3.53 lb VOC/gal acs) for the topcoat operation based on control of the basecoat spray booth and/or the basecoat heated flash off area, as well as the clearcoat booth and the topcoat oven with an RTO or a combination of a concentrator and RTO, with the RTO achieving 95 percent DRE of the captured emissions.

b. How the Final Revisions to Topcoat Limits Differ From the Proposed Revisions

After considering the comments on the proposed revisions to the topcoat emission limit, the EPA is finalizing the topcoat operation VOC emission limit, as proposed.

c. Topcoat Comments and Responses

Similar to the guide coat operation, the EPA received comments on the topcoat operation that caused us to further evaluate the use of waterborne and solvent borne coatings and to further investigate the controls used for each. This evaluation resulted in the finding that topcoat operations using a waterborne basecoat and achieving the 3.53 lb VOC/gal acs limit are doing so by controlling the waterborne basecoat booth and/or flash off area, as stated in the EPA response in this section. During this evaluation we also updated the cost effectiveness calculations for the topcoat operation by increasing the interest rate to 7 percent and the CEPCI to the 2021 index, we made a correction to the proposed topcoat cost effectiveness calculations, and we estimated the incremental cost effectiveness between the two topcoat options.

Comment: One commenter stated that the EPA cannot use Prevention of Significant Deterioration (PSD) permits by themselves as a basis for setting national emissions standards, but that PSD permits do provide useful information as to what emissions control alternatives should be rejected, since state permitting agencies routinely use incremental cost-effectiveness analysis in assessing emissions control alternatives in PSD permitting. The commenter provided determinations for 2 case studies for topcoat operations with BACT limits in the state of Indiana to support their claim that the proposed subpart MMA emissions standards for the topcoat operations are not cost-effective for sources using waterborne coatings. The commenter stated the standards must be adjusted to avoid the need to install cost-ineffective spray booth controls on waterborne topcoat lines.

Response: CAA section 111(b)(1)(B) requires the EPA to conduct its own cost effectiveness determination as part of the BSER analysis. As part of that analysis, the EPA also considered these same topcoat operations identified by the commenter in the 2 case studies cited by the commenter in its BSER review. The BACT limits referred to by the commenter, reflected in the ALDT plants' title V operating permits, are lower than the 1980 subpart MM

emissions limits for topcoat operations. Thus, even the examples provided by the commenters indicate that ALDT plants can achieve a greater level of emission reductions in topcoat operations than the current standards. In addition, the EPA identified topcoat operations achieving lower VOC emission limits than those reflected in the 2 case studies and determined the proposed limit for the topcoat operation is achievable and cost-effective.

In our review of topcoat operations, we found that more plants use waterborne than solvent borne coatings for the basecoat and that all plants use solvent borne clearcoats. For topcoat operations, we are clarifying the description of the 2 cost-effective options included in the proposal to better distinguish between the use of waterborne and solvent borne coatings, as described here.

For topcoat operations, the first option was represented by plants achieving a BACT limit of 5.2 lb VOC/gal acs by controlling the solvent borne clearcoat process only and no control of the waterborne basecoat part of the topcoat operation. We found that plants achieving a limit of 5.2 lb VOC/gal acs used: (1) waterborne basecoat and no control of the basecoat booth and no control of the heated flash off area; and (2) solvent borne clearcoat with control of the automated sections of the clearcoat booth and the clearcoat flash off area and the topcoat (combined basecoat and clearcoat) oven. The automated sections of the solvent borne clearcoat booth are controlled by either an RTO or a combination of a concentrator and an RTO. The concentrators include a carbon or zeolite adsorber (either a dual bed system or rotary wheel system) before the RTO, and most RTOs achieve greater than 95 percent DRE of the captured emissions. The topcoat oven is controlled with an RTO that achieves 95 percent DRE of the captured emissions. For topcoat operations using a waterborne basecoat, this numeric limit would represent no change from the 1980 NSPS level of no add-on control of the waterborne basecoat. For topcoat operations using a solvent borne clearcoat, this numeric limit would represent an increase from the 1980 NSPS level of add-on control (control of the automated sections of the clearcoat booth and flash off area). Therefore, the cost effectiveness for this option reflects the emission reductions and costs associated with controlling the solvent borne clearcoat process.

For topcoat operations, the proposed second option was represented by plants achieving a BACT limit of 3.53 lb

VOC/gal acs by controlling both the waterborne basecoat and solvent borne clearcoat parts of the topcoat operation. We found that plants achieving a limit of 3.53 lb VOC/gal acs limit used: (1) waterborne basecoat with control of the booth and/or the flash off area with an RTO; and (2) solvent borne clearcoat with control of the automated sections of the clearcoat booth, the clearcoat flash off area and the topcoat (combined basecoat and clearcoat) oven, as described in the first topcoat option. For waterborne basecoat operations, this numeric limit represents an increase in the level of control (control of the waterborne basecoat booth and/or flash off area) compared to the 1980 NSPS (no control). For solvent borne clearcoat operations, this numeric limit represents the same increase in the level of control (compared to the 1980 NSPS) as the first topcoat option (by adding control of the automated sections of the clearcoat booth and flash off area), and no change when compared to the first topcoat option. Therefore, the cost effectiveness for the second topcoat option reflects the emission reductions and costs associated with controlling the water borne basecoat process.

As a result of the BSER analysis for the topcoat operation, the EPA is clarifying that the difference between the 2 options is due to control of VOC emissions from the waterborne base coat booth and/or flash off area with an incremental cost effectiveness of \$6,500 per ton of VOC reduced. Therefore, the EPA has determined that the proposed standard is achievable using either solvent borne or waterborne topcoat systems and is finalizing the proposed limits for the topcoat operation in subpart MMA. Additional detail is provided in the memorandum titled, *Final Cost and Environmental Impacts Memo for Surface Coating Operations in the Automobiles and Light-Duty Trucks Source Category (40 CFR part 60, subpart MMA)*, located in the docket for this action.

Comment: One commenter claimed the proposed analysis is flawed because it is not based on an incremental evaluation of regulatory alternatives. The commenter stated that the subpart MMA proposal contains analysis of 2 control options for topcoat lines and it does not evaluate the incremental cost-effectiveness of option 2 as compared to option 1. The commenter stated that option 1 was based on control of the clearcoat spray booth and the topcoat oven and option 2 was based on control of the basecoat spray booth/flash off area as well as clearcoat booth and oven. According to the commenter, option 2 further reduces VOC by 50 tons with an

incremental cost-effectiveness of \$13,840/ton of VOC reduced, a value that is facially not cost-effective using the EPA's usual cost effectiveness thresholds for VOCs. Moreover, the commenter stated that this value exceeds levels that the EPA has rejected in other rules as not being incrementally cost-effective. According to the commenter, in a recently proposed NSPS for Bulk Gasoline Terminals, the EPA determined that in setting emission limits for loading operations the incremental cost effectiveness of \$8,300/ton of VOC reduced was not cost-effective.

Response: The EPA is clarifying the description of the options in the proposal to distinguish between the use of waterborne and solvent borne coatings for the topcoat operation and has estimated the incremental cost-effectiveness of those options.

The 1980 subpart MM baseline level of control for topcoat operations (including basecoats) was a limit of 12.3 lb VOC/gal acs and required no control on waterborne coating operations. Our analysis indicates topcoat operations using waterborne basecoats are now achieving a limit of 5.2 lb VOC/gal acs using no control and that a lower limit of 3.53 lb VOC/gal acs is achieved by ALDT plants by controlling the emissions from the waterborne basecoat booth and/or flash off area. The cost effectiveness to control the waterborne basecoat booth or flash off area is \$6,010 per ton of VOC reduced, which is the incremental cost effectiveness between the 2 topcoat options.

In this final action, the EPA is correcting an error in the proposal found while estimating the incremental cost effectiveness between the topcoat options. In its proposal for the second topcoat option, the EPA estimated an emission reduction of 160 tpy and a cost effectiveness of \$7,900/ton VOC reduced to achieve the lower FCA Sterling Heights Assembly Plant limit of 2.32 lb VOC/gal acs (instead of the proposed 3.53 lb VOC/gal acs). The final estimated emission reduction and cost per ton for option 1 (5.2 lb VOC/gal acs) is 137 tons VOC reduced per year and \$3,980/ton reduced. The revised emission reduction and cost effectiveness for the second topcoat option of 3.53 lb VOC/gal acs is 169 tpy and \$4,370 per ton of VOC reduced compared to the 1980 baseline level of control, which the EPA determined to be reasonable. As a result, the EPA estimated the incremental emission reduction to be 32 tpy and estimated an incremental cost effectiveness between the 2 topcoat options to be \$6,010 per ton of VOC reduced when compared to

the cost and emission reduction estimated for option 1 at 5.2 lb VOC/gal acs.

The EPA determined the topcoat incremental cost effectiveness of \$6,010 per ton of VOC reduced to be reasonable as an incremental cost. The topcoat incremental cost effectiveness of \$6,010 per ton of VOC reduced is lower than the cost per ton of VOC reduced for the prime coat operation (\$6,800/ton VOC reduced) and results in greater VOC emission reductions (169 tpy compared to 40 tpy for prime coat) when compared to the 1980 NSPS baseline level of control. This incremental cost effectiveness (\$6,010 per ton of VOC reduced) is also lower than the incremental cost effectiveness value of \$8,300/ton for modified and reconstructed loading operations that was rejected in the Bulk Gasoline Terminals NSPS cited by the commenter. The EPA also notes that, in any event, the Bulk Gasoline Terminals source category is a very different industry and emission source type and cannot be used to establish an incremental cost effectiveness boundary or threshold for ALDT surface coating operations. Revision of the standards of performance for each source category must reflect the degree of emission limitation achievable through the application of the BSER considering the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements (CAA section 111(a)(1)). Therefore, we are finalizing the 3.53 lb VOC/gal acs emission limit for the topcoat operation, as proposed. Additional detail on the topcoat cost effectiveness analysis is provided in the memorandum titled, *Final Cost and Environmental Impacts Memo for Surface Coating Operations in the Automobiles and Light-Duty Trucks Source Category (40 CFR part 60, subpart MMA)*, located in the docket for this action.

B. Work Practice Standards

1. Proposed Work Practice Standards

The EPA proposed work practice standards in the new subpart MMA to minimize fugitive VOC emissions from: (1) the storage, mixing, and conveying of coatings, thinners, and cleaning materials used in, and waste materials generated by, the prime coat, guide coat and topcoat operations; and (2) the cleaning and purging of equipment associated with the prime coat, guide coat and topcoat operations. Subpart MMA affected sources are also required to develop and implement work practice plans consistent with the ALDT

NESHAP provisions, which we have determined to be BSER. The work practices include: the use of low-VOC and no-VOC alternatives; controlled access to VOC-containing cleaning materials; capture and recovery of VOC-containing materials; use of high-pressure water systems to clean equipment in the place of VOC-containing materials; masking of spray booth interior walls, floors, and spray equipment to protect from over spray; and use of tack wipes or solvent moistened wipes.

For fugitive emissions of VOC, the EPA evaluated work practices demonstrated by 43 of 44 existing ALDT plants currently subject to ALDT NESHAP in 40 CFR 63.3094 as discussed in the proposal (87 FR 30151; May 18, 2022). The EPA proposed these work practices and the development and implementation of work practice plans for the ALDT NSPS MMA to minimize fugitive VOC emissions from the storage, mixing, and conveying of VOC-containing materials that include the coatings, thinners, and cleaning materials used in, and waste materials generated by, the prime coat, guide coat and topcoat operations. The EPA also proposed work practices and the development and implementation of work practice plans for the ALDT NSPS MMA to minimize fugitive VOC emissions from the cleaning and purging of equipment. The EPA proposed VOC minimizing practices including: the use of low-VOC and no-VOC alternatives; controlled access to VOC-containing cleaning materials; capture and recovery of VOC-containing materials; use of high-pressure water systems to clean equipment in the place of VOC-containing materials; masking of spray booth interior walls, floors, and spray equipment to protect from over spray; and use of tack wipes or solvent moistened wipes. The EPA considers these work practices to reflect BSER for controlling fugitive emissions of VOC.

As discussed in the proposal, CAA section 111(h)(1) authorizes the Administrator to promulgate “a design, equipment, work practice, or operational standard, or combination thereof” if in his or her judgment, “it is not feasible to prescribe or enforce a standard of performance.” CAA section 111(h)(2) provides the circumstances under which prescribing or enforcing a standard of performance is “not feasible,” such as when the pollutant cannot be emitted through a conveyance designed to emit or capture the pollutant, or when there is no practicable measurement methodology for the particular class of sources.

The results of our BSER review did not identify any ALDT facilities demonstrating add-on controls for these fugitive VOC emissions, and because these emissions are from various sources and activities located throughout the ALDT facility and are generally released into the ambient air from various locations throughout the facility, the EPA determined that it would not be feasible to route these fugitive VOC emissions to capture and control systems. The sources of fugitive VOC emissions include: containers for VOC-containing materials used for wipe-down operations and cleaning; spills of VOC-containing materials; the cleaning of spray booth interior walls, floors, grates and spray equipment; the cleaning of spray booth exterior surfaces; and the cleaning of equipment used to convey the vehicle body through the surface coating operations.

2. How the Final Revisions to Work Practice Standards Differ From the Proposed Revisions

After considering the comments on the proposed work practice standards, the EPA is finalizing the work practice standards, as proposed.

3. Work Practice Standards Comments and Responses

Comment: Three commenters requested that the EPA provide a compliance alternative such that compliance with the elements of the ALDT NESHAP work practice plan that incorporate subpart MMA requirements for VOC represent compliance with subpart MMA. The commenter refers to the subpart MMA proposal where the EPA stated that “[f]acilities demonstrating compliance with the ALDT NESHAP Subpart III work practice provisions will be in compliance with these same requirements in the revised ALDT NSPS Subpart MMA” and requests that this condition be added to the subpart MMA rule text to streamline the permitting process and to avoid the use of repetitive permit terms in site compliance systems. The commenters provided suggestions for subpart MMA regulatory text in their comments.

Response: In subpart MMA, 40 CFR 60.392a provides the work practices to minimize fugitive emissions of VOC from materials and equipment associated with coating operations for which emission limits are established under 40 CFR 60.392a(a). These coating operations are the prime coat, guide coat and topcoat operations that are subject to MMA due to construction, reconstruction, or modification after May 18, 2022. Subpart MMA, 40 CFR

60.392a(b) provides the work practices for storage, mixing, and conveying of coatings, thinners, and cleaning materials used in, and waste materials generated by, all coating operations for which emission limits are established under 40 CFR 60.392a(a). In subpart MMA, 40 CFR 60.392a(c) provides the work practices for cleaning and purging of equipment associated with all coating operations for which emission limits are established under 40 CFR 60.392a(a).

These same work practices are required by the ALDT NESHAP to minimize fugitive emissions of organic HAP. However, the ALDT NESHAP applies to the subpart MMA sources as well as additional ALDT surface coating operations including operations for paint repair, underbody coating, sealers, *etc.* (*i.e.*, the NESHAP has broader applicability than subpart MMA). In addition, low-HAP-containing materials are not necessarily low-VOC-containing materials. For example, methyl ethyl ketone (MEK) was delisted as a HAP but is still considered to be a VOC. In addition, due to the potential for changes to the work practice standards in future ALDT NSPS and ALDT NESHAP rulemakings, the EPA is not providing a compliance alternative in subpart MMA to say that compliance with elements of the ALDT NESHAP work practice plans represents compliance with subpart MMA. After considering the comments on the proposed work practice standards, the EPA is finalizing the work practice standards, as proposed.

C. Plastic Parts Provision

1. Proposed Plastic Parts Provision

The EPA is also finalizing, as proposed, revision of the plastic parts provision so that subpart MMA applies to the surface coating of all vehicle bodies, including all-plastic vehicle bodies, to reflect changes in coating technology since the original ALDT NSPS MM and to make the requirements consistent for all ALDT surface coating facilities subject to subpart MMA (87 FR 30151–30152, May 18, 2022).

Based on the BSER review required by CAA section 111(b)(1)(B), the EPA proposed to remove the all-plastic vehicle body exemption from subpart MM in subpart MMA. One affected ALDT plant that uses waterborne (and solvent borne) coatings on all-plastic bodies is not subject to the ALDT NSPS subpart MM due to this exemption. The exemption was based on an industry comment the EPA received during development of the 1980 ALDT NSPS stating that compliance with subpart

MM was not possible due to the significant problems associated with the use of waterborne topcoats on plastic substrates due to the high temperature required to cure the waterborne coatings¹ (87 FR 30152; May 18, 2022). The EPA is finalizing that subpart MMA applies to the surface coating of all vehicle bodies, including all-plastic vehicle bodies. This requirement that includes all-plastic vehicle bodies in subpart MMA reflects BSER because the coating of the vehicle bodies using waterborne coatings has been demonstrated and it is expected that new all-plastic vehicle body surface coating operations can use the same technology as other facilities to meet the emission limits that reflect the application of BSER.

2. How the Final Revisions to the Plastic Parts Provision Differ From the Proposed Revisions

After considering the comment on the proposed plastic parts provisions, the EPA is finalizing the plastic parts provisions in subpart MMA, as proposed.

3. Plastic Parts Provision Comment and Response

Comment: One commenter supported the EPA's decision to exclude the coating of plastic parts from regulation under the proposed 40 CFR part 60, subpart MMA.

Response: The EPA acknowledges the commenters support of the proposed amendment to the rule.

D. Testing, Monitoring, Recordkeeping, and Reporting Provisions

1. Proposed Testing, Monitoring, Recordkeeping, and Reporting Provisions

The NSPS developed under CAA section 111 are required to reflect the best system of emission reduction under conditions of proper operation and maintenance. For the NSPS review, the EPA also evaluates and determines the proper testing, monitoring, recordkeeping, and reporting requirements needed to ensure compliance with the performance standards.

As a result of our review, we evaluated the testing, monitoring, recordkeeping, and reporting requirements for 43 of 44 ALDT plants currently subject to the ALDT NESHAP as discussed in the proposal (87 FR 30152; May 18, 2022) and proposed

revisions to the ALDT NSPS MMA requirements. The EPA considers these to be appropriate means of ensuring compliance with the standards that reflect BSER. These requirements will provide for more robust testing, monitoring, and reporting than is required by the current ALDT NSPS MM and will align the new ALDT NSPS MMA and the ALDT NESHAP requirements. Facilities demonstrating compliance with the ALDT NESHAP requirements will have no additional burden complying with these same requirements in the new NSPS subpart MMA.

a. Capture and Control Devices

In addition to the thermal and catalytic incineration in the current ALDT NSPS MM, we proposed to add the control devices listed in Table 1 to subpart IIII of part 63—Operating Limits for Capture Systems and Add-On Control Devices (ALDT NESHAP Table 1) to the new ALDT NSPS subpart MMA. The additional control devices include regenerative carbon adsorbers, condensers, and concentrators (including zeolite wheels and rotary carbon adsorbers). We also proposed requirements for capture systems that are permanent total enclosures and capture systems that are not permanent total enclosures for the new NSPS subpart MMA to match the ALDT NESHAP requirements.

b. Operating Limits and Monitoring Provisions for Capture and Control Devices

In addition to updating the capture and control devices in the new ALDT NSPS subpart MMA, the EPA proposed operating limits and monitoring provisions for the capture and control devices to match the ALDT NESHAP requirements. These requirements include matching: (a) 40 CFR 63.3093 and the ALDT NESHAP Table 1; (b) the provisions for establishing control device operating limits in 40 CFR 63.3167; and (c) the provisions for the continuous monitoring system installation, operation, and maintenance of control devices in 40 CFR 63.3168.

c. Performance Testing of Capture and Control Devices

In addition to updating the capture and control devices in the new ALDT NSPS MMA, the EPA proposed initial capture performance testing and initial and periodic control device performance testing requirements in NSPS subpart MMA to match the ALDT NESHAP provisions in 40 CFR 63.3160 and 63.3160(c)(3). Periodic performance tests are used to establish or evaluate

the ongoing destruction efficiency of the control device and establish the corresponding operating parameters, such as temperature, which can vary as processes change or as control devices age. The EPA also proposed control device destruction efficiency requirements to match the ALDT NESHAP provisions in 40 CFR 63.3166 for the new NSPS subpart MMA.

d. Recordkeeping and Reporting Provisions

The recordkeeping and reporting provisions proposed in the new ALDT NSPS MMA reflect the part 60 general provisions and are included in 40 CFR 60.395a. Subpart MMA requires quarterly or semiannual compliance reports, similar to subpart MM. Subpart MMA sources must identify, record, and submit a report every calendar quarter for each instance a deviation occurred from the emission limits, operating limits, or work practices. If no such instances have occurred during a particular quarter, a report stating such is required to be submitted semiannually.

2. How the Final Revisions to the Testing, Monitoring, Recordkeeping and Reporting Provisions Differ From the Proposed Revisions

After considering the comments on the proposed testing, monitoring, recordkeeping and reporting provisions, the EPA is finalizing these provisions, as proposed.

3. Testing, Monitoring, Recordkeeping and Reporting Comments and Responses

Comment: One commenter explained that during performance tests RTOs may experience a rise in combustion chamber temperature above the chamber temperature setpoint due to the high thermal efficiency of modern RTOs and the release of heat from materials contained in the incoming gases from various consolidated and concentrated VOC sources. The commenter requested that the EPA allow the performance test chamber temperature setpoint to be the minimum combustion temperature operating limit and revise 40 CFR 60.394a(a)(2) to either (a) allow the permit holder to establish the operating limit as equal to the combustion chamber temperature setpoint that has been established for the oxidizer based on previous source measurements that demonstrated compliance, or (b) allow the permit holder of the thermal oxidizer to apply to the Administrator for approval of an alternate operating limit under 40 CFR 60.13(i).

¹ Automobile and Light Duty Truck Surface Coating Operations, Background Information for Promulgated Standards, EPA-450/3-79-030b, September 1980, Comment 2.1.9, page 2-8.

Response: Subpart MMA requires initial and periodic performance testing of RTOs to demonstrate compliance with the required emission limits and to establish and demonstrate compliance with the operating limits for control devices. Subpart MMA at 40 CFR 60.392a(a) and 40 CFR 60.392a(g) require that the emission limits and the operating limits must be met at all times, including periods of SSM.

The commenter stated that RTOs “may” experience a higher combustion chamber temperature than indicated by the setpoint during performance testing and provided examples of RTOs operating at higher temperatures than the operating limit. However, the examples provided show that the sources have not demonstrated the RTO destruction or removal efficiency (DRE) at the setpoint, but instead demonstrated the capability of the RTO to meet the required DRE at whatever temperature the RTO was actually operating. The EPA agrees that the effect of solvent loading depends on the degree to which the various sources of VOC are consolidated and concentrated within the facility, as well as the thermal and destruction efficiency of the RTO. However, the commenter does not provide any data on the number of sources routed to the RTOs or any information about the RTOs such as the age or date of installation. The commenter also does not provide data related to the materials in the exhaust gases or the BTU content of these materials, or data related to the fuel used for the RTO. These data could be used to predict the combustion temperatures expected during performance testing. In addition to the subpart MMA and the part 60 general provision performance testing requirements, performance testing could also include the retest of various materials/fuel mixtures used, in order to identify the minimum operating temperature corresponding to the DRE needed demonstrate compliance. Therefore, the EPA considers this to be a site-specific issue that should be addressed on a case-by-case basis in accordance with 40 CFR 60.13(i).

The EPA bases its stack testing requirements on the *Clean Air Act National Stack Testing Guidance* dated April 27, 2009.² In this guidance the EPA recommends that performance tests for a facility operating under an emission rate standard or concentration standard, normal process operating conditions producing the highest emissions or loading to a control device

would generally constitute the most challenging conditions for meeting the emissions standard. In these cases, the EPA recommends that the facility conduct a stack test at maximum capacity or the allowable/permitted capacity.

For both ALDT subparts MM and MMA, in which sources are subject to rate limits (mass VOC per volume of applied coating solids), testing should be conducted at maximum capacity or allowable/permitted capacity, and this could be expected to lead to the most challenging test conditions. Facility operators have several options if they expect that temperatures may rise above the set point during a compliance test. These include the following:

- If temperature rise is expected to occur when a facility is operating at maximum production, the facility operator may be able to adjust the set point prior to the test to prevent a temperature rise and achieve an average temperature operating limit more in line with the set point and representative minimum operating temperatures.
- The facility operator may request approval to use a VOC continuous emission monitoring system (CEMS) to continuously measure actual VOC emissions after the control device and use these direct VOC emission measurements in demonstrating compliance with the VOC emission rate limits.
- The facility operator may test at a lower average RTO temperature and use the DRE from that test in their compliance calculations and as the operating limit.

The temperature and thermal oxidizer DRE data in the stack tests collected by the EPA for this rulemaking show that DRE values are more variable at lower temperatures (e.g., 92 to 98 percent DRE at 1400 degrees F) than at higher temperatures (e.g., 96 to 99 percent DRE at 1500 degrees F) in the range between 1400 to 1550 degrees F. Because RTO temperature is an important determinant of DRE and DRE is used in the compliance calculations, it is important that the EPA ensure that RTOs are complying with an operating limit based on the actual temperature that corresponds to the DRE used in a facility’s compliance calculations. Therefore, the EPA is finalizing the proposed monitoring and operating limit provisions for subpart MMA that rely on the actual measured combustion temperature rather than the set point.

To request approval of alternatives to any monitoring procedures or requirements of part 60, including the operating limits, subpart MMA refers to the part 60 general provisions at 40 CFR

60.13(i). Specifically, subpart MMA at 40 CFR 60.394a provides performance test requirements for RTOs and refers to 40 CFR 60.13(i) for alternative monitoring. Subpart MMA at 40 CFR 60.394a also refers to 40 CFR 60.392a(h) which states that if a source uses an add-on control device other than those listed in Table 1 to subpart MMA or wishes to monitor an alternative parameter and comply with a different operating limit, the source must apply to the Administrator for approval according to 40 CFR 60.13(i). The part 60 general provisions also provide an alternative to the monitoring requirements for VOC emissions in subpart MMA with a CEMS in accordance with 40 CFR 60.13(i).

Comment: One commenter agreed that the time periods of bypass on an air pollution control device must be recorded and factored into the monthly compliance calculation by assuming that during bypass periods, the control efficiency for that portion of the operation(s) is zero. However, the commenter believes the bypass should not be characterized as a deviation from the standard unless the emission limit is exceeded.

Response: The EPA disagrees with the commenter. Subpart MMA at 40 CFR 60.392a(a) and 60.392a(g) require that the emission limits and the operating limits for capture and control devices must be met at all times after they are established during the initial performance test. This includes periods of SSM. The ALDT NESHAP also includes these same requirements.

Subpart MMA at 40 CFR 60.392a(g) also refers to Table 1 to subpart MMA, *Operating Limits for Capture Systems and Add-On Control Devices*, and requires sources to establish operating limits during performance tests according to the requirements in 40 CFR 60.394a. Sources are required to comply with the applicable operating limits in Table 1; for example, for thermal oxidizers the average combustion temperature in any 3-hour period must not fall below the operating limit (combustion temperature limit) established according to 40 CFR 60.394a(a). The average combustion temperature maintained during the performance test establishes the operating limit (the minimum 3-hour average operating limit) for the thermal oxidizer. In addition, subpart MMA at 40 CFR 60.393a(c)(2) and (3) requires sources to demonstrate continuous compliance with the applicable operating limit, and if an operating parameter is out of the allowed range, as specified in Table 1, it is a deviation from the operating limit that must be

² See <https://www.epa.gov/compliance/clean-air-act-national-stack-testing-guidance>.

reported as specified by 40 CFR 60.395a(h).

As the commenter states, subpart MMA in 40 CFR 60.393a(c)(4) requires that if an operating parameter deviates from the operating limit specified in Table 1, sources must assume that the emission capture system and add-on control device were achieving zero efficiency during the time period of the deviation except as provided in 40 CFR 60.393a(m). For the purposes of completing the compliance calculations specified in 40 CFR 60.393a(j), the rule text reiterates that sources must assume that both the emission capture system and the add-on control device were achieving zero efficiency during the time period of the deviation.

Specifically for bypasses, subpart MMA in 40 CFR 60.393a(c)(6) requires sources to meet the requirements for bypass lines in 40 CFR 60.394a(h) for control devices (other than solvent recovery systems for which liquid-liquid material balances are conducted). If any bypass line is opened and emissions are diverted to the atmosphere when the coating operation is running, this is a deviation that must be reported as specified in 40 CFR 60.395a(h). Subpart MMA in 40 CFR 60.395a(h)(1) also requires sources to monitor or secure the valve or closure mechanism controlling the bypass line in a non-diverting position in such a way that the valve or closure mechanism cannot be opened without creating a record that the valve was opened. If any bypass line is opened, sources must include a description of why the bypass line was opened and the length of time it remained open in the semiannual compliance report required by 40 CFR 60.395a. For the purposes of completing the compliance calculations specified in 40 CFR 60.393a(j), the rule text reiterates that sources must assume that both the emission capture system and the add-on control device were achieving zero efficiency during the time period of the deviation.

Comment: One commenter requested that the EPA modify the regulatory language in subparts MM and MMA to eliminate any quarterly reporting to align with the semiannual reporting frequency in the ALDT NESHAP and title V. The submittal of deviations should be addressed in a semiannual report as already required under the ALDT NESHAP in 40 CFR 63.3120(a) and under the title V requirements.

Response: The EPA disagrees with the commenter and provides the basis for the quarterly reporting requirement in the 1979 subpart MM proposal (44 FR 57801; October 5, 1979). We consider this basis to still be valid today. As

discussed in the selection of monitoring requirements section, the EPA explained that monitoring requirements are generally included in the standards of performance to provide a means for enforcement personnel to ensure that the emission control measures adopted by a facility to comply with standards are properly operated and maintained. Each surface coating operation that has achieved compliance without the use of an add-on VOC emission control device would be required to monitor the average VOC content of the coating materials used in that operation. Generally, increases in the VOC content of the coating materials would cause VOC emissions to increase. These increases could be caused by the use of new coatings or by changes in the composition of existing coatings. Therefore, following the initial performance test, increases in the average VOC content of the coating materials used in each surface coating operation are required to be reported on a quarterly basis. For surface coating operations using add-on control devices, the monitoring of combustion temperatures is required. Following the initial performance test, decreases in the incinerator combustion temperature are required to be reported on a quarterly basis.

Less frequent reporting is provided for affected facilities demonstrating compliance with subpart MMA requirements after 1 year. The part 60 General Provision at 40 CFR 60.7 provides that reporting on a quarterly (or more frequent) basis may be reduced if the following conditions are met: (i) for 1 full year (e.g., 4 quarterly or 12 monthly reporting periods) the affected facility's excess emissions and monitoring systems reports submitted to comply with a part 60 standard continually demonstrate that the facility is in compliance with the applicable standard; (ii) the owner or operator continues to comply with all recordkeeping and monitoring requirements specified in this subpart and the applicable standard; and (iii) the Administrator does not object to a reduced frequency of reporting for the affected facility. Therefore, we are finalizing the proposed requirement for quarterly reporting in subpart MMA at 40 CFR 60.395a(d).

Comment: One commenter requested that the EPA provide flexibility in the NSPS MMA to submit compliance reports according to dates incorporated in title V operating permits, consistent with the provisions in the ALDT NESHAP. The commenter also recommended that the EPA allow NSPS reporting to align with any reporting

date provisions in a title V operating permit.

Response: The EPA has revised the reporting requirements in subpart MMA at 40 CFR 60.395a (d) for compliance reports according to dates incorporated in title V operating permits, consistent with the provisions in the ALDT NESHAP at 40 CFR 63.3120.

E. Transfer Efficiency Provisions

1. Proposed Transfer Efficiency Provisions

The EPA proposed provisions to require the measurement of transfer efficiency (TE) and a separate calculation to account for the recovery of purge solvent in subpart MMA, to be consistent with the ALDT NESHAP. In addition, we proposed provisions that sources determine the TE for each guide coat and topcoat coating operation using either ASTM D5066–91 (Reapproved 2017) or the guidelines presented in the “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations,” EPA–453/R–08–002, September 2008 (2008 ALDT Protocol). The EPA also proposed amendments for TE testing on representative coatings and for representative spray booths as described in the 2008 ALDT Protocol. In addition, the EPA proposed that sources can assume 100 percent TE for prime coat EDP operations.

2. How the Final Revisions to the Transfer Efficiency Provisions Differ From the Proposed Revisions

After considering the comments on the proposed transfer efficiency provisions for subpart MMA, the EPA is finalizing the transfer efficiency provisions, as proposed.

3. Transfer Efficiency Comment and Response

Comment: One commenter stated that subpart MMA emissions standards must provide the operational flexibility to employ a variety of coating application technologies and they must not be based on the assumption that all new, reconstructed, and modified facilities can achieve the highest levels of TE, because all facilities cannot do so.

Response: The EPA is finalizing in subpart MMA, as proposed, the measurement of the overall TE, which comprises all methods of spray application, for each guide coat and each topcoat operation subject to subpart MMA. These requirements are in accordance with the “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of

Automobile and Light-Duty Truck Topcoat Operations” (2008 Auto Protocol), contrary to the comment that the EPA is requiring the highest levels of TE (87 FR 30141; May 18, 2022). The EPA is not prescribing any specific application methods or requirements for a minimum allowable TE in subpart MMA.

F. NSPS Subpart MMA Without Startup, Shutdown, Malfunction Exemptions

1. Proposed SSM Provisions

Consistent with *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), the EPA has established standards in this rule that apply at all times. The NSPS general provisions in 40 CFR 60.8(c) currently exempt non-opacity emission standards during periods of SSM. We are finalizing in subpart MMA in section 40 CFR 60.392a specific requirements that override these general provisions for SSM requirements and match the SSM provisions in the ALDT NESHAP. In finalizing the standards in this rule, the EPA has taken into account startup and shutdown periods and, for the reasons explained in this section of the preamble, has not finalized alternate standards for those periods. We discussed the potential need for alternative standards with industry representatives during the recent development of amendments to the ALDT NESHAP and during the proposal of this ALDT NSPS action. No issues were identified, and there are no data indicating problems with complying with these provisions during periods of startup and shutdown. Therefore, the EPA determined that no additional standards are needed to address emissions during these periods. The legal rationale and explanation of the changes for SSM periods are set forth in the proposed rule (see 87 FR 30153–30154, May 18, 2022). Further, the EPA did not propose and is not promulgating standards for malfunctions in this final action.

Periods of startup, normal operations, and shutdown are all predictable and routine aspects of a source’s operations. Malfunctions, in contrast, are neither predictable nor routine. Instead, they are, by definition, sudden, infrequent, and not reasonably preventable failures of emissions control, process, or monitoring equipment (40 CFR 60.2). The EPA interprets CAA section 111 as not requiring emissions that occur during periods of malfunction to be factored into development of CAA section 111 standards. Nothing in CAA section 111 or in case law requires that the EPA consider malfunctions when determining what standards of

performance reflect the degree of emission limitation achievable through “the application of the best system of emission reduction” that the EPA determines is adequately demonstrated. While the EPA accounts for variability in setting emissions standards, nothing in CAA section 111 requires the Agency to consider malfunctions as part of that analysis. The EPA is not required to treat a malfunction in the same manner as the type of variation in performance that occurs during routine operations of a source. A malfunction is a failure of the source to perform in a “normal or usual manner” and no statutory language compels the EPA to consider such events in setting section 111 standards of performance. The EPA’s approach to malfunctions in the analogous circumstances (setting “achievable” standards under CAA section 112) has been upheld as reasonable by the D.C. Circuit in *U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 606–610 (2016).]

2. How the Final Revisions to the SSM Provisions Differ From the Proposed Revisions

After considering the comment on the proposed revisions to the SSM provisions for subpart MMA, the EPA is finalizing the SSM provisions, as proposed.

3. SSM Provision Comment and Response

Comment: One commenter supported the EPA’s proposal to remove startup, shutdown, and malfunction (SSM) regulatory loopholes, and additionally would like the EPA to also remove the SSM exemption from the NSPS general provisions.

Response: The EPA acknowledges the commenter’s support of the proposed amendment to the rule and the commenter’s suggestion to make a similar amendment to the 40 CFR part 60 general provisions. However, changes to the general provisions are outside the scope of this rulemaking action.

G. Electronic Reporting

1. Proposed Electronic Reporting Requirement

The EPA is finalizing the proposed requirement that owners and operators of affected facilities in the ALDT surface coating source category subject to the current and new NSPS at 40 CFR part 60, subparts MM and MMA submit electronic copies of required performance test reports and compliance reports through the EPA’s Central Data Exchange (CDX) using the

Compliance and Emissions Data Reporting Interface (CEDRI). We also are finalizing, as proposed, provisions that allow affected facility owners and operators the ability to seek extensions for submitting electronic reports for circumstances beyond the control of the ALDT plant, *i.e.*, for a possible outage in the CDX or CEDRI or for a *force majeure* event in the time just prior to a report’s due date, as well as the process to assert such a claim (87 FR 30154; May 18, 2022). The final subpart MM and MMA electronic reporting provisions require performance test results and compliance reports to be submitted to the Administrator as required by 40 CFR 60.395(f) and 60.395a(f). These final electronic reporting provisions would not affect submittals required by state air agencies.

Current subpart MM and new subpart MMA affected sources are required to comply with the electronic reporting requirements for performance test results on the effective date of the standard or upon startup, whichever is later. Current subpart MM and new subpart MMA affected sources are required to use the appropriate e-reporting template to comply with the electronic reporting requirements for compliance reports beginning 180 days after the EPA posts the final compliance reporting templates to CEDRI.

2. How the Final Revisions to the Electronic Reporting Requirement Differ From the Proposed Revisions

The EPA revised the proposed electronic reporting provisions for compliance reports in subparts MM and MMA due to the comments received. Sources are required to use the appropriate e-reporting template to comply with the electronic reporting requirements for compliance reports beginning 180 days instead of the proposed 90 days after the EPA posts the final compliance reporting templates to CEDRI. The electronic reporting templates were also revised according to the comments we received during the comment period and are available in the docket for this action.

3. Electronic Reporting Requirement Comments and Responses

Comment: One commenter requested that the EPA allow facilities that become subject to electronic reporting to submit the compliance report for both subpart MM and subpart MMA at least 180 days after the effective date of the rule, or once the reporting template has been available on the CEDRI website for 1-year, whichever date is later. According to the commenter the proposal stated that the EPA would require use of the

NSPS template once the template has been available on the CEDRI website for 90 days, but this language was not included in the proposed regulatory text.

Response: The EPA has revised the subpart MM and subpart MMA rule language to state that the reporting template must be used beginning 180 days after the effective date of the rule or once the reporting template has been available on the CEDRI website for 1-year, whichever date is later.

Comment: One commenter asserted that the use of electronic reporting is reasonable as a general matter, but that the proposed compliance templates, and regulatory language contain errors that must be corrected in the final rule. The EPA must correct the errors identified in the two proposed compliance templates and implement recommendations to make the templates more user-friendly.

Response: The EPA requested review and comment on the proposed templates and regulatory language, revised them according to the comments, and is providing the final versions in this rulemaking docket.

H. Test Methods

1. Proposed Test Methods

We are finalizing the proposed additional EPA test methods, voluntary consensus standards (VCS), alternative methods, and a guidance document in subpart MMA (87 FR 30157; May 18, 2022).

In addition to the EPA test methods listed in subpart MM (EPA Methods 1, 2, 3, 4, 24, and 25 of 40 CFR part 60, appendix A), we are finalizing the following EPA test methods in subpart MMA, as proposed:

- EPA Methods 1A, 2A, 2C, 2D, 2F, 2G, 3A, 3B, 18, and 25A of appendix A to 40 CFR part 60;
- EPA Methods 204, 204A, 204B, 204C, 204D, 204E, and 204F of appendix M to 40 CFR part 51; and
- EPA Method 311 of appendix A to 40 CFR part 63.

In accordance with requirements of 1 CFR 51.5, the EPA is incorporating by reference (IBR) the following VCS and a guidance document described in the amendments to 40 CFR 60.17:

- ASME/ANSI PTC 19.10–1981, “Flue and Exhaust Gas Analyses [Part 10, Instruments and Apparatus]” issued August 31, 1981, IBR approved for 40 CFR 60.396a(a)(3).

- ASTM D6093–97 (Reapproved 2016), “Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer,” Approved December 1, 2016, IBR approved for 40 CFR 60.393a(g)(1).

- ASTM D2369–20, “Standard Test Method for Volatile Content of Coatings,” (Approved June 1, 2020), IBR approved for 40 CFR 60.393a(f)(1)(i).

- ASTM D2697–22, “Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings,” (Approved July 1, 2022), IBR approved for 40 CFR 60.393a(g)(1).

- EPA–453/R–08–002, “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer Surfacer and Topcoat Operations,” September 2008, Office of Air Quality Planning and Standards (OAQPS), IBR approved for 40 CFR 60.393a(e), 60.393a(h), 60.395a(k)(3)(iii), 60.397a(e) introductory text, 60.397a(e)(2)–(4), and Appendix A to subpart MMA of Part 60 sections 2.1 and 2.2, 4.1 and 4.2.

We are also incorporating by reference the following alternative methods specific to automotive coatings described in the amendments to 40 CFR 60.17:

- ASTM D1475–13, “Standard Test Method for Density of Liquid Coatings, Inks, and Related Products,” Approved November 1, 2013, IBR approved for 40 CFR 60.393a(f)(2).

- ASTM D5965–02 (Reapproved 2013), “Standard Test Methods for Specific Gravity of Coating Powders,” Approved June 1, 2013, IBR approved for 40 CFR 60.393a(f)(2).

- ASTM D5066–91 (Reapproved 2017), “Standard Test Method for Determination of the Transfer Efficiency Under Production Conditions for Spray Application of Automotive Paints-Weight Basis,” Approved June 1, 2017, IBR approved for 40 CFR 60.393a(h).

- ASTM D5087–02 (Reapproved 2021), “Standard Test Method for Determining Amount of Volatile Organic Compound (VOC) Released from Solvent-borne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement),” Approved February 1, 2021, IBR approved for 40 CFR 60.397a(e) and appendix A to subpart MMA, section 2.1.

- ASTM D6266–00a (Reapproved 2017), “Standard Test Method for Determining the Amount of Volatile Organic Compound (VOC) Released from Waterborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement),” Approved July 1, 2017, IBR approved for 60.397a(e).

In addition, the EPA is finalizing the addition of the ALDT panel testing procedure titled “Determination of Capture Efficiency of Automobile and Light-Duty Truck Spray Booth

Emissions From Solvent-borne Coatings Using Panel Testing” as appendix A to subpart MMA of 40 CFR part 60.

2. How the Final Revisions to the Test Methods Differ From the Proposed Revisions

After considering the comments on the proposed revisions to the test methods, the EPA is finalizing the test methods, as proposed. However, based on ASTM revisions to 2 proposed test methods we are updating Methods ASTM D2369–20, “Standard Test Method for Volatile Content of Coatings,” (Approved June 1, 2020) and ASTM D2697–22, “Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings,” (Approved July 1, 2022) in the final rule.

3. Test Method Comment and Response

Comment: One commenter requested that the EPA allow the use of Conditional Test Method 042 (CTM–042), Use of Flame Ionization Detector-Methane Cutter Analysis Systems for VOC Compliance Testing of Bakeries, to identify the methane content, rather than EPA Method 18 during performance tests. The commenter noted that although CTM–042 was originally approved for VOC testing in bakeries, many state agencies allow it for other processes, as it allows evaluation in real time so that the company and agency can identify issues during the test. The commenter argued that recognizing a measurement issue during the test benefits both the permittee and the agency, as costly and time-consuming re-testing can often be avoided. The commenter also noted that the use of CTM–042 reduces the risk of damaged sample bags or lab error that would require additional test runs after the tests have been completed and the test crews have left the site.

Response: The EPA is not revising the proposed test methods to allow the use of CTM–042 for measuring methane in ALDT surface coating emissions and does not support the use of CTM–042 for ALDT sources. The EPA acknowledges that although measuring VOC using EPA Method 25A and then subtracting EPA Method 18 methane results to measure nonmethane organic compounds (NMOC) is viewed by some as difficult, we are making this decision because use of CTM–042 is limited to bakery emissions in which ethanol is the predominant non-methane organic species in those emissions. CTM–042 calibrates the non-methane channel with ethanol, so it is simple to do a direct subtraction of the instrument calibrated for just methane and ethanol.

For application to the ALDT emission sources and many other emission source types in general, choosing the right calibration gas to measure methane and non-methane compounds will be an issue, because NMOC can be composed of a variety of compounds with different combustion temperatures depending on the emission source. It is also important to note that source owners and operators are not limited to the use of bags for EPA Method 18 samples. EPA Method 18 can be performed on site by direct real-time gas chromatography (GC) analysis to determine the methane concentration rather than by choosing the EPA Method 18 bag sample option. The real-time GC analysis of methane emissions using EPA Method 18 would address issues of timely feedback on emissions and the risks of bag damage or lab error raised by the commenters.

Comment: One commenter requested that the EPA allow performance testing to continue to be reported “as propane” or “as methane” as the basis for compliance. The commenter stated that a potential concern is that most historic test reports are not conducted for NSPS purposes, but for BACT or RACT purposes, and would be presented as VOC “as propane,” while the new reports performed for NSPS would be “as carbon.” The commenter stated that permit limits or other items based on the VOC concentration on a propane basis would not necessarily be the same as on a carbon basis, and that this difference would require duplicative tests or calculations to demonstrate compliance with VOC concentration limits. Additionally, the commenter stated, test results as carbon would be inconsistent from previous tests and would not allow the company or agency to observe testing in real time to review results to identify concerns.

Response: Subpart MM requires compliance calculations to include the concentration of VOC (as carbon) in units of parts per million by volume (ppmv). Similarly, the new subpart MMA requires compliance calculations to include the concentration of VOC (as carbon) in units of ppmv as the basis for compliance, so the NSPS performance testing requirements have not changed as a result of this rulemaking, contrary to the comment received. Subpart MMA requires VOC concentrations to be measured by following the procedures in EPA Method 25A.³ Review of RTO destruction efficiency performance tests included in the docket for this rulemaking show that ALDT plants are measuring VOC concentrations using

the procedures found in EPA Method 25A using on-line (real time) total hydrocarbon (THC) gas analyzers. The THC gas analyzer directs the sample to a flame ionization detector (FID) where the hydrocarbons present in the sample are ionized into carbon. The concentration determined by the analyzer is based on the calibration gas used, typically either methane or propane. Section 12.1 of EPA Method 25A explicitly outlines the procedures for calculating the concentration as carbon, which is as simple as a 1:1 ratio for methane and a 3:1 ratio for propane. No duplicative tests are required, and the conversion to units of carbon does not inhibit real-time assessment of compliance. Therefore, the EPA is finalizing the compliance calculations, as proposed.

I. Other Final Amendments

The EPA is promulgating a final amendment in response to a comment to modify the definition of “flash-off area” in subparts MM and MMA to include the flash-off areas located between spray booths. The “flash-off area” in subpart MM and proposed subpart MMA are defined as “the structure on automobile and light-duty truck assembly lines between the coating application system (dip tank or spray booth) and the bake oven.” The EPA is revising this definition in the final rules to include: “Flash off area also means the structure between spray booths in a wet-on-wet coating process in which some of the solvent evaporates before the next spray booth; the flash off area may be ambient temperature or heated to accelerate evaporation.” Additional detail on the EPA response to this comment is provided in the document titled, *Summary of Public Comments and Responses on Proposed Rule: New Source Performance Standards for Automobile and Light Duty Truck Surface Coating Operations (40 CFR part 60, subpart MM) Best System of Emission Reduction Review, Final Amendments*, Docket ID No. EPA-HQ-OAR-2021-0664.

In addition, the EPA is finalizing minor corrections and edits to the subpart MM and MMA equations and rule text to provide clarity as described in the summary of public comments and responses document identified above.

J. Effective Date and Compliance Dates

Pursuant to CAA section 111(b)(1)(B), the effective date of the final rule requirements in subpart MM and subpart MMA will be the promulgation date. Affected sources that commence construction, reconstruction, or modification after May 18, 2022, must

comply with all requirements of 40 CFR part 60, subpart MMA no later than the effective date of the final rule or upon startup, whichever is later, except for the electronic reporting of compliance reports. For electronic reporting of quarterly and semiannual compliance reports, subpart MM and MMA affected sources are required to use the appropriate electronic template to submit information to CEDRI. The electronic templates are available in the docket for this final action. Both templates were revised according to comments the EPA received during the comment period. Subpart MM and MMA affected sources are required to use the templates to electronically submit compliance reports 180 days after the EPA posts the final templates to CEDRI.

IV. Summary of Cost, Environmental, and Economic Impacts

A. What are the air quality impacts?

The final ALDT NSPS subpart MMA would achieve an annual average VOC emission reduction of 331 tpy reduction of allowable VOC emissions per facility compared to that of the current NSPS subpart MM. Over the first 8 years after the rule is final, we expect an average of 2 new, reconstructed, or modified facilities per year, or 16 new affected facilities. We estimate a total VOC emission reduction of 4,160 tpy in the eighth year after the rule is final, compared to the current NSPS subpart MM.

We estimate the increased usage of electricity and natural gas would result in an increase in the average production of 4,474 metric tons of carbon dioxide equivalents (mtCO₂e) per year per facility. We estimate a total GHG emission production of 71,584 mtCO₂e in the eighth year after the rule is final.

In this action, we are not evaluating the environmental impacts of other pollutants such as hydrocarbons (other than VOC), GHG, nitrogen oxides, and carbon monoxide emitted by control devices due to the combustion of natural gas as fuel or from the generation of electricity.

B. What are the energy impacts?

The energy impacts associated with the electricity and natural gas consumption associated with the operation of control devices to meet the final NSPS subpart MMA include an estimated average electricity consumption of 2.54 million kilowatt hours (kwh) per year per facility and an estimated average natural gas consumption of 48.8 million standard cubic feet (scf) per year per facility compared to that of the current NSPS

³ See https://www.epa.gov/sites/default/files/2017-08/documents/method_25a.pdf.

subpart MM. Over the first 8 years after the rule is final, we expect an average of 2 new, reconstructed, or modified facilities per year, or 16 new affected facilities. We estimate a total electricity consumption of 40.6 million kwh and a total natural gas consumption of 780.8 million scf in the eighth year after the rule is final, compared to the current NSPS subpart MM.

C. What are the cost impacts?

We estimate that the average capital cost of controls to comply with the NSPS subpart MMA will be \$7.44 million per new facility, or \$14.9 million per year for 2 new facilities in each year in the 8-year period after the rule is final.

We estimate that the average annual cost of controls to comply with the NSPS subpart MMA will be \$1.97 million per year per facility, or \$3.93 million for 2 new facilities in each year in the 8-year period after the rule is final. The total cumulative annual costs (including annualized capital costs and O&M costs) of complying with the rule in the eighth year after the rule is final would be \$31.5 million.

We estimate that the average cost of the periodic testing of control devices once every 5 years to comply with subpart MMA will be \$57,000 per facility, or \$114,000 for 2 facilities in the fifth year after the rule is final.

For further information on the cost impacts for this action see the memorandum titled, *Final Cost and Environmental Impacts Memo for Surface Coating Operations in the Automobiles and Light-Duty Trucks Source Category (40 CFR part 60, subpart MMA)*, located in the docket for this action.

D. What are the economic impacts?

The EPA conducted an economic impact analysis (EIA) and small business screening assessment for this final action, as discussed in the proposal for this action and detailed in the memorandum, *Economic Impact Analysis and Small Business Screening Assessment for Final Revisions and Amendments to the New Source Performance Standards for Automobile and Light Duty Truck Surface Coating Operations*, which is available in the docket for this action. The economic impacts of this final action were estimated by comparing total annualized compliance costs to revenues at the ultimate parent company level. This is known as the cost-to-revenue or cost-to-sales test. This ratio provides a measure of the direct economic impact to ultimate parent owners of facilities while presuming no

impact on consumers. As discussed in the proposal for this action, we estimate that none of the ultimate parent owners potentially affected by this final action will incur total annualized costs of greater than 1 percent of their revenues if they modify or reconstruct the relevant portions of their facility and become subject to the requirements of this final rule (87 FR 30155, May 18, 2022).

Since proposal, the 1 existing facility that was owned by a small entity was sold to a company in May 2022 that is not a small entity. Because the coatings processes are large operations at automobile and light duty truck manufacturing facilities, it is not anticipated that any affected facilities that have completed their initial startup phase would be classified as small entities. Therefore, no economic impacts are expected for small entities. Furthermore, it was assumed that any new entrant into the industry would have sales similar to at least the smallest current ultimate owner, so it is not anticipated that any new ultimate owner would face costs of greater than 1 percent of sales.

Therefore, the economic impacts are anticipated to be low for affected companies and the industries impacted by this final action, and there will not be substantial impacts on the markets for affected products. The costs of this final action are not expected to result in a significant market impact, regardless of whether they are passed on to the purchaser or absorbed by the firms.

E. What are the benefits?

As described earlier in this preamble, the final NSPS subpart MMA would result in lower VOC emissions compared to the existing NSPS subpart MM. The new NSPS subpart MMA would also require that the standards apply at all times, which includes SSM periods. We are also promulgating several compliance assurance requirements which will ensure compliance with the new NSPS subpart MMA and help prevent noncompliant emissions of VOC. Furthermore, the final requirements in the new NSPS subpart MMA to submit reports and test results electronically will improve monitoring, compliance, and implementation of the rule.

F. What analysis of environmental justice did we conduct?

Consistent with the EPA's commitment to integrating environmental justice in the Agency's actions, and following the directives set forth in multiple Executive Orders as well as CAA section 111(b)(1)(B), the

Agency has carefully evaluated the impacts of this action on communities with environmental justice concerns. This action finalizes standards of performance for new, modified, and reconstructed ALDT surface coating sources that commence construction after May 18, 2022. In general, the locations of the new, modified, and reconstructed ALDT surface coating facilities are not known. However, since proposal, we became aware of 3 ALDT surface coating facilities for which construction permits were recently issued or were about to be issued. We have evaluated the demographics of the populations living within 5 kilometers (km) and 50 km of these 3 new facilities as examples of new facility locations. We also evaluated the demographics of the populations living within 5 km and 50 km of 46 ALDT plants. The 46 ALDT plants include the 44 existing ALDT plants and two additional ALDT plants for which we had locational data.

Executive Order 12898 directs the EPA to identify the populations of concern who are most likely to experience unequal burdens from environmental harms—specifically, minority populations, low-income populations, and indigenous peoples (59 FR 7629; February 16, 1994). Additionally, Executive Order 13985 is intended to advance racial equity and support underserved communities through Federal government actions (86 FR 7009; January 20, 2021). The EPA defines EJ as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”⁴ The EPA further defines the term fair treatment to mean that “no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies.” In recognizing that minority and low-income populations often bear an unequal burden of environmental harms and risks, the EPA continues to consider ways of protecting them from adverse public health and environmental effects of air pollution.

A demographic analysis was conducted for 3 new ALDT plants, which we identified after proposal and anticipate will be subject to the requirements of subpart MMA once in operation. The demographic analysis shows that within 5 km of these new

⁴ See <https://www.epa.gov/environmentaljustice>.

facilities, the percent of the population that is African American is significantly higher than the national average (17 percent versus 12 percent). The percent of the population within 5 km that is Hispanic/Latino is significantly higher than the national average (51 percent versus 19 percent). The percent of people within 5 km that are over 25 without a high school diploma is also higher than the national average (28 percent versus 12 percent).

A demographic analysis was conducted for 46 existing ALDT plants to characterize the demographics in areas where the plants are currently located. These represent ALDT plants that might modify or reconstruct in the future and become subject to the NSPS MMA requirements. This analysis was presented in the proposal and remains unchanged. The demographic analysis shows that, within 5 km of the ALDT facilities, the percent of the population that is African American is significantly higher than the national average (27 percent versus 12 percent). The percent of people within 5 km living below the poverty level is significantly higher than the national average (22 percent versus 13 percent). The percent of people living within 5 km that are over 25 without a high school diploma is also higher than the national average (15 percent versus 12 percent).

The EPA particularly noted community impacts and concerns in some areas of the country that have a larger percentage of sources. A large percentage of the sources in the Auto and Light Duty Truck Surface Coating source category are in EPA Region 5 states and, of those states, most sources are in the state of Michigan. Most if not all the counties where these sources are located are designated as ozone nonattainment areas. For this reason, we engaged with EPA Region 5 and the state of Michigan as part of this rulemaking.

The EPA expects that this ALDT NSPS review will result in significant reductions of VOC emissions from the affected sources. The new emission limits finalized for this action reflect the best system of emission reduction demonstrated and establish new more stringent standards of performance for the primary sources of VOC emissions from the source category. The EPA expects that the finalized requirements in subpart MMA will result in significant reductions of VOC emissions for communities surrounding new, modified, and reconstructed affected sources compared to the existing rule in subpart MM and will result in lower VOC emissions for communities located in areas designated as ozone non-

attainment areas. These areas are already overburdened by pollution and are often minority, low-income, and indigenous communities. The methodology and the results (including facility-specific results and the 50 km proximity results) of the demographic analysis are presented in a technical report titled, *Analysis of Demographic Factors for Populations Living Near Automobile and Light-Duty Truck Surface Coating NSPS Source Category Operations—Final Rule*, available in the docket for this action (Docket ID No. EPA-HQ-OAR-2021-0664).

V. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at <https://www.epa.gov/laws-regulations/laws-and-executive-orders>.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This final action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

The information collection activities in this action have been submitted for approval to OMB under the PRA.

The Information Collection Request (ICR) document that the EPA prepared for subpart MM has been assigned EPA ICR number 1064.20 and OMB control number 2060-0034. The ICR document that the EPA prepared for subpart MMA has been assigned EPA ICR number 2714.01 and OMB control number 2060-0034. You can find a copy of the final ICR documents in the ALDT NSPS Docket No. EPA-HQ-OAR-2021-0664, and they are briefly summarized here. The final ICR documents were updated to reflect 2021 labor costs. The information collection requirements are not enforceable until OMB approves them.

Each ICR is specific to information collection associated with the ALDT surface coating source category, in accordance with the requirements in the revised 40 CFR part 60, subpart MM or the new 40 CFR part 60, subpart MMA.

For the revised 40 CFR part 60, subpart MM, as part of the ALDT NSPS review, the EPA is finalizing the proposed requirement for the electronic submittal of reports.

Respondents/affected entities: The respondents to the recordkeeping and reporting requirements are owners and operators of ALDT surface coating

operations subject to 40 CFR part 60, subpart MM.

Respondent's obligation to respond: Mandatory (40 CFR part 60, subpart MM).

Estimated number of respondents: In the 3 years after the amendments are final, approximately 44 respondents per year will be subject to the NSPS and no new respondents will be subject to the NSPS (40 CFR part 60, subpart MM).

Frequency of response: The frequency of responses varies depending on the burden item. Responses include a one-time review of rule requirements, reports of performance tests, and semiannual excess emissions and continuous monitoring system performance reports.

Total estimated burden: The average annual recordkeeping and reporting burden for the 44 responding facilities to comply with the requirements in subpart MM over the 3 years after the rule is final is estimated to be 506 hours (per year). The average annual burden to the Agency over the 3 years after the rule is final is estimated to be 152 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: The average annual cost to the ALDT facilities is \$47,200 in labor costs in the first 3 years after the rule is final. The total average annual Agency cost over the first 3 years after the amendments are final is estimated to be \$7,800.

For the new 40 CFR part 60, subpart MMA, as part of the ALDT NSPS review, the EPA is finalizing the proposed emission limits and other requirements as described in this preamble for affected sources that commence construction, reconstruction, or modification after May 18, 2022. We are also finalizing the proposed testing, recordkeeping, and reporting requirements for 40 CFR part 60, subpart MMA, including the performance testing of control devices once every 5 years and electronic submittal of performance test results and compliance reports. This information is being collected to assure compliance with 40 CFR part 60, subpart MMA.

Respondents/affected entities: The respondents to the recordkeeping and reporting requirements are owners and operators of ALDT surface coating operations subject to 40 CFR part 60, subpart MMA.

Respondent's obligation to respond: Mandatory (40 CFR part 60, subpart MMA).

Estimated number of respondents: In the 3 years after the amendments are final, approximately 6 respondents per

year will be subject to the NSPS (40 CFR part 60, subpart MMA).

Frequency of response: The frequency of responses varies depending on the burden item. Responses include one-time review of rule requirements, reports of performance tests, and semiannual excess emissions and continuous monitoring system performance reports.

Total estimated burden: The average annual recordkeeping and reporting burden for the 6 responding facilities to comply with all the requirements in the new NSPS subpart MMA over the 3 years after the rule is final is estimated to be 1,663 hours (per year). The average annual burden to the Agency over the 3 years after the rule is final is estimated to be 207 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: The average annual cost to the ALDT facilities is \$155,000 in labor costs in the first 3 years after the rule is final. The average annual capital and operation and maintenance (O&M) cost is \$151,000 in the first 3 years after the rule is final. The total average annual cost is \$306,000 in the first 3 years after the rule is final. The total average annual Agency cost over the first 3 years after the amendments are final is estimated to be \$10,600.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9. When OMB approves this ICR, the Agency will announce that approval in the **Federal Register** and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved information collection activities contained in this final rule.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities because there are no regulated facilities owned by small entities. Details of the analysis in support of this determination are presented in the memorandum titled, *Economic Impact Analysis and Small Business Screening Assessment for Final Revisions and Amendments to the New Source Performance Standards for Automobile and Light Duty Truck Surface Coating Operations*, which is available in the docket for this action.

D. Unfunded Mandates Reform Act of 1995 (UMRA)

This action does not contain an unfunded mandate of \$100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. While this action creates an enforceable duty on the private sector, the cost does not exceed \$100 million or more.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. It will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law, and it does not have substantial direct effects on the relationship between the Federal government and Indian Tribes or on the distribution of power and responsibilities between the Federal government and Indian Tribes, as specified in Executive Order 13175 (65 FR 67249; November 9, 2000). No tribal facilities are known to be engaged in the industry that would be affected by this action nor are there any adverse health or environmental effects from this action. However, the EPA conducted a proximity analysis for this source category and found that 6 ALDT plants are located within 50 miles of tribal lands. Consistent with the EPA Policy on Consultation and Coordination with Indian Tribes, the EPA offered consultation with tribal officials during the development of this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not anticipate the environmental health or safety risks addressed by this action present a disproportionate risk to children. No health or risk assessments were performed for this action. As described in section IV.E of this preamble, the EPA estimates a reduction in VOC emissions from the ALDT NSPS subpart MMA for sources affected by this action

because the subpart MMA requirements are more stringent than the existing ALDT NSPS subpart MM requirements.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 because it is not a significant regulatory action under Executive Order 12866. This action is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

I. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR Part 51

This rulemaking involves technical standards. Therefore, the EPA conducted searches through the Enhanced National Standards System Network Database managed by the American National Standards Institute (ANSI) to determine if there are VCS that are relevant to this action. The Agency also contacted VCS organizations and accessed and searched their databases.

During the search, if the title or abstract (if provided) of the VCS described technical sampling and analytical procedures that are similar to the EPA's reference method, the EPA considered it as a potential equivalent method. All potential standards were reviewed to determine the practicality of the VCS for this rule. This review requires significant method validation data which meets the requirements of the EPA Method 301 for accepting alternative methods or scientific, engineering and policy equivalence to procedures in the EPA reference methods. The EPA may reconsider determinations of impracticality when additional information is available for particular VCS. As a result, the EPA is amending 40 CFR 60.17 to incorporate by reference (IBR) the following proposed VCS for subpart MMA:

- ASME/ANSI PTC 19.10–1981, “Flue and Exhaust Gas Analyses.” This method determines quantitatively the gaseous constituents of exhausts resulting from stationary combustion sources. The manual procedures (but not instrumental procedures) of ASME/ANSI PTC 19.10–1981–Part 10 may be used as an alternative to EPA Method 3B for measuring the oxygen or carbon dioxide content of the exhaust gas. The gases covered in ASME/ANSI PTC 19.10–1981 are oxygen, carbon dioxide, carbon monoxide, nitrogen, sulfur dioxide, sulfur trioxide, nitric oxide, nitrogen dioxide, hydrogen sulfide, and hydrocarbons. However, the use in this

rule is only applicable to oxygen and carbon dioxide and is an acceptable alternative to the manual portion only and not the instrumental portion.

- ASTM D6093–97 (Reapproved 2016), “Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer.” This test method can be used to determine the percent volume of nonvolatile matter in clear and pigmented coatings and is an alternative to EPA Method 24.

- ASTM D2369–20 (Approved June 1, 2020), “Standard Test Method for Volatile Content of Coatings.” This test method allows for more accurate results for multi-component chemical resistant coatings and is an alternative to EPA Method 24.

- ASTM D2697–22 (Approved July 1, 2022), “Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings.” This test method can be used to determine the volume of nonvolatile matter in clear and pigmented coatings and is an alternative to EPA Method 24.

- EPA–453/R–08–002, “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations,” September 2008. This protocol provides guidelines for combining analytical VOC content and formulation solvent content as an alternative to EPA Method 24.

In addition to the VCS identified here, we are amending 40 CFR 60.17 to IBR the following ASTM methods that are specific to automotive coatings:

- ASTM D1475–13, “Standard Test Method for Density of Liquid Coatings, Inks, and Related Products,” Approved November 1, 2013. This test method can be used to determine the density of coatings and the updated version of the test method clarifies units of measure and reduces the number of determinations required.

- ASTM D5965–02 (Reapproved 2013), “Standard Test Methods for Specific Gravity of Coating Powders.” These test methods include Test Methods A and B that can be used to determine the specific gravity of coating powders. Test Method A can be used to test coating powders except for metallics. Test Method B provides greater precision than Test Method A, includes the use of helium pycnometry, and can be used for metallics.

- ASTM D5066–91 (Reapproved 2017) “Standard Test Method for Determination of the Transfer Efficiency Under Production Conditions for Spray Application of Automotive Paints—Weight Basis.” This test method includes procedures to determine the

transfer efficiency under production conditions for in-plant spray-application of automotive coatings using a weight method. The transfer efficiency is calculated from the weight of the paint solids sprayed and the paint solids that are deposited on the painted part. An alternative approach is also included in the method.

- ASTM D5087–02 (Reapproved 2021), “Standard Test Method for Determining Amount of Volatile Organic Compound (VOC) Released from Solvent-borne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement).” This test method can be used to measure solvent loading for the heated flash off areas and bake ovens for waterborne coatings.

- ASTM D6266–00a (Reapproved 2017) “Standard Test Method for Determining the Amount of Volatile Organic Compound (VOC) Released from Waterborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement).” This test method can be used to measure solvent loading for heated flash off areas and bake ovens for waterborne coatings.

In addition, we are adding the ALDT panel testing procedure titled “Determination of Capture Efficiency of Automobile and Light-Duty Truck Spray Booth Emissions from Solvent-borne Coatings Using Panel Testing” as appendix A to subpart MMA of 40 CFR part 60, as proposed.

In addition to the EPA test methods listed in subpart MM (EPA Methods 1, 2, 3, 4, 24, and 25 of 40 CFR part 60, appendix A), we are finalizing the following EPA methods in subpart MMA, as proposed:

- EPA Methods 1A, 2A, 2C, 2D, 2F, 2G, 3A, 3B, 18, and 25A of appendix A to 40 CFR part 60;

- EPA Methods 204, 204A, 204B, 204C, 204D, 204E, and 204F of appendix M to 40 CFR part 51; and
- EPA Method 311 of appendix A to 40 CFR part 63.

EPA–453/R–08–002 is available online at <https://www.epa.gov/stationary-sources-air-pollution/clean-air-act-guidelines-and-standards-solvent-use-and-surface> (see Automobile and Light Duty Truck CTG) or through <https://www.regulations.gov> under EPA–HQ–OAR–2008–0413–0080.

ASME/ANSI PTC 19.10–1981 is available from the American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016–5990, Telephone (800) 843–2763. See <https://www.asme.org>.

The ASTM standards are available from the American Society for Testing and Materials (ASTM), 100 Barr Harbor

Drive, Post Office Box C700, West Conshohocken, PA 19428–2959. See <https://www.astm.org>.

Additional information for the VCS search and determinations can be found in the memorandum titled, *Voluntary Consensus Standard Results for Review of Standards of Performance for Automobile and Light Duty Truck Surface Coating*, which is dated January 24, 2023, and is available in the docket for this action.

Under the general provisions at 40 CFR 60.8(b) and 60.13(i) of subpart A, a source may apply to the EPA to use alternative test methods or alternative monitoring requirements in place of any required testing methods, performance specifications, or procedures in the final rule or any amendments.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 (59 FR 7629; February 16, 1994) directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations (people of color and/or indigenous peoples) and low-income populations.

The EPA anticipates that the human health or environmental conditions that exist prior to this action result in or have the potential to result in disproportionate and adverse human health or environmental effects on people of color, low-income populations and/or indigenous peoples.

The EPA anticipates that this action is likely to reduce existing disproportionate and adverse effects on people of color, low-income populations and/or indigenous peoples. As discussed in section IV.F of this preamble, we performed a demographic analysis for the ALDT surface coating source category, which is an assessment of the proximity of individual demographic groups living close to the facilities (within 50 km and within 5 km). We performed demographic analyses during proposal for 46 existing ALDT plants and after proposal for three new ALDT plants. The methodology and the results of the demographic analyses are presented in a technical report titled, *Analysis of Demographic Factors for Populations Living Near Automobile and Light-Duty Truck Surface Coating NSPS Source Category Operations—Final Rule*, available in the

docket for this action. The results of the demographic analysis for existing ALDT plants indicate that the following groups are above the national average: African Americans, People Living Below the Poverty Level, and People without a High School Diploma. For the new ALDT plants, the results of the demographic analysis indicate that the following groups are above the national average: African Americans, Hispanic/Latino, and People without a High School Diploma. We anticipate that the lower VOC emission limits finalized in this action for new, modified, or reconstructed ALDT surface coating sources that commence construction, reconstruction, or modification after May 18, 2022, will result in lower ambient concentrations of ground level ozone and increase compliance with the National Ambient Air Quality Standards for ozone.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 60

Environmental protection, Administrative practice and procedures, Air pollution control, Incorporation by reference, Intergovernmental relations, Reporting and recordkeeping requirements, Volatile organic compounds.

Michael S. Regan,
Administrator.

For the reasons set forth in the preamble, the EPA amends 40 CFR part 60 as follows:

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

■ 1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, et seq.

Subpart A—General Provisions

■ 2. Amend § 60.17 by:

- a. Revising paragraph (g)(14);
- b. Redesignating paragraphs (h)(186) through (218) as paragraphs (h)(191) through (223);
- c. Redesignating paragraphs (h)(183) through (185) as paragraphs (h)(187) through (189);
- d. Redesignating paragraph (h)(182) as paragraph (h)(184) and paragraph (h)(181) as paragraph (h)(186), respectively;

- e. Redesignating paragraphs (h)(172) through (180) as paragraphs (h)(175) through (183);
- f. Redesignating paragraphs (h)(60) through (171) as paragraphs (h)(61) through (172)
- g. Adding new paragraph (h)(60);
- h. Revising newly-designated paragraphs (h)(97) and (h)(110);
- i. Adding new paragraphs (h)(173), (174), and (185);
- j. Revising newly-designated paragraph (h)(186);
- k. Adding new paragraph (h)(190);
- l. Redesignating paragraphs (j)(1) through (4) as (j)(2) through (5); and
- m. Adding a new paragraph (j)(1).

The revisions and additions read as follows:

§ 60.17 Incorporations by reference.

(g) * * *
(14) ASME/ANSI PTC 19.10–1981, Flue and Exhaust Gas Analyses [Part 10, Instruments and Apparatus], Issued August 31, 1981; IBR approved for §§ 60.56c(b); 60.63(f); 60.106(e); 60.104a(d), (h), (i), and (j); 60.105a(b), (d), (f), and (g); 60.106a(a); 60.107a(a), (c), and (d); tables 1 and 3 to subpart EEEE; tables 2 and 4 to subpart FFFF; table 2 to subpart JJJJ; §§ 60.285a(f); 60.396a(a); 60.2145(s) and (t); 60.2710(s) and (t); 60.2730(q); 60.4415(a); 60.4900(b); 60.5220(b); tables 1 and 2 to subpart LLLL; tables 2 and 3 to subpart MMMM; §§ 60.5406(c); 60.5406a(c); 60.5407a(g); 60.5413(b); 60.5413a(b); 60.5413a(d).

(h) * * *
(60) ASTM D1475–13, Standard Test Method for Density of Liquid Coatings, Inks, and Related Products, Approved November 1, 2013; IBR approved for § 60.393a(f).

(97) ASTM D2369–20, Standard Test Method for Volatile Content of Coatings, Approved June 1, 2020; IBR approved for §§ 60.393a(f); 60.723(b); 60.724(a); 60.725(b); 60.723a(b); 60.724a(a); 60.725a(b).

(110) ASTM D2697–22, Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings, Approved July 1, 2022; IBR approved for §§ 60.393a(g); 60.723(b); 60.724(a); 60.725(b); 60.723a(b); 60.724a(a); 60.725a(b).

(173) ASTM D5066–91, Standard Test Method for Determination of the Transfer Efficiency Under Production Conditions for Spray Application of Automotive Paints—Weight Basis,

Approved June 1, 2017; IBR approved for § 60.393a(h).

(174) ASTM D5087–02 (Reapproved 2021), Standard Test Method for Determining Amount of Volatile Organic Compound (VOC) Released from Solventborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement), Approved February 1, 2021; IBR approved for § 60.397a(e); appendix A to subpart MMA.

(185) ASTM D5965–02 (Reapproved 2013), Standard Test Methods for Specific Gravity of Coating Powders, Approved June 1, 2013; IBR approved for § 60.393a(f).

(186) ASTM D6093–97 (Reapproved 2016), Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer, Approved December 1, 2016; IBR approved for §§ 60.393a(g); 60.723(b); 60.724(a); 60.725(b); 60.723a(b); 60.724a(a); 60.725a(b).

(190) ASTM D6266–00a (Reapproved 2017), Standard Test Method for Determining the Amount of Volatile Organic Compound (VOC) Released From Waterborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement), Approved July 1, 2017; IBR approved for § 60.397a(e).

(j) * * *
(1) EPA–453/R–08–002, Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat Operations, September 2008, Office of Air Quality Planning and Standards (OAQPS); IBR approved for §§ 60.393a(e) and (h); 60.395a(k); 60.397a(e); appendix A to subpart MMA.

Subpart MM—Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations for which Construction, Modification or Reconstruction Commenced After October 5, 1979, and On or Before May 18, 2022

■ 3. Revise the heading for subpart MM of part 60 to read as set forth above.

■ 4. Amend § 60.390 by revising paragraph (c) to read as follows:

§ 60.390 Applicability and designation of affected facility.

(c) The provisions of this subpart apply to any affected facility identified

in paragraph (a) of this section that begins construction, reconstruction, or modification after October 5, 1979, and on or before May 18, 2022.

■ 5. Amend § 60.391 in paragraph (a) by revising the definition of “Flash-off area” to read as follows:

§ 60.391 Definitions.

(a) * * *

Flash-off area means the structure on automobile and light-duty truck assembly lines between the coating application system (dip tank or spray booth) and the bake oven. Flash-off area also means the structure between spray booths in a wet-on-wet coating process in which some of the solvent evaporates before the next spray booth; the flash off area may be ambient temperature or heated to accelerate evaporation.

* * * * *

(1) In subsequent months, the owner or operator shall use the most recently determined capture fraction for the performance test.

(2) If the owner can justify to the Administrator’s satisfaction that another method will give comparable results, the Administrator will approve its use on a case-by-case basis.

* * * * *

■ 8. Amend § 60.395 by revising paragraphs (a)(2), (b), and (c) introductory text and adding paragraphs (e) and (f) to read as follows:

§ 60.395 Reporting and recordkeeping requirements.

(a) * * *

(2) Where compliance is achieved through the use of incineration, the owner or operator shall include the following additional data in the control device initial performance test required by § 60.8(a) or subsequent performance tests at which destruction efficiency is determined: the combustion temperature (or the gas temperature upstream and downstream of the catalyst bed), the total mass of VOC per volume of applied coating solids before and after the incinerator, capture efficiency, the destruction efficiency of the incinerator used to attain compliance with the applicable emission limit specified in § 60.392 and a description of the method used to establish the fraction of VOC captured and sent to the control device.

(b) Following the initial performance test, the owner or operator of an affected

■ 6. Amend § 60.392 by revising the introductory text to read as follows:

§ 60.392 Standards for volatile organic compounds.

On and after the date on which the initial performance test required by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any affected facility VOC emissions in excess of the limitations listed in paragraphs (a)(1) and (2) of this section. The emission limitations listed in paragraphs (a)(1) and (2) shall apply at all times, including periods of startup, shutdown and malfunction. As provided in § 60.11(f), this provision supersedes the exemptions for periods of startup, shutdown and malfunction in

$$F = \frac{\sum_{i=1}^n Q_{bi} C_{bi}}{\sum_{i=1}^n Q_{bi} C_{bi} + \sum_{k=1}^p Q_{fk} C_{fk}}$$

facility shall identify, record, and submit a report to the Administrator every calendar quarter of each instance in which the volume-weighted average of the total mass of VOC’s emitted to the atmosphere per volume of applied coating solids (N) is greater than the limit specified under § 60.392. If no such instances have occurred during a particular quarter, a report stating this shall be submitted to the Administrator semiannually. Where compliance is achieved through the use of a capture system and control device, the volume-weighted average after the control device should be reported.

(c) Where compliance with § 60.392 is achieved through the use of incineration, the owner or operator shall continuously record the incinerator combustion temperature during coating operations for thermal incineration or the gas temperature upstream and downstream of the incinerator catalyst bed during coating operations for catalytic incineration. The owner or operator shall submit a report at the frequency specified in § 60.7(c) and paragraph (e) of this section.

* * * * *

(e) The owner or operator shall submit the reports listed in paragraphs (b) and (c) of this section following the procedures specified in paragraphs (e)(1) through (3) of this section. In addition to the information required in paragraphs (b) and (c) of this section, owners or operators are required to report excess emissions and a monitoring systems performance report

the general provisions in subpart A of this part.

* * * * *

■ 7. Amend § 60.393 by revising paragraph (c)(2)(ii)(A) to read as follows:

§ 60.393 Performance test and compliance provisions.

* * * * *

(c) * * *

(2) * * *

(ii) * * *

(A) Determine the fraction of total VOC which is emitted by an affected facility that enters the control device by using the following equation where “n” is the total number of stacks entering the control device and “p” is the total number of stacks not connected to the control device:

and a summary report to the Administrator according to § 60.7(c) and (d). Owners or operators are required by § 60.7(c) and (d) to report the date, time, cause, and duration of each exceedance of the applicable emission limit specified in § 60.392, any malfunction of the air pollution control equipment, and any periods during which the CMS or monitoring device is inoperative. For each failure, the report must include a list of the affected sources or equipment and a description of the method used to estimate the emissions.

(1) Effective date. On and after November 6, 2023, or once the reporting template has been available on the CEDRI website for 1-year, whichever date is later, owners or operators must use the appropriate spreadsheet template on the Compliance and Emissions Data Reporting Interface (CEDRI) website (<https://www.epa.gov/electronic-reporting-air-emissions/cedri>) for this subpart. The date the reporting template for this subpart becomes available will be listed on the CEDRI website. The report must be submitted by the deadline specified in this subpart, regardless of the method by which the report is submitted. Submit all reports to the EPA via CEDRI, which can be accessed through the EPA’s CDX (<https://cdx.epa.gov/>). The EPA will make all the information submitted through CEDRI available to the public without further notice to the owner or operator. Do not use CEDRI to submit information you claim as CBI. Any information submitted using CEDRI

cannot later be claimed CBI. If you claim CBI, submit the report following the procedure described in paragraph (f)(3) of this section. The same file with the CBI omitted must be submitted to CEDRI as described in paragraph (f)(3) of this section.

(2) *System outage.* Owner or operators that are required to submit a report electronically through CEDRI in the EPA's CDX, may assert a claim of EPA system outage for failure to timely comply with that reporting requirement. To assert a claim of EPA system outage, owners or operators must meet the requirements outlined in paragraphs (e)(2)(i) through (vii) of this section.

(i) You must have been or will be precluded from accessing CEDRI and submitting a required report within the time prescribed due to an outage of either the EPA's CEDRI or CDX systems.

(ii) The outage must have occurred within the period of time beginning five business days prior to the date that the submission is due.

(iii) The outage may be planned or unplanned.

(iv) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(v) You must provide to the Administrator a written description identifying:

(A) The date(s) and time(s) when CDX or CEDRI was accessed, and the system was unavailable;

(B) A rationale for attributing the delay in reporting beyond the regulatory deadline to EPA system outage;

(C) A description of measures taken or to be taken to minimize the delay in reporting; and

(D) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(vi) The decision to accept the claim of EPA system outage and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(vii) In any circumstance, the report must be submitted electronically as soon as possible after the outage is resolved.

(3) *Force majeure.* Owner or operators that are required to submit a report electronically through CEDRI in the EPA's CDX, may assert a claim of force majeure for failure to timely comply with that reporting requirement. To assert a claim of force majeure, Owner or operators must meet the requirements outlined in paragraphs (e)(1) through (5) of this section.

(i) You may submit a claim if a force majeure event is about to occur, occurs, or has occurred or there are lingering effects from such an event within the period of time beginning five business days prior to the date the submission is due. For the purposes of this section, a force majeure event is defined as an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents you from complying with the requirement to submit a report electronically within the time period prescribed. Examples of such events are acts of nature (e.g., hurricanes, earthquakes, or floods), acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility (e.g., large scale power outage).

(ii) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(iii) You must provide to the Administrator:

(A) A written description of the force majeure event;

(B) A rationale for attributing the delay in reporting beyond the regulatory deadline to the force majeure event;

(C) A description of measures taken or to be taken to minimize the delay in reporting; and

(D) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(iv) The decision to accept the claim of force majeure and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(f) Where compliance is achieved through the use of incineration, the owner or operator shall submit control device performance test results at which destruction efficiency is determined for initial and subsequent performance tests according to paragraph (a) of this section within 60 days of completing each performance test following the procedures specified in paragraphs (f)(1) through (3) of this section.

(1) Data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>) at the time of the test.

(i) Submit the results of the performance test to the EPA via the CEDRI, which can be accessed through

the EPA's Central Data Exchange (CDX) (<https://cdx.epa.gov/>).

(ii) The data must be submitted in a file format generated using the EPA's ERT. Alternatively, the owner or operator may submit an electronic file consistent with the extensible markup language (XML) schema listed on the EPA's ERT website.

(2) Data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test.

(i) The results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website.

(ii) Submit the ERT generated package or alternative file to the EPA via CEDRI.

(3) Confidential business information (CBI). Do not use CEDRI to submit information you claim as CBI. Any information submitted using CEDRI cannot later be claimed CBI. Under CAA section 114(c), emissions data is not entitled to confidential treatment, and the EPA is required to make emissions data available to the public. Thus, emissions data will not be protected as CBI and will be made publicly available. Owners or operators that assert a CBI claim for any information submitted under paragraph (f)(1) or (2) of this section, must submit a complete file, including information claimed to be CBI, to the EPA. The file must be generated using the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website. Owners or operators can submit CBI according to one of the two procedures in paragraph (f)(3)(i) or (ii) of this section. All CBI claims must be asserted at the time of submission.

(i) If sending CBI through the postal service, submit the file on a compact disc, flash drive, or other commonly used electronic storage medium and clearly mark the medium as CBI. Owners or operators are required to mail the electronic medium to U.S. EPA/OAQPS/CORE CBI Office, Attention: Automobile and Light Duty Truck Surface Coating Operations Sector Lead, MD C404-02, 4930 Old Page Rd., Durham, NC 27703. The same file with the CBI omitted must be submitted to the EPA via the EPA's CDX as described in paragraphs (f)(1) and (2) of this section.

(ii) The EPA preferred method for CBI submittal is for it to be transmitted electronically using email attachments, File Transfer Protocol (FTP), or other online file sharing services (e.g., Dropbox, OneDrive, Google Drive). Electronic submissions must be transmitted directly to the OAQPS CBI

Office at the email address *oaqpscbi@epa.gov*, Attention: Automobile and Light Duty Truck Surface Coating Operations Sector Lead, and as described above, should be clearly identified as CBI. If assistance is needed with submitting large electronic files that exceed the file size limit for email attachments, and if you do not have your own file sharing service, you may email *oaqpscbi@epa.gov* to request a file transfer link.

■ 9. Add subpart MMA to part 60 to read as follows:

Subpart MMA—Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations for which Construction, Modification or Reconstruction Commenced After May 18, 2022

Sec.

- 60.390a Applicability and designation of affected facility.
 60.391a Definitions.
 60.392a Standards for volatile organic compounds.
 60.393a Performance test and compliance provisions.
 60.394a Add-on control device operating limits and monitoring requirements.
 60.395a Notifications, reports, and records.
 60.396a Add-on control device destruction efficiency.
 60.397a Emission capture system efficiency.
 Table 1 to Subpart MMA of Part 60—Operating limits for capture systems and add-on control devices.
 Appendix A to Subpart MMA of Part 60—Determination of capture efficiency of automobile and light-duty truck spray booth emissions from solvent-borne coatings using panel testing.

Subpart MMA—Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations for which Construction, Modification or Reconstruction Commenced After May 18, 2022

§ 60.390a Applicability and designation of affected facility.

(a) The provisions of this subpart apply to the following affected facilities in an automobile or light-duty truck assembly plant specified in paragraphs (a)(1) through (4) of this section:

- (1) Each prime coat operation, each guide coat operation, and each topcoat operation.
- (2) All storage containers and mixing vessels in which coatings, thinners, and cleaning materials are stored or mixed.
- (3) All manual and automated equipment and containers used for conveying coatings, thinners, and cleaning materials.
- (4) All storage containers and all manual and automated equipment and

containers used for conveying waste materials generated by a coating operation.

(b) Exempted from the provisions of this subpart are operations used to coat plastic body components on separate coating lines. The attachment of plastic body parts to a metal body before the body is coated does not cause the metal body coating operation to be exempted.

(c) The provisions of this subpart apply to any affected facility identified in paragraph (a) of this section that begins construction, reconstruction, or modification after May 18, 2022.

(d) The following physical or operational changes are not, by themselves, considered modifications of existing facilities:

- (1) Changes as a result of model year changeovers or switches to larger vehicles.
- (2) Changes in the application of the coatings to increase coating film thickness.

§ 60.391a Definitions.

All terms used in this subpart that are not defined below have the meaning given to them in the Act and in subpart A of this part.

Applied coating solids means the volume of dried or cured coating solids which is deposited and remains on the surface of the automobile or light-duty truck body.

Automobile means a motor vehicle capable of carrying no more than 12 passengers.

Automobile and light-duty truck assembly plant means a facility that assembles automobiles or light-duty trucks, including coating facilities and processes.

Automobile and light-duty truck body means the exterior surface of an automobile or light-duty truck including hoods, fenders, cargo boxes, doors, and grill opening panels.

Bake oven means a device that uses heat to dry or cure coatings.

Electrodeposition (EDP) means a method of applying a prime coat by which the automobile or light-duty truck body is submerged in a tank filled with coating material and an electrical field is used to affect the deposition of the coating material on the body.

Electrostatic spray application means a spray application method that uses an electrical potential to increase the transfer efficiency of the coating solids. Electrostatic spray application can be used for prime coat, guide coat, or topcoat operations.

Flash-off area means the structure on automobile and light-duty truck assembly lines between the coating application system (dip tank or spray

booth) and the bake oven. *Flash off area* also means the structure between spray booths in a wet-on-wet coating process in which some of the solvent evaporates before the next spray booth; the flash off area may be ambient temperature or heated to accelerate evaporation.

Guide coat operation means the guide coat spray booth, flash-off area, and bake oven(s) which are used to apply and dry or cure a surface coating between the prime coat and topcoat operation on the components of automobile and light-duty truck bodies.

Light-duty truck means any motor vehicle rated at 3,850 kilograms gross vehicle weight or less, designed mainly to transport property.

Plastic body means an automobile or light-duty truck body constructed of synthetic organic material.

Plastic body component means any component of an automobile or light-duty truck exterior surface constructed of synthetic organic material.

Prime coat operation means the prime coat spray booth or dip tank, flash-off area, and bake oven(s) which are used to apply and dry or cure the initial coating on components of automobile or light-duty truck bodies.

Purge or line purge means the coating material expelled from the spray system when clearing it.

Solvent-borne means a coating which contains five percent or less water by weight in its volatile fraction.

Spray application means a method of applying coatings by atomizing the coating material and directing the atomized material toward the part to be coated. Spray applications can be used for prime coat, guide coat, and topcoat operations.

Spray booth means a structure housing automatic or manual spray application equipment where prime coat, guide coat, or topcoat is applied to components of automobile or light-duty truck bodies.

Surface coating operation means any prime coat, guide coat, or topcoat operation on an automobile or light-duty truck surface coating line.

Topcoat operation means the topcoat spray booth(s), heated flash-off area, flash-off area, and bake oven(s) which are used to apply and dry or cure the final coating(s) on components of automobile and light-duty truck bodies.

Transfer efficiency means the ratio of the amount of coating solids transferred onto the surface of a part or product to the total amount of coating solids used.

VOC content means all volatile organic compounds that are in a coating expressed as kilograms of VOC per liter of coating solids.

Waterborne or water reducible means a coating which contains more than five weight percent water in its volatile fraction.

§ 60.392a Standards for volatile organic compounds.

You must comply with the requirements in paragraphs (a) through (h) of this section.

(a) *Emission limitations.* On and after the date on which the initial performance test required by § 60.8 is completed, you must not discharge or cause the discharge into the atmosphere from any affected facility VOC emissions in excess of the limits in paragraph (a)(1) through (4) of this section. The emission limitations listed in this paragraph (a) of this section shall apply at all times, including periods of startup, shutdown and malfunction. As provided in § 60.11(f), this provision supersedes the exemptions for periods of startup, shutdown and malfunction in the part 60 general provisions in subpart A to this part.

(1) For each EDP prime coat operation:

(i) 0.027 kilogram of VOC per liter of applied coating solids when R_T is 0.16 or greater.

(ii) $0.027 \times 350^{(0.160 - R_T)}$ kg of VOC per liter of applied coating solids when R_T is greater than or equal to 0.040 and less than 0.160.

(iii) When R_T is less than 0.040, there is no emission limit.

(2) 0.027 kilograms of VOC per liter of applied coating solids (0.23 pounds per gallon of applied coating solids) from each non-EDP prime coat operation.

(3) 0.35 kilograms of VOC per liter of applied coating solids (2.92 pounds per gallon of applied coating solids) from each guide coat operation.

(4) 0.42 kilograms of VOC per liter of applied coating solids (3.53 pounds per gallon of applied coating solids) from each topcoat operation.

(b) *Work practices for storage, mixing, and conveying.* You must develop and implement a work practice plan to minimize VOC emissions from the storage, mixing, and conveying of coatings, thinners, and cleaning materials used in, and waste materials generated by, all coating operations for which emission limits are established under § 60.392a(a). The plan must specify practices and procedures to ensure that, at a minimum, the elements specified in paragraphs (b)(1) through (5) of this section are implemented.

(1) All VOC-containing coatings, thinners, cleaning materials, and waste materials must be stored in closed containers.

(2) The risk of spills of VOC-containing coatings, thinners, cleaning

materials, and waste materials must be minimized.

(3) VOC-containing coatings, thinners, cleaning materials, and waste materials must be conveyed from one location to another in closed containers or pipes.

(4) Mixing vessels, other than day tanks equipped with continuous agitation systems, which contain VOC-containing coatings and other materials must be closed except when adding to, removing, or mixing the contents.

(5) Emissions of VOC must be minimized during cleaning of storage, mixing, and conveying equipment.

(c) *Work practices for cleaning and purging.* You must develop and implement a work practice plan to minimize VOC emissions from cleaning and from purging of equipment associated with all coating operations for which emission limits are established under paragraph (a) of this section.

(1) The plan shall, at a minimum, address each of the operations listed in paragraphs (c)(1)(i) through (viii) of this section in which you use VOC-containing materials or in which there is a potential for emission of VOC.

(i) The plan must address vehicle body wipe emissions through one or more of the techniques listed in paragraphs (c)(1)(i)(A) through (D) of this section, or an approved alternative.

(A) Use of solvent-moistened wipes.
(B) Keeping solvent containers closed when not in use.

(C) Keeping wipe disposal/recovery containers closed when not in use.

(D) Use of tack-wipes.

(ii) The plan must address coating line purging emissions through one or more of the techniques listed in paragraphs (c)(1)(ii)(A) through (D) of this section, or an approved alternative.

(A) Air/solvent push-out.

(B) Capture and reclaim or recovery of purge materials (excluding applicator nozzles/tips).

(C) Block painting to the maximum extent feasible.

(D) Use of low-VOC or no-VOC solvents for purge.

(iii) The plan must address emissions from flushing of coating systems through one or more of the techniques listed in paragraphs (c)(1)(iii)(A) through (D) of this section, or an approved alternative.

(A) Keeping solvent tanks closed.

(B) Recovering and recycling solvents.

(C) Keeping recovered/recycled solvent tanks closed.

(D) Use of low-VOC or no-VOC solvents.

(iv) The plan must address emissions from cleaning of spray booth grates through one or more of the techniques

listed in paragraphs (c)(1)(iv)(A) through (E) of this section, or an approved alternative.

(A) Controlled burn-off.

(B) Rinsing with high-pressure water (in place).

(C) Rinsing with high-pressure water (off line).

(D) Use of spray-on masking or other type of liquid masking.

(E) Use of low-VOC or no-VOC content cleaners.

(v) The plan must address emissions from cleaning of spray booth walls through one or more of the techniques listed in paragraphs (c)(1)(v)(A) through (E) of this section, or an approved alternative.

(A) Use of masking materials (contact paper, plastic sheet, or other similar type of material).

(B) Use of spray-on masking.

(C) Use of rags and manual wipes instead of spray application when cleaning walls.

(D) Use of low-VOC or no-VOC content cleaners.

(E) Controlled access to cleaning solvents.

(vi) The plan must address emissions from cleaning of spray booth equipment through one or more of the techniques listed in paragraphs (c)(1)(vi)(A) through (E) of this section, or an approved alternative.

(A) Use of covers on equipment (disposable or reusable).

(B) Use of parts cleaners (off-line submersion cleaning).

(C) Use of spray-on masking or other protective coatings.

(D) Use of low-VOC or no-VOC content cleaners.

(E) Controlled access to cleaning solvents.

(vii) The plan must address emissions from cleaning of external spray booth areas through one or more of the techniques listed in paragraphs (c)(1)(vii)(A) through (F) of this section, or an approved alternative.

(A) Use of removable floor coverings (paper, foil, plastic, or similar type of material).

(B) Use of manual and/or mechanical scrubbers, rags, or wipes instead of spray application.

(C) Use of shoe cleaners to eliminate coating track-out from spray booths.

(D) Use of booties or shoe wraps.

(E) Use of low-VOC or no-VOC content cleaners.

(F) Controlled access to cleaning solvents.

(viii) The plan must address emissions from housekeeping measures not addressed in paragraphs (c)(1)(i) through (vii) of this section through one or more of the techniques listed in

paragraphs (c)(1)(viii)(A) through (C) of this section, or an approved alternative.

(A) Keeping solvent-laden articles (cloths, paper, plastic, rags, wipes, and similar items) in covered containers when not in use.

(B) Storing new and used solvents in closed containers.

(C) Transferring of solvents in a manner to minimize the risk of spills.

(2) Notwithstanding the requirements of paragraphs (c)(1)(i) through (viii) of this section, if the type of coatings used in any facility with surface coating operations subject to the requirements of this section are of such a nature that the need for one or more of the practices specified under paragraphs (c)(1)(i) through (viii) of this section is eliminated, then the plan may include approved alternative or equivalent measures that are applicable or necessary during cleaning of storage, conveying, and application equipment.

(d) *Work practice plan revisions.* The work practice plans developed in accordance with paragraphs (b) and (c) of this section are not required to be incorporated in your title V permit. Any revisions to the work practice plans developed in accordance with paragraphs (b) and (c) of this section do not constitute revisions to your title V permit.

(e) *Work practice plan retention time.* Copies of the current work practice plans developed in accordance with paragraphs (b) and (c) of this section, as well as plans developed within the preceding 5 years must be available on-site for inspection and copying by the permitting authority.

(f) *Operating limits.* You are not required to meet any operating limits for any coating operation(s) without add-on controls, nor are you required to meet operating limits for any coating operation(s) that do not utilize emission capture systems and add-on controls to comply with the emission limits in § 60.392a(a).

(g) *Operating limits for operations with add-on controls.* Except as provided in paragraph (h) of this section, for any controlled coating operation(s), you must meet the operating limits specified in table 1 to this subpart. These operating limits apply to the emission capture and add-on control systems for affected sources in § 60.390a(a)(1), and you must establish the operating limits during performance tests according to the requirements in § 60.394a. You must meet the operating limits at all times after you establish them.

(h) *Alternative operating limits.* If you use an add-on control device other than those listed in table 1 to this subpart or

wish to monitor an alternative parameter and comply with a different operating limit, you must apply to the Administrator for approval of alternative monitoring under § 60.13(i).

§ 60.393a Performance test and compliance provisions.

(a) *Representative conditions.* You must conduct performance tests under representative conditions for the affected coating operation according to § 60.8(c) and under the conditions in this section unless you obtain a waiver of the performance test according to the provisions in § 60.8(b)(4).

(1) Operations during periods of startup, shutdown, or nonoperation do not constitute conditions representative of normal operation for purposes of conducting a performance test. You may not conduct performance tests during periods of malfunction. Emissions in excess of the applicable emission limit during periods of startup, shutdown, and malfunction will be considered a violation of the applicable emission limit.

(2) You must record the process information that is necessary to document operating conditions during the performance test and explain why the conditions represent normal operation. Upon request, you must make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

(3) Section 60.8(d) and (f) do not apply to the performance test procedures required by this section.

(b) *Initial and continuous compliance requirements.* You must conduct an initial performance test in accordance with § 60.8(a) and thereafter for each calendar month for each affected facility according to the procedures in this section. You must also conduct periodic performance tests of add-on controls, except for solvent recovery systems for which liquid-liquid material balances are conducted according to paragraph (l) of this section, to reestablish the operating limits required by § 60.392a within 5 years following the previous performance test. You must meet all the requirements of this section to demonstrate initial and continuous compliance.

(1) To demonstrate initial compliance, the VOC emissions from affected source must meet the applicable emission limitation in § 60.392a and the work practice standards in § 60.392a and the applicable operating limits in § 60.392a established during the initial performance test using the procedures in § 60.394a and table 1 to this subpart.

(i) You must complete the initial compliance demonstration for the initial compliance period according to the requirements of this section. The initial compliance period begins on the applicable compliance date specified in § 60.8 and ends on the last day of the month following the compliance date. If the compliance date occurs on any day other than the first day of a month, then the initial compliance period extends through the end of that month plus the next month.

(ii) You must determine the mass of VOC emissions and volume of coating solids deposited in the initial compliance period. The initial compliance demonstration includes the results of emission capture system and add-on control device performance tests conducted according to §§ 60.396a and 60.397a; supporting documentation showing that during the initial compliance period the VOC emission rate was equal to or less than the emission limit in § 60.392a; the operating limits established during the performance tests and the results of the continuous parameter monitoring required by § 60.394a; and documentation of whether you developed and implemented the work practice plans required by § 60.392(b) and (c).

(2) To demonstrate continuous compliance with the applicable emission limit in § 60.392a, the VOC emission rate for each compliance period, determined according to the procedures in this section, must be equal to or less than the applicable emission limit in § 60.392a. A compliance period consists of 1 month. Each month after the end of the initial compliance period described in § 60.393a(b)(1)(i) is a compliance period consisting of that month. You must perform the calculations in this section on a monthly basis.

(3) If the VOC emission rate for any 1-month compliance period exceeded the applicable emission limit in § 60.392a, this is a deviation from the emission limitation for that compliance period and must be reported as specified in § 60.395a(h).

(c) *Compliance with operating limits.* Except as provided in paragraph (c)(1) of this section, you must establish and demonstrate continuous compliance during the initial compliance period with the operating limits required by § 60.392a, using the procedures specified in § 60.394a.

(1) You do not need to comply with the operating limits for the emission capture system and add-on control device required by § 60.394a until after you have completed the initial

performance test specified in paragraph (b) of this section. During the period between the startup date of the affected source and the initial performance test required by § 60.8 you must maintain a log detailing the operation and maintenance of the emission capture system, the add-on control device, and the continuous monitoring system (CMS).

(2) You must demonstrate continuous compliance with each operating limit required by § 60.392a that applies to you, as specified in Table 1 to this subpart, and you must conduct performance tests as specified in paragraph (c)(4) of this section.

(3) If an operating parameter is out of the allowed range specified in table 1 to this subpart, this is a deviation from the operating limit that must be reported as specified in § 60.395a(h).

(4) If an operating parameter deviates from the operating limit specified in table 1 to this subpart, then you must assume that the emission capture system and add-on control device were achieving zero efficiency during the time period of the deviation except as provided in § 60.393a (m).

(5) Except for solvent recovery systems for which you conduct liquid-liquid material balances according to paragraph (l) of this section for controlled coating operations, you must conduct periodic performance tests of add-on controls and reestablish the operating limits required by § 60.392a within 5 years following the previous performance test. You must conduct the first periodic performance test within 5 years following the initial performance test required by § 60.8. Thereafter, you must conduct a performance test no later than 5 years following the previous performance test. Operating limits must be confirmed or reestablished during each performance test. If you are using the alternative monitoring option for a catalytic oxidizer according to § 60.394a(b)(3) and following the catalyst maintenance procedures in § 60.394a(b)(4), you are not required to conduct periodic control device performance testing as specified by this paragraph (c). For any control device for which instruments are used to continuously measure organic compound emissions, you are not required to conduct periodic control device performance testing as specified by this paragraph. The requirements of this paragraph do not apply to measuring emission capture system efficiency.

(6) You must meet the requirements for bypass lines in § 60.394a(h) for control devices other than solvent recovery systems for which you conduct

liquid-liquid material balances. If any bypass line is opened and emissions are diverted to the atmosphere when the coating operation is running, this is a deviation that must be reported as specified in § 60.395a(h). For the purposes of completing the compliance calculations specified in paragraph (j) of this section, you must assume that the emission capture system and add-on control device were achieving zero efficiency during the time period of the deviation.

(d) *Compliance with work practice requirements.* You must develop, implement, and document implementation of the work practice plans required by § 60.392a(b) and (c) during the initial compliance period, as specified in § 60.395a.

(1) You must demonstrate continuous compliance with the work practice standards in § 60.392a (b) and (c). If you did not develop a work practice plan, if you did not implement the plan, or if you did not keep the records required by § 60.395a (k)(11), this is a deviation from the work practice standards that must be reported as specified in § 60.395a (k)(4).

(e) *Compliance with emission limits.* You must use the following procedures in paragraphs (f) through (m) of this section to determine the monthly volume weighted average mass of VOC emitted per volume of applied coating solids for each affected facility to demonstrate compliance with the applicable emission limitation in § 60.392a. You may also use the guidelines presented in "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat" EPA-453/R-08-002 (incorporated by reference, *see* § 60.17) in making this demonstration.

(f) *Determine the mass fraction of VOC, density, and volume for each material used.* You must follow the procedures specified in paragraphs (f)(1) through (3) of this section to determine the mass fraction of VOC, the density, and volume for each coating and thinner used during each month. For the electrodeposition primer operation, the mass fraction of VOC, density, and volume used must be determined for each material added to the tank or system during each month.

(1) *Determine the mass fraction of VOC for each material used.* You must determine the mass fraction of VOC for each material used during the compliance period by using one of the options in paragraphs (f)(1)(i) through (iii) of this section.

(i) *EPA Method 24 (appendix A-7 to 40 CFR part 60).* For coatings, you may use EPA Method 24 to determine the mass fraction of nonaqueous volatile matter and use that value as a substitute for the mass fraction of VOC. As an alternative to using EPA Method 24, you may use ASTM D2369-20 (incorporated by reference, *see* § 60.17). For Method 24, the coating sample must be a 1-liter sample taken in a 1-liter container.

(ii) *Alternative method.* You may use an alternative test method for determining the mass fraction of VOC once the Administrator has approved it. You must follow the procedure in § 60.8(b)(3) to submit an alternative test method for approval.

(iii) *Information from the supplier or manufacturer of the material.* You may rely on information other than that generated by the test methods specified in paragraphs (f)(1)(i) through (iii) of this section, such as manufacturer's formulation data. If there is a disagreement between such information and results of a test conducted according to paragraphs (f)(1)(i) through (iii) of this section, then the test method results will take precedence, unless after consultation, you demonstrate to the satisfaction of the enforcement authority that the facility's data are correct.

(2) *Determine the density of each material used.* Determine the density of each material used during the compliance period from test results using ASTM D1475-13 (incorporated by reference, *see* § 60.17) or for powder coatings, test method A or test method B of ASTM D5965-02 (Reapproved 2013) (incorporated by reference, *see* § 60.17), or information from the supplier or manufacturer of the material. If there is disagreement between ASTM D1475-13 test results or ASTM D5965-02 (Reapproved 2013), Test Method A or Test Method B test results and the supplier's or manufacturer's information, the test results will take precedence unless after consultation, the facility demonstrates to the satisfaction of the enforcement authority that the supplier's or manufacturer's data are correct.

(3) *Determine the volume of each material used.* You must determine from company records on a monthly basis the volume of coating consumed, as received, and the mass of solvent used for thinning purposes.

(g) *Determine the volume fraction of coating solids for each coating.* You must determine the volume fraction of coating solids for each coating used during the compliance period by a test or by information provided by the supplier or the manufacturer of the material, as specified in paragraphs

(g)(1) and (2) of this section. For electrodeposition primer operations, the volume fraction of solids must be determined for each material added to the tank or system during each month. If test results obtained according to paragraph (g)(1) of this section do not agree with the information obtained under paragraph (g)(2) of this section, the test results will take precedence unless, after consultation, the facility demonstrates to the satisfaction of the enforcement authority that the facility's data are correct.

(1) *ASTM Method D2697-22 or ASTM Method D6093-97.* You may use ASTM D2697-22 (incorporated by reference, see § 60.17), or ASTM D6093-97 (incorporated by reference, see § 60.17), to determine the volume fraction of coating solids for each coating. Divide the nonvolatile volume percent obtained

with the methods by 100 to calculate volume fraction of coating solids.

(2) *Information from the supplier or manufacturer of the material.* You may obtain the volume fraction of coating solids for each coating from the supplier or manufacturer.

(h) *Determine the transfer efficiency for each coating.* You must determine the transfer efficiency for each non-electrodeposition prime coat coating, each guide coat coating and each topcoat coating using ASTM Method D5066-91 (Reapproved 2017), "Standard Test Method for Determination of the Transfer Efficiency Under Production Conditions for Spray Application of Automotive Paints—Weight Basis" (incorporated by reference, see § 60.17), or the guidelines presented in "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and

Topcoat" EPA-453/R-08-002 (incorporated by reference, see § 60.17). You may conduct transfer efficiency testing on representative coatings and for representative spray booths as described in "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat" EPA-453/R-08-002 (incorporated by reference, see § 60.17). You may assume 100 percent transfer efficiency for electrodeposition primer coatings.

(i) *Calculate the volume weighted average mass of VOC emitted per volume of applied coating solids before add-on controls.* (1) Calculate the mass of VOC used in each calendar month for each affected facility using Equation 1 of this section, where "n" is the total number of coatings used and "m" is the total number of VOC solvents used:

$$M_o + M_d = \sum_{i=1}^n L_{ci} D_{ci} W_{oi} + \sum_{j=1}^m L_{dj} D_{dj} \quad (\text{Eq. 1})$$

Where:

- M_o = total mass of VOC in coatings as received (kilograms).
- M_d = total mass of VOC in dilution solvent (kilograms).
- L_{ci} = volume of each coating (i) consumed, as received (liters).
- D_{ci} = density of each coating (i) as received (kilograms per liter).

- W_{oi} = proportion of VOC by weight in each coating (i), as received.
- L_{dj} = volume of each type VOC dilution solvent (j) added to the coatings, as received (liters).
- D_{dj} = density of each type VOC dilution solvent (j) added to the coatings, as received (kilograms per liter).

[$\sum L_{dj} D_{dj}$ will be zero if no VOC solvent is added to the coatings, as received.]

(2) Calculate the total volume of coating solids used in each calendar month for each affected facility using Equation 2 of this section, where "n" is the total number of coatings used:

$$L_s = \sum_{i=1}^n L_{ci} V_{si} \quad (\text{Eq. 2})$$

Where:

- L_s = volume of solids in coatings consumed (liters).
- L_{ci} = volume of each coating (i) consumed, as received (liters).
- V_{si} = proportion of solids by volume in each coating (i) as received.

(3) Calculate the transfer efficiency (T) for each surface coating operation according to paragraph (h) of this section.

(i) When more than one application method (l) is used on an individual surface coating operation, you must

perform an analysis to determine an average transfer efficiency using Equation 3 of this section, where "n" is the total number of coatings used and "p" is the total number of application methods:

$$T = \frac{\sum_{i=1}^n T_l V_{si} L_{cil}}{\sum_{l=1}^p L_s} \quad (\text{Eq. 3})$$

Where:

- T = overall transfer efficiency.
- T_l = transfer efficiency for application method (l).
- V_{si} = proportion of solids by volume in each coating (i) as received

- L_{cil} = Volume of each coating (i) consumed by each application method (l), as received (liters).
- L_s = volume of solids in coatings consumed (liters).

calendar month for each affected facility using Equation 4 of this section:

$$G = \frac{M_o + M_d}{L_s T} \quad (\text{Eq. 4})$$

Where:

$\frac{\text{liter solids}}{\text{liter coating}}$, and

- (ii) [Reserved]
- (4) Calculate the volume weighted average mass of VOC per volume of applied coating solids (G) during each

G = volume weighted average mass of VOC per volume of applied solids (kilograms per liter).

M_o = total mass of VOC in coatings as received (kilograms).

M_d = total mass of VOC in dilution solvent (kilograms).

L_s = volume of solids in coatings consumed (liters).

T = overall transfer efficiency.

(5) Select the appropriate limit according to § 60.392a. If the volume weighted average mass of VOC per volume of applied coating solids (G), calculated on a calendar month basis, is less than or equal to the applicable emission limit specified in § 60.392a, the affected facility is in compliance. Each monthly calculation is a

performance test for the purpose of this subpart.

(j) Calculate the volume weighted average mass of VOC emitted per volume of applied coating solids after add-on controls. You use the following procedures for each affected facility which uses a capture system and a control device that destroys VOC (e.g., incinerator) to comply with the applicable emission limit specified under § 60.392a. Use the procedures in paragraph (j)(1) through (5) of this section to calculate volume weighted average mass of VOC per volume of applied coating solids for each controlled coating operation using an emission capture system and add-on

control device other than a solvent recovery system for which you conduct liquid-liquid material balances. For each controlled coating operation using a solvent recovery system for which you conduct a liquid-liquid material balance, you must use the procedures in paragraph (l) of this section.

(1) Calculate the volume weighted average mass of VOC per volume of applied coating solids (G) during each calendar month for each affected facility as described under § 60.393a(i)(4).

(2) Calculate the volume weighted average mass of VOC per volume of applied coating solids (N) emitted after the control device using Equation 5 of this section:

$$N = G[1 - CE * DRE] \text{ (Eq. 5)}$$

Where:

N = volume weighted average mass of VOC per volume of applied coating solids after the control device in units of kilograms of VOC per liter of applied coating solids.

G = volume weighted average mass of VOC per volume of applied coating solids (kilograms per liter).

CE = fraction of total VOC that is emitted by an affected facility that enters the control device.

DRE = VOC destruction or removal efficiency of the control device.

(3) You must use the procedures and test methods in section 60.397a to determine the emission capture system efficiency (CE) as part of the initial performance test.

(i) If you can justify to the Administrator's satisfaction that another method will give comparable results, the Administrator will approve its use on a case-by-case basis.

(ii) In subsequent months, you must use the most recently determined capture efficiency for the performance test.

(4) You must use the procedures and test methods in section 60.396a to determine the add-on control device emission destruction or removal efficiency as part of the initial performance test.

(i) In subsequent months, you must use the most recently determined VOC destruction efficiency for the performance test.

(ii) If two or more add-on control devices are used for the same emission stream, you must measure emissions at the outlet of each device in accordance with § 60.396a(c). If there is more than one inlet or outlet to the add-on control device, you must calculate the total gaseous organic mass flow rate for each

inlet and each outlet and then total all of the inlet emissions and total all of the outlet emissions in accordance with § 60.396a(d). The emission destruction or removal efficiency of the add-on control device is the average of the efficiencies determined in the three test runs. The destruction or removal efficiency determined using these data shall be applied to each affected facility served by the control device.

(5) Calculate the mass of VOC for each affected facility each calendar month for each period of time in which a deviation, including a deviation during a period of startup, shutdown, or malfunction, from an emission limitation, an operating limit or any CMS requirement for the capture system or control device serving the controlled coating operation occurred. Except as provided in paragraph (m) of this section, for any period of time in which a deviation, including a deviation during a period of startup, shutdown, or malfunction, from an emission limitation or operating limit or from any CMS requirement of the capture system or control device serving the controlled coating operation occurred, you must assume zero efficiency for the emission capture system and add-on control device. During such a deviation you must assume the affected source was uncontrolled for the duration of the deviation using the equation in paragraph (i)(4) of this section.

(6) Adjust the volume weighted average mass of VOC per volume of applied coating solids emitted after the control device for each affected facility (N) during a calendar month for periods of deviation by adding the mass of VOC for the uncontrolled period of time

according to paragraph (i)(5) of this section.

(7) If the adjusted volume weighted average mass of VOC per volume of applied solids emitted after the control device (N) calculated on a calendar month basis is less than or equal to the applicable emission limit specified in § 60.392a, the affected facility is in compliance. Each monthly calculation is a performance test for the purposes of this subpart.

(k) Calculate the volume weighted average mass of VOC emitted per volume of applied coating solids after add-on recovery devices. You must use the following procedures for each affected facility which uses a capture system and a control device that recovers the VOC (e.g., carbon adsorber) other than a solvent recovery system for which you conduct a liquid-liquid material balance to comply with the applicable emission limit specified under § 60.392a.

(1) Calculate the mass of VOC ($M_o + M_d$) used during each calendar month for each affected facility as described under paragraph (i) of this section.

(2) Calculate the total volume of coating solids (L_s) used in each calendar month for each affected facility as described under paragraph (i) of this section.

(3) Calculate the mass of VOC recovered (M_r) each calendar month for each affected facility by the following equation:

$$M_r = L_r * D_r$$

Where:

M_r = total mass of VOC recovered from an affected facility (kilograms).

L_r = volume of VOC recovered from an affected facility (liters).

D_r = density of VOC recovered from an affected facility (kilograms per liter).

(4) Calculate the volume weighted average mass of VOC per volume of applied coating solids emitted after the

control device (N) during a calendar month using Equation 6 of this section:

$$N = \frac{M_o + M_d - M_r}{L_s T} \quad (\text{Eq. 6})$$

Where:

N = volume weighted average mass of VOC per volume of applied coating solids after the control device in units of kilograms of VOC per liter of applied coating solids.

M_o = total mass of VOC in coatings as received (kilograms).

M_d = total mass of VOC in dilution solvent (kilograms).

M_r = total mass of VOC recovered from an affected facility (kilograms).

L_s = volume of solids in coatings consumed (liters).

T = overall transfer efficiency.

(5) Adjust the volume weighted average mass of VOC per volume of applied coating solids emitted after the recovery device for each affected facility (N) during a calendar month for periods of deviation by adding the mass of VOC for the uncontrolled periods of time according to paragraph (i)(6) of this section.

(6) If the adjusted volume weighted average mass of VOC per volume of applied solids emitted after the control device (N) calculated on a calendar month basis is less than or equal to the applicable emission limit specified in

§ 60.392a, the affected facility is in compliance. Each monthly calculation is a performance test for the purposes of this subpart.

(1) *Calculate the collection and recovery efficiency for solvent recovery systems using liquid-liquid material balances.* You must use the following procedures for each affected facility which uses a solvent recovery system for which you conduct liquid-liquid material balances to comply with the applicable emission limit specified under § 60.392a.

(1) Calculate the mass of VOC emission reduction for the coating operation controlled by the solvent recovery system using a liquid-liquid material balance for each affected facility by applying the volatile organic matter collection and recovery efficiency to the mass of VOC contained in the coatings and thinners used in the coating operation controlled by the solvent recovery system during each month. Perform a liquid-liquid material balance for each month as specified in paragraphs (1)(1) through (6) of this section.

(2) For each solvent recovery system, install, calibrate, maintain, and operate according to the manufacturer's specifications, a device that indicates the cumulative amount of volatile organic matter recovered by the solvent recovery system each month. The device must be initially certified by the manufacturer to be accurate to within ± 2.0 percent of the mass of volatile organic matter recovered.

(3) For each solvent recovery system, determine the mass of volatile organic matter recovered for the month based on measurement with the device required in paragraphs (1)(1) and (2) of this section.

(4) For each affected facility, determine the mass of VOC ($M_o + M_d$) of each coating and thinner controlled by the solvent recovery system for each calendar month using the equation in paragraph (i)(1) of this section.

(5) Calculate the solvent recovery system's volatile organic matter collection and recovery efficiency (R_v) for each affected facility using Equation 7 of this section:

$$R_v = 100 \frac{M_{VR}}{\sum_{i=1}^m Vol_i D_i WV_{c,i} + \sum_{j=1}^n Vol_j D_j WV_{t,j}} \quad (\text{Eq. 7})$$

Where:

R_v = Volatile organic matter collection and recovery efficiency of the solvent recovery system during the month, percent.

M_{VR} = Mass of volatile organic matter recovered by the solvent recovery system during the month, kg.

Vol_i = Volume of coating, i, used in the coating operation controlled by the solvent recovery system during the month, liters.

D_i = Density of coating, i, kg per liter.

$WV_{c,i}$ = Mass fraction of volatile organic matter for coating, i, kg volatile organic matter per kg coating.

Vol_j = Volume of thinner, j, used in the coating operation controlled by the solvent recovery system during the month, liters.

D_j = Density of thinner, j, kg per liter.

$WV_{t,j}$ = Mass fraction of volatile organic matter for thinner, j, kg volatile organic matter per kg thinner.

m = Number of different coatings used in the coating operation controlled by the solvent recovery system during the month.

n = Number of different thinners used in the coating operation controlled by the solvent recovery system during the month.

(6) For each affected facility, you may apply the solvent recovery system's volatile organic matter collection and recovery efficiency to the mass of VOC for the coating operation controlled by the solvent recovery system for each calendar month.

(m) *Deviations.* You may request approval from the Administrator to use non-zero capture efficiencies and add-on control device efficiencies for any period of time in which a deviation, including a deviation during a period of startup, shutdown, or malfunction, from

an emission limitation, operating limit or any CMS requirement for the capture system or add-on control device serving a controlled coating operation occurred.

(1) If you have manually collected parameter data indicating that a capture system or add-on control device was operating normally during a CMS malfunction, a CMS out-of-control period, or associated repair, then these data may be used to support and document your request to use the normal capture efficiency or add-on control device efficiency for that period of deviation.

(2) If you have data indicating the actual performance of a capture system or add-on control device (e.g., capture efficiency measured at a reduced flow rate or add-on control device efficiency measured at a reduced thermal oxidizer temperature) during a deviation,

including a deviation during a period of startup, shutdown, or malfunction, from an emission limitation or operating limit or from any CMS requirement for the capture system or add-on control device serving a controlled coating operation, then these data may be used to support and document your request to use these values for that period of deviation.

(3) You may recalculate the adjusted volume weighted average mass of VOC emitted per volume of applied coating solids after add-on controls in paragraph (j)(6) of this section, and the adjusted volume weighted average mass of VOC per volume of applied coating solids emitted after the recovery device in paragraph (k)(4) of this section, based on Administrator approval of the non-zero capture efficiency and add-on control device efficiency values based on data provided in accordance with paragraphs (m)(1) and (2) of this section.

(n) *No deviations.* If there were no deviations from the emission limitations, submit a statement as part of the compliance report that you were in compliance with the emission limitations during the reporting period because the VOC emission rate for each compliance period was less than or equal to the applicable emission limit in § 60.392a, you achieved the operating limits required by § 60.394a, and you achieved the work practice standards required by § 60.392a during each compliance period.

(o) *Recordkeeping.* You must maintain records as specified in § 60.395a.

§ 60.394a Add-on control device operating limits and monitoring requirements.

During the performance tests required by § 60.393a, if you use an add-on control device(s) to comply with the emission limits specified under § 60.392a(a) through (c), you must establish add-on control device operating limits required by § 60.392a(h) according to this section, unless approval has been received for alternative monitoring under § 60.13(i) as specified in § 60.392a(h).

(a) *Thermal oxidizers.* If your add-on control device is a thermal oxidizer, establish the operating limit according to paragraphs (a)(1) and (2) of this section.

(1) During the performance test, you must monitor and record the combustion temperature at least once every 15 minutes during each of the three test runs. You must monitor the temperature in the firebox of the thermal oxidizer or immediately downstream of the firebox before any substantial heat exchange occurs.

(2) Use all valid data collected during the performance test to calculate and record the average combustion temperature maintained during the performance test. This average combustion temperature is the minimum 3-hour average operating limit for your thermal oxidizer.

(b) *Catalytic oxidizers.* If your add-on control device is a catalytic oxidizer, establish the operating limits according to either paragraphs (b)(1) and (2) or paragraphs (b)(3) and (4) of this section.

(1) During the performance test, you must monitor and record the temperature just before the catalyst bed and the temperature difference across the catalyst bed at least once every 15 minutes during each of the three test runs.

(2) Use all valid data collected during the performance test to calculate and record the average temperature just before the catalyst bed and the average temperature difference across the catalyst bed maintained during the performance test. The minimum 3-hour average operating limits for your catalytic oxidizer are the average temperature just before the catalyst bed maintained during the performance test of that catalytic oxidizer and 80 percent of the average temperature difference across the catalyst bed maintained during the performance test of that catalytic oxidizer, except during periods of low production, the latter minimum operating limit is to maintain a positive temperature gradient across the catalyst bed. A low production period is when production is less than 80 percent of production rate during the performance test of that catalytic oxidizer.

(3) As an alternative to monitoring the temperature difference across the catalyst bed, you may monitor the temperature at the inlet to the catalyst bed and implement a site-specific inspection and maintenance plan for your catalytic oxidizer as specified in paragraph (b)(4) of this section. During the performance test, you must monitor and record the temperature just before the catalyst bed at least once every 15 minutes during each of the three test runs. Use all valid data collected during the performance test to calculate and record the average temperature just before the catalyst bed during the performance test. This is the minimum operating limit for your catalytic oxidizer.

(4) You must develop and implement an inspection and maintenance plan for your catalytic oxidizer(s) for which you elect to monitor according to paragraph (b)(3) of this section. The plan must address, at a minimum, the elements

specified in paragraphs (b)(4)(i) through (iii) of this section.

(i) Annual sampling and analysis of the catalyst activity (*i.e.*, conversion efficiency) following the manufacturer's or catalyst supplier's recommended procedures. If problems are found during the catalyst activity test, you must replace the catalyst bed or take other corrective action consistent with the manufacturer's recommendations.

(ii) Monthly external inspection of the catalytic oxidizer system, including the burner assembly and fuel supply lines for problems and, as necessary, adjust the equipment to assure proper air-to-fuel mixtures.

(iii) Annual internal inspection of the catalyst bed to check for channeling, abrasion, and settling. If problems are found during the annual internal inspection of the catalyst, you must replace the catalyst bed or take other corrective action consistent with the manufacturer's recommendations. If the catalyst bed is replaced and is not of like or better kind and quality as the old catalyst, and is not consistent with the manufacturer's recommendations, then you must conduct a new performance test to determine destruction efficiency according to § 60.396a. If a catalyst bed is replaced and the replacement catalyst is of like or better kind and quality as the old catalyst, and is consistent with the manufacturer's recommendations, then a new performance test to determine destruction efficiency is not required and you may continue to use the previously established operating limits for that catalytic oxidizer.

(c) *Regenerative carbon adsorbers.* If your add-on control device is a regenerative carbon adsorber, establish the operating limits according to paragraphs (c)(1) and (2) of this section.

(1) You must monitor and record the total regeneration desorbing gas (*e.g.*, steam or nitrogen) mass flow for each regeneration cycle and the carbon bed temperature after each carbon bed regeneration and cooling cycle for the regeneration cycle either immediately preceding or immediately following the performance test.

(2) The operating limits for your carbon adsorber are the minimum total desorbing gas mass flow recorded during the regeneration cycle and the maximum carbon bed temperature recorded after the cooling cycle.

(d) *Condensers.* If your add-on control device is a condenser, establish the operating limits according to paragraphs (d)(1) and (2) of this section.

(1) During the performance test, you must monitor and record the condenser outlet (product side) gas temperature at

least once every 15 minutes during each of the three test runs.

(2) Use all valid data collected during the performance test to calculate and record the average condenser outlet (product side) gas temperature maintained during the performance test. This average condenser outlet gas temperature is the maximum 3-hour average operating limit for your condenser.

(e) *Concentrators.* If your add-on control device includes a concentrator, you must establish operating limits for the concentrator according to paragraphs (e)(1) and (2) of this section.

(1) During the performance test, you must monitor and record the desorption gas inlet temperature at least once every 15 minutes during each of the three runs of the performance test.

(2) Use all valid data collected during the performance test to calculate and record the average desorption gas inlet temperature. The minimum operating limit for the concentrator is 8 degrees Celsius (15 degrees Fahrenheit) below the average desorption gas inlet temperature maintained during the performance test for that concentrator. You must keep the set point for the desorption gas inlet temperature no lower than 6 degrees Celsius (10 degrees Fahrenheit) below the lower of that set point during the performance test for that concentrator and the average desorption gas inlet temperature maintained during the performance test for that concentrator.

(f) *Emission capture systems.* For each capture device that is not part of a permanent total enclosure (PTE) that meets the criteria of § 60.397a and that is not capturing emissions from a downdraft spray booth or from a flash-off area or bake oven associated with a downdraft spray booth, establish an operating limit for either the gas volumetric flow rate or duct static pressure, as specified in paragraphs (f)(1) and (2) of this section. The operating limit for a PTE is specified in table 1 to this subpart.

(1) During the capture efficiency determination required by § 60.393a and described in § 60.397a, you must monitor and record either the gas volumetric flow rate or the duct static pressure for each separate capture device in your emission capture system at least once every 15 minutes during each of the test runs at a point in the duct between the capture device and the add-on control device inlet.

(2) Calculate and record the average gas volumetric flow rate or duct static pressure for the three test runs for each capture device, using all valid data. This average gas volumetric flow rate or duct

static pressure is the minimum operating limit for that specific capture device.

(g) *Monitoring requirements.* If you use an add-on control device(s) to comply with the emission limits specified under § 60.392a(a) through (c), you must install, operate, and maintain each CMS specified in paragraphs (c), (e), (f), and (g) of this section according to paragraphs (g)(1) through (6) of this section. You must install, operate, and maintain each CMS specified in paragraphs (h) and (i) of this section according to paragraphs (g)(3) through (5) of this section.

(1) The CMS must complete a minimum of one cycle of operation for each successive 15-minute period. You must have a minimum of four equally spaced successive cycles of CMS operation in 1 hour.

(2) You must determine the average of all recorded readings for each successive 3-hour period of the emission capture system and add-on control device operation.

(3) You must record the results of each inspection, calibration, and validation check of the CMS.

(4) You must maintain the CMS at all times in accordance with § 60.11(d) and have readily available necessary parts for routine repairs of the monitoring equipment.

(5) You must operate the CMS and collect emission capture system and add-on control device parameter data at all times that a controlled coating operation is operating in accordance with § 60.11(d).

(6) Startups and shutdowns are normal operation for this source category. Emissions from these activities are to be included when determining if the standards specified in § 60.392a(a) through (c) are being attained. You must not use emission capture system or add-on control device parameter data recorded during monitoring malfunctions, associated repairs, out-of-control periods, or required quality assurance or control activities when calculating data averages. You must use all the data collected during all other periods in calculating the data averages for determining compliance with the emission capture system and add-on control device operating limits.

(7) A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the CMS to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions. Except for periods of required quality assurance or control activities, any period during which the CMS fails to operate and record data

continuously as required by paragraph (g)(1) of this section or generates data that cannot be included in calculating averages as specified in this paragraph (g)(7) constitutes a deviation from the monitoring requirements.

(h) *Capture system bypass line.* You must meet the requirements of paragraphs (h)(1) and (2) of this section for each emission capture system that contains bypass lines that could divert emissions away from the add-on control device to the atmosphere.

(1) You must monitor or secure the valve or closure mechanism controlling the bypass line in a nondiverting position in such a way that the valve or closure mechanism cannot be opened without creating a record that the valve was opened. The method used to monitor or secure the valve or closure mechanism must meet one of the requirements specified in paragraphs (h)(1)(i) through (iv) of this section.

(i) *Flow control position indicator.* Install, calibrate, maintain, and operate according to the manufacturer's specifications a flow control position indicator that takes a reading at least once every 15 minutes and provides a record indicating whether the emissions are directed to the add-on control device or diverted from the add-on control device. The time of occurrence and flow control position must be recorded, as well as every time the flow direction is changed. The flow control position indicator must be installed at the entrance to any bypass line that could divert the emissions away from the add-on control device to the atmosphere.

(ii) *Car-seal or lock-and-key valve closures.* Secure any bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. You must visually inspect the seal or closure mechanism at least once every month to ensure that the valve is maintained in the closed position, and the emissions are not diverted away from the add-on control device to the atmosphere.

(iii) *Valve closure monitoring.* Ensure that any bypass line valve is in the closed (nondiverting) position through monitoring of valve position at least once every 15 minutes. You must inspect the monitoring system at least once every month to verify that the monitor will indicate valve position.

(iv) *Automatic shutdown system.* Use an automatic shutdown system in which the coating operation is stopped when flow is diverted by the bypass line away from the add-on control device to the atmosphere when the coating operation is running. You must inspect the automatic shutdown system at least once every month to verify that it will

detect diversions of flow and shut down the coating operation.

(2) If any bypass line is opened, you must include a description of why the bypass line was opened and the length of time it remained open in the semiannual compliance reports required in § 60.395a.

(i) *Thermal oxidizers and catalytic oxidizers.* If you are using a thermal oxidizer or catalytic oxidizer as an add-on control device (including those used to treat desorbed concentrate streams from concentrators or carbon adsorbers), you must comply with the requirements in paragraphs (i)(1) through (3) of this section:

(1) For a thermal oxidizer, install a gas temperature monitor in the firebox of the thermal oxidizer or in the duct immediately downstream of the firebox before any substantial heat exchange occurs.

(2) For a catalytic oxidizer, install a gas temperature monitor upstream of the catalyst bed. If you establish the operating parameters for a catalytic oxidizer under paragraphs (b)(1) through (3) of this section, you must also install a gas temperature monitor downstream of the catalyst bed. The temperature monitors must be in the gas stream immediately before and after the catalyst bed to measure the temperature difference across the bed. If you establish the operating parameters for a catalytic oxidizer under paragraphs (b)(4) through (6) of this section, you need not install a gas temperature monitor downstream of the catalyst bed.

(3) For all thermal oxidizers and catalytic oxidizers, you must meet the requirements in paragraphs (g)(1) through (6) and (i)(3)(i) through (vii) of this section for each gas temperature monitoring device, unless approval has been received for alternative monitoring under § 60.13(i) as specified in § 60.392a(h). For the purposes of this paragraph (i)(3), a thermocouple is part of the temperature sensor.

(i) Locate the temperature sensor in a position that provides a representative temperature.

(ii) Use a temperature sensor with a measurement sensitivity of 4 degrees Fahrenheit or 0.75 percent of the temperature value, whichever is larger.

(iii) Shield the temperature sensor system from electromagnetic interference and chemical contaminants.

(iv) The gas temperature sensor must be capable of recording the temperature continuously. If a gas temperature chart recorder is used, it must have a measurement sensitivity in the minor division of at least 20 degrees Fahrenheit.

(v) Perform an electronic calibration at least semiannually according to the procedures in the manufacturer's owner's manual. Following the electronic calibration, you must conduct a temperature sensor validation check in which a second or redundant temperature sensor placed nearby the process temperature sensor must yield a reading within 30 degrees Fahrenheit of the process temperature sensor reading.

(vi) Conduct calibration and validation checks any time the sensor exceeds the manufacturer's specified maximum operating temperature range or install a new temperature sensor.

(vii) At least monthly, inspect components for integrity and electrical connections for continuity, oxidation, and galvanic corrosion.

(j) *Regenerative carbon adsorbers.* If you are using a regenerative carbon adsorber as an add-on control device, you must monitor the total regeneration desorbing gas (e.g., steam or nitrogen) mass flow for each regeneration cycle, the carbon bed temperature after each regeneration and cooling cycle and comply with paragraphs (g)(3) through (5) and (j)(1) and (2) of this section.

(1) The regeneration desorbing gas mass flow monitor must be an integrating device having a measurement sensitivity of plus or minus 10 percent, capable of recording the total regeneration desorbing gas mass flow for each regeneration cycle.

(2) The carbon bed temperature monitor must have a measurement sensitivity of 1 percent of the temperature (as expressed in degrees Fahrenheit) recorded or 1 degree Fahrenheit, whichever is greater, and must be capable of recording the temperature within 15 minutes of completing any carbon bed cooling cycle.

(k) *Condensers.* If you are using a condenser, you must monitor the condenser outlet (product side) gas temperature and comply with paragraphs (g)(1) through (6) and (k)(1) and (2) of this section.

(1) The gas temperature monitor must have a measurement sensitivity of 1 percent of the temperature (expressed in degrees Fahrenheit) recorded or 1 degree Fahrenheit, whichever is greater.

(2) The temperature monitor must provide a gas temperature record at least once every 15 minutes.

(l) *Concentrators.* If you are using a concentrator, such as a zeolite wheel or rotary carbon bed concentrator, you must install a temperature monitor in the desorption gas stream. The temperature monitor must meet the requirements in paragraphs (g)(1) through (6) and (i)(3) of this section.

(m) *Emission capture systems.* The capture system monitoring system must comply with the applicable requirements in paragraphs (m)(1) and (2) of this section.

(1) For each flow measurement device, you must meet the requirements in paragraphs (g)(1) through (6) and (m)(1)(i) through (iv) of this section.

(i) Locate a flow sensor in a position that provides a representative flow measurement in the duct from each capture device in the emission capture system to the add-on control device.

(ii) Reduce swirling flow or abnormal velocity distributions due to upstream and downstream disturbances.

(iii) Conduct a flow sensor calibration check at least semiannually.

(iv) At least monthly, inspect components for integrity, electrical connections for continuity, and mechanical connections for leakage.

(2) For each pressure drop measurement device, you must comply with the requirements in paragraphs (g)(1) through (6) and (m)(2)(i) through (vi) of this section.

(i) Locate the pressure tap(s) in a position that provides a representative measurement of the pressure drop across each opening you are monitoring.

(ii) Minimize or eliminate pulsating pressure, vibration, and internal and external corrosion.

(iii) Using an inclined manometer with a measurement sensitivity of 0.0002 inches of water, check gauge calibration quarterly and transducer calibration monthly.

(iv) Conduct calibration checks any time the sensor exceeds the manufacturer's specified maximum operating pressure range or install a new pressure sensor.

(v) At least monthly, inspect components for integrity, electrical connections for continuity, pressure taps for plugging and mechanical connections for leakage.

§ 60.395a Notifications, reports, and records.

(a) *Notifications.* You must submit all notifications in §§ 60.7, 60.8, and 60.13 that apply to you by the dates specified in those sections and in paragraphs (a)(1) through (5) of this section.

(1) A notification of the date construction (or reconstruction as defined under § 60.15) of an affected facility is commenced no later than 30 days after such date.

(2) A notification of the actual date of initial startup of an affected facility within 15 days after such date.

(3) A notification of any physical or operational change to an existing facility which may increase the VOC emission

rate within 60 days or as soon as practicable before the change is commenced.

(4) A notification of the date upon which demonstration of the CMS performance commences in accordance with § 60.13(c) not less than 30 days prior to such date.

(5) A notification of any performance test at least 30 days prior to afford the Administrator (or delegated State or local agency) the opportunity to have an observer present.

(b) *Initial performance test report.* If you use add-on control devices, you must submit reports of performance test results for emission capture systems and add-on control devices. Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility, you are required to conduct performance test(s) and furnish the Administrator a report of the results of such performance test(s) in accordance with § 60.8(a). You are also required to conduct transfer efficiency test(s) and submit reports of the results of transfer efficiency tests and furnish the Administrator a report of the results of such transfer efficiency tests. The initial performance test report must include the information specified in § 60.8.

(c) *Subsequent performance test reports.* You must conduct periodic performance tests of add-on control devices in accordance with § 60.393a(b) within five years of the previous performance test and at such other times as may be required by the Administrator under section 114 of the Act in accordance with § 60.8(a). You must furnish the Administrator a written report of the results of such performance test(s) within 60 days of completing the performance test. Periodic testing of transfer efficiency and capture efficiency are not required.

(d) *Compliance reports.* Following the initial performance test, you must submit a quarterly or semiannual compliance report for each affected source required by § 60.8 according to the requirements of paragraphs (e) and (f) of this section. You must identify, record, and submit a report to the Administrator every calendar quarter each instance a deviation occurred from the emission limits, operating limits, or work practices in §§ 60.392a, 60.393a, and 60.394a, that apply to you. If no such instances have occurred during a particular quarter, a report stating this shall be submitted to the Administrator semiannually. For each affected source that is subject to 40 CFR part 70 or 71 permitting regulations and if the

permitting authority has established dates for submitting semiannual compliance reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 71.6(a)(3)(iii)(A), you may submit the semiannual compliance reports according to the dates the permitting authority has established.

(e) *Initial compliance report.* You must include the data outlined in paragraphs (e)(1) and (2) of this section in the initial compliance report required by § 60.8 and the information required by paragraphs (f) through (h) of this section.

(1) The volume weighted average mass of VOC per volume of applied coating solids for each affected facility.

(2) Where compliance is achieved through the use of a capture or control device, include the following additional data in the initial performance test report required by § 60.8(a) specified in paragraphs (e)(2)(i) through (v) of this section:

(i) The data collected to establish the operating limits for the appropriate capture or control device required as by § 60.394a and table 1 to this subpart;

(ii) The total mass of VOC per volume of applied coating solids before and after the control device as required by § 60.396a;

(iii) The destruction efficiency of the control device used to attain compliance with the applicable emission limit specified in § 60.392a(a);

(iv) The capture efficiency as required by § 60.397a and a description of the method used to establish the capture efficiency for the affected facility; and

(v) The transfer efficiency test results and a description of the method used to establish the transfer efficiency for the affected facility.

(f) *Compliance report content.* Compliance reports must contain the information specified in paragraphs (f)(1) through (4) of this section and paragraph (g) that are applicable to your affected source.

(1) Company name and address.

(2) Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(3) Date of report and beginning and ending dates of the reporting period.

(4) Identification of the affected source.

(g) *No deviations.* If there were no deviations from the emission limits, work practices, or operating limits in §§ 60.392a and 60.394a, that apply to you, the compliance report must include a statement that there were no deviations from the applicable emission limitations during the reporting period. If you used control devices to comply

with the emission limits, and there were no periods during which the CMS were out of control as specified in § 60.394a(g) the compliance report must include a statement that there were no periods during which the CMS were out of control during the reporting period.

(h) *Deviations.* If there was a deviation from the applicable emission limits in § 60.392a or the applicable operating limit(s) in table 1 to this subpart or the work practice standards in § 60.392a, the compliance report must contain the information in paragraphs (h)(1) through (15) of this section.

(1) The beginning and ending dates of each month during which the volume-weighted average of the total mass of VOC emitted to the atmosphere per volume of applied coating solids (N) for the affected source exceeded the applicable emission limit in § 60.392a.

(2) The calculation used to determine the volume-weighted average of the total mass of VOC emitted to the atmosphere per volume of applied coating solids (N) in accordance with § 60.395a. You do not need to submit the background data supporting these calculations, for example information provided by materials suppliers or manufacturers, or test reports.

(3) The date and time that each malfunction of the capture system or add-on control devices used to control emissions from these operations started and stopped.

(4) A brief description of the CMS.

(5) The date of the latest CMS certification or audit.

(6) For each instance that the CMS was inoperative, except for zero (low-level) and high-level checks, the date, time, and duration that the CMS was inoperative; the cause (including unknown cause) for the CMS being inoperative; and descriptions of corrective actions taken.

(7) For each instance that the CMS was malfunctioning or out-of-control, as specified in § 60.394a(g)(6) or (7), the date, time, and duration that the CMS was malfunctioning or out-of-control; the cause (including unknown cause) for the CMS malfunctioning or being out-of-control; and descriptions of corrective actions taken.

(8) The date, time, and duration of each deviation from an operating limit in table 1 to this subpart; and the date, time, and duration of each bypass of an add-on control device.

(9) A summary of the total duration and the percent of the total source operating time of the deviations from each operating limit in table 1 to this subpart and the bypass of each add-on control device during the semiannual reporting period.

(10) A breakdown of the total duration of the deviations from each operating limit in Table 1 to this subpart and bypasses of each add-on control device during the semiannual reporting period into those that were due to control equipment problems, process problems, other known causes, and other unknown causes.

(11) A summary of the total duration and the percent of the total source operating time of the downtime for each CMS during the semiannual reporting period.

(12) A description of any changes in the CMS, coating operation, emission capture system, or add-on control devices since the last semiannual reporting period.

(13) For deviations from the work practice standards, the number of deviations, and, for each deviation, the information in paragraphs (h)(13)(i) and (ii) of this section.

(i) A description of the deviation, the date, time, and duration of the deviation; and the actions you took to minimize emissions in accordance with § 60.11(d).

(ii) A list of the affected sources or equipment for which a deviation occurred, the cause of the deviation (including unknown cause, if applicable), and any corrective actions taken to return the affected unit to its normal or usual manner of operation.

(14) For deviations from an emission limitation in § 60.392a or operating limit in Table 1 of this subpart, a statement of the cause of each deviation (including unknown cause, if applicable).

(15) For each deviation from an emission limitation in § 60.392a, or operating limit in Table 1 to this subpart, a list of the affected sources or equipment for which a deviation occurred, an estimate of the quantity of VOC emitted over any emission limit in § 60.392a, and a description of the method used to estimate the emissions.

(i) *Electronic reporting of performance test data.* Where compliance is achieved through the use of add-on control devices, the owner or operator shall submit control device performance test results for initial and subsequent performance tests according to paragraphs (b) and (c) of this section within 60 days of completing each performance test following the procedures specified in paragraphs (i)(1) through (3) of this section.

(1) *Supported test methods.* Data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/>

<https://www.epa.gov/electronic-reporting-air-emissions/>) at the time of the test.

(i) Submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's Central Data Exchange (CDX) (<https://cdx.epa.gov/>).

(ii) The data must be submitted in a file format generated using the EPA's ERT. Alternatively, the owner or operator may submit an electronic file consistent with the extensible markup language (XML) schema listed on the EPA's ERT website.

(2) *Unsupported test methods.* Data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test.

(i) The results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website.

(ii) Submit the ERT generated package or alternative file to the EPA via CEDRI.

(3) *Confidential business information (CBI).* Do not use CEDRI to submit information you claim as CBI. Any information submitted using CEDRI cannot later be claimed CBI. Under CAA section 114(c), emissions data are not entitled to confidential treatment, and the EPA is required to make emissions data available to the public. Thus, emissions data will not be protected as CBI and will be made publicly available. Owners or operators that assert a CBI claim for any information submitted under paragraph (i)(1) or (i)(2) of this section, must submit a complete file, including information claimed to be CBI, to the EPA. The file must be generated using the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website. Owners or operators can submit CBI according to one of the two procedures in paragraph (i)(3)(i) or (ii) of this section. All CBI claims must be asserted at the time of submission.

(i) If sending CBI through the postal service, submit the file on a compact disc, flash drive, or other commonly used electronic storage medium and clearly mark the medium as CBI. Owners or operators are required to mail the electronic medium to U.S. EPA/OAQPS/CORE CBI Office, Attention: Automobile and Light Duty Truck Surface Coating Operations Sector Lead, MD C404-02, 4930 Old Page Rd., Durham, NC 27703. The same file with the CBI omitted must be submitted to the EPA via the EPA's CDX as described in paragraphs (i)(1) and (2) of this section.

(ii) The EPA preferred method for CBI submittal is for it to be transmitted electronically using email attachments, File Transfer Protocol (FTP), or other online file sharing services (e.g., Dropbox, OneDrive, Google Drive). Electronic submissions must be transmitted directly to the OAQPS CBI Office at the email address oaqpscbi@epa.gov, and as described above, should be clearly identified as CBI and note Attention: Automobile and Light Duty Truck Surface Coating Operations Sector Lead. If assistance is needed with submitting large electronic files that exceed the file size limit for email attachments, and if you do not have your own file sharing service, you can email oaqpscbi@epa.gov to request a file transfer link.

(j) *Electronic submittal of reports.* The owner or operator shall submit the reports listed in paragraphs (b) through (e) of this section following the procedures specified in paragraphs (j)(1) through (3) of this section. In addition to the information required in paragraphs (b) through (h) of this section, owners or operators are required to report excess emissions and a monitoring systems performance report and a summary report to the Administrator according to § 60.7(c) and (d). Owners or operators are required by § 60.7(c) and (d) to report the date, time, cause, and duration of each exceedance of the applicable emission limit specified in § 60.392a(a), any malfunction of the air pollution control equipment, and any periods during which the CMS or monitoring device is inoperative, malfunctioning, or out-of-control. For each failure, the report must include a list of the affected sources or equipment and a description of the method used to estimate the emissions.

(1) *Effective date.* On and after November 6, 2023, or once the reporting template has been available on the CEDRI website for 1-year, whichever date is later, owners or operators must use the appropriate spreadsheet template on the CEDRI website (<https://www.epa.gov/electronic-reporting-air-emissions/cedri>) for this subpart. The date the reporting template for this subpart becomes available will be listed on the CEDRI website. The report must be submitted by the deadline specified in this subpart, regardless of the method by which the report is submitted. Submit all reports to the EPA via CEDRI, which can be accessed through the EPA's CDX (<https://cdx.epa.gov/>). The EPA will make all the information submitted through CEDRI available to the public without further notice to the owner or operator. Do not use CEDRI to submit information you claim as CBI.

Any information submitted using CEDRI cannot later be claimed CBI. If you claim CBI, submit the report following the procedure described in paragraph (i)(3) of this section. The same file with the CBI omitted must be submitted to CEDRI as described in this paragraph.

(2) *System outage.* Owner or operators that are required to submit a report electronically through CEDRI in the EPA's CDX, may assert a claim of EPA system outage for failure to timely comply with that reporting requirement. To assert a claim of EPA system outage, owners or operators must meet the requirements outlined in paragraphs (e)(2)(i) through (vii) of this section.

(i) You must have been or will be precluded from accessing CEDRI and submitting a required report within the time prescribed due to an outage of either the EPA's CEDRI or CDX systems.

(ii) The outage must have occurred within the period of time beginning five business days prior to the date that the submission is due.

(iii) The outage may be planned or unplanned.

(iv) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(v) You must provide to the Administrator a written description identifying:

(A) The date(s) and time(s) when CDX or CEDRI was accessed, and the system was unavailable;

(B) A rationale for attributing the delay in reporting beyond the regulatory deadline to EPA system outage;

(C) A description of measures taken or to be taken to minimize the delay in reporting; and

(D) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(vi) The decision to accept the claim of EPA system outage and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(vii) In any circumstance, the report must be submitted electronically as soon as possible after the outage is resolved.

(3) *Force majeure.* Owner or operators that are required to submit a report electronically through CEDRI in the EPA's CDX, may assert a claim of force majeure for failure to timely comply with that reporting requirement. To assert a claim of force majeure, you must meet the requirements outlined in paragraphs (j)(3)(i) through (iv) of this section.

(i) You may submit a claim if a force majeure event is about to occur, occurs, or has occurred or there are lingering effects from such an event within the period of time beginning five business days prior to the date the submission is due. For the purposes of this section, a force majeure event is defined as an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents you from complying with the requirement to submit a report electronically within the time period prescribed. Examples of such events are acts of nature (e.g., hurricanes, earthquakes, or floods), acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility (e.g., large scale power outage).

(ii) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(iii) You must provide to the Administrator:

(A) A written description of the force majeure event;

(B) A rationale for attributing the delay in reporting beyond the regulatory deadline to the force majeure event;

(C) A description of measures taken or to be taken to minimize the delay in reporting; and

(D) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(iv) The decision to accept the claim of force majeure and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(k) *Recordkeeping.* You must collect and keep records of the data and information specified in paragraphs (k)(1) through (12) of this section. Failure to collect and keep these records is a deviation from the applicable standard.

(1) A copy of each notification and report that you submitted to comply with this subpart, and the documentation supporting each notification and report.

(2) A current copy of information provided by materials suppliers or manufacturers, such as manufacturer's formulation data, or test data used to determine the mass fraction of VOC, the density and the volume fraction of coating solids for each coating, and the mass fraction of VOC and the density for each thinner. If you conducted testing to determine mass fraction of VOC,

density, or volume fraction of coating solids, you must keep a copy of the complete test report. If you use information provided to you by the manufacturer or supplier of the material that was based on testing, you must keep the summary sheet of results provided to you by the manufacturer or supplier. If you use the results of an analysis conducted by an outside testing lab, you must keep a copy of the test report. You are not required to obtain the test report or other supporting documentation from the manufacturer or supplier.

(3) For each month, the records specified in paragraphs (k)(3)(i) through (iii) of this section.

(i) For each coating used for the affected source, a record of the volume used in each month, the mass fraction VOC content, the density, and the volume fraction of solids.

(ii) For each thinner used in coating operations for the affected source, a record of the volume used in each month, the mass fraction VOC content, and the density.

(iii) A record of the calculation of the VOC emission rate for the affected source for each month. This record must include all raw data, algorithms, and intermediate calculations. If the guidelines presented in the "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat" EPA-453/R-08-002 (incorporated by reference, see § 60.17), are used, you must keep records of all data input to this protocol. If these data are maintained as electronic files, the electronic files, as well as any paper copies must be maintained. These data must be provided to the permitting authority on request on paper, and in (if calculations are done electronically) electronic form.

(4) For each deviation from an emission limitation, operating limit, or work practice plan reported under paragraph (h) of this section, a record of the information specified in paragraphs (4)(i) through (iv) of this section, as applicable.

(i) The date, time, and duration of the deviation, and for each deviation, the information as reported under paragraph (h) of this section.

(ii) A list of the affected sources or equipment for which the deviation occurred and the cause of the deviation, as reported under paragraph (h) of this section.

(iii) An estimate of the quantity of VOC emitted over any applicable emission limit in § 60.392a or any applicable operating limit in Table 1 to

this subpart, and a description of the method used to calculate the estimate, as reported under paragraph (h) of this section.

(iv) A record of actions taken to minimize emissions in accordance with § 60.11(d) and any corrective actions taken to return the affected unit to its normal or usual manner of operation.

(5) The records required by § 60.7(b) and (c) related to SSM.

(6) For each capture system that is a PTE, the data and documentation you used to support a determination that the capture system meets the criteria in Method 204 of appendix M to 40 CFR part 51 for a PTE and has a capture efficiency of 100 percent, as specified in § 60.397a(a).

(7) For each capture system that is not a PTE, the data and documentation you used to determine capture efficiency according to the requirements specified in § 60.397a(b) through (g), including the records specified in paragraphs (k)(7)(i) through (iv) of this section that apply to you.

(i) Records for a liquid-to-uncaptured-gas protocol using a temporary total enclosure or building enclosure. Records of the mass of total VOC, as measured by Method 204A or F of appendix M to 40 CFR part 51, for each material used in the coating operation, and the total VOC for all materials used during each capture efficiency test run, including a copy of the test report. Records of the mass of VOC emissions not captured by the capture system that exited the temporary total enclosure or building enclosure during each capture efficiency test run, as measured by Method 204D or E of appendix M to 40 CFR part 51, including a copy of the test report. Records documenting that the enclosure used for the capture efficiency test met the criteria in Method 204 of appendix M to 40 CFR part 51 for either a temporary total enclosure or a building enclosure.

(ii) Records for a gas-to-gas protocol using a temporary total enclosure or a building enclosure. Records of the mass of VOC emissions captured by the emission capture system, as measured by Method 204B or C of appendix M to 40 CFR part 51, at the inlet to the add-on control device, including a copy of the test report. Records of the mass of VOC emissions not captured by the capture system that exited the temporary total enclosure or building enclosure during each capture efficiency test run, as measured by Method 204D or E of appendix M to 40 CFR part 51, including a copy of the test report. Records documenting that the enclosure used for the capture efficiency test met the criteria in Method 204 of appendix

M to 40 CFR part 51 for either a temporary total enclosure or a building enclosure.

(iii) Records for panel tests. Records needed to document a capture efficiency determination using a panel test as described in § 60.397a(e) and (g), including a copy of the test report and calculations performed to convert the panel test results to percent capture efficiency values.

(iv) Records for an alternative protocol. Records needed to document a capture efficiency determination using an alternative method or protocol, as specified in § 60.397a(f), if applicable.

(8) The records specified in paragraphs (k)(8)(i) and (ii) of this section for each add-on control device VOC destruction or removal efficiency determination as specified in § 60.393a.

(i) Records of each add-on control device performance test conducted according to § 60.393a.

(ii) Records of the coating operation conditions during the add-on control device performance test showing that the performance test was conducted under representative operating conditions.

(9) Records of the data and calculations you used to establish the emission capture and add-on control device operating limits as specified in § 60.394a and to document compliance with the operating limits as specified in table 1 to this subpart.

(10) Records of the data and calculations you used to determine the transfer efficiency for guide coat and topcoat coating operations pursuant to § 60.393a(h).

(11) A record of the work practice plans required by § 60.392a(b) and (c) and documentation that you are implementing the plans on a continuous basis. Appropriate documentation may include operational and maintenance records, records of documented inspections, and records of internal audits.

(12) For each add-on control device and for each CMS, a copy of the equipment operating instructions must be maintained on-site for the life of the equipment in a location readily available to plant operators and inspectors. You may prepare your own equipment operating instructions, or they may be provided to you by the equipment supplier or other third party.

(l) *Record form and retention time.* (1) Any records required to be maintained by this subpart that are submitted electronically via the EPA's CEDRI may be maintained in electronic format. This ability to maintain electronic copies does not affect the requirement for facilities to make records, data, and

reports available upon request to a delegated air agency or the EPA as part of an on-site compliance evaluation.

(2) Except as provided in paragraph (k)(12) of this section, you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(3) Except as provided in paragraph (k)(12) of this section, you must keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. You may keep the records off site for the remaining 3 years.

§ 60.396a Add-on control device destruction efficiency.

You must use the procedures and test methods in this section to determine the add-on control device emission destruction or removal efficiency as part of the performance test required by § 60.393a(j)(4), except as provided in § 60.8. You must conduct three test runs as specified in §§ 60.8(f) and 60.394a, and each test run must last at least 1 hour.

(a) For all types of add-on control devices, use the test methods specified in paragraphs (a)(1) through (5) of this section.

(1) Use EPA Method 1 or 1A of appendix A-1 to 40 CFR part 60, as appropriate, to select sampling sites and velocity traverse points.

(2) Use EPA Method 2, 2A, 2C, 2D, or 2F of appendix A-1, or 2G of appendix A-2 to 40 CFR part 60, as appropriate, to measure gas volumetric flow rate.

(3) Use EPA Method 3, 3A, or 3B of appendix A-2 to 40 CFR part 60, as appropriate, for gas analysis to determine dry molecular weight. The ASME/ANSI PTC 19.10-1981 (incorporated by reference, *see* § 60.17), may be used as an alternative to EPA Method 3B.

(4) Use EPA Method 4 of appendix A-3 to 40 CFR part 60 to determine stack gas moisture.

(5) Methods for determining gas volumetric flow rate, dry molecular weight, and stack gas moisture must be performed, as applicable, during each test run.

(b) Measure total gaseous organic mass emissions as carbon in the effluent gas leaving each stack not equipped with a control device and at the inlet and outlet of the add-on control device simultaneously, using either EPA Method 25 or 25A of appendix A-7 to 40 CFR part 60, as specified in paragraphs (b)(1) through (4) of this section. You must use the same method

for both the inlet and outlet measurements.

(1) Use Method 25 if the add-on control device is an oxidizer and you expect the total gaseous organic concentration as carbon to be more than 50 parts per million by volume (ppmv) at the control device outlet.

(2) Use Method 25A if the add-on control device is an oxidizer and you expect the total gaseous organic concentration as carbon to be 50 ppmv or less at the control device outlet.

(3) Use Method 25A if the add-control device is not an oxidizer.

(4) You may use EPA Method 18 of appendix A-6 to 40 CFR part 60 to subtract methane emissions from measured total gaseous organic mass emissions as carbon.

(5) For Method 25 and 25A, the sampling time for each of three runs

must be at least one hour. The minimum sample volume must be 0.003 dscm except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Administrator. The Administrator will approve the sampling of representative stacks on a case-by-case basis if you can demonstrate to the satisfaction of the Administrator that the testing of representative stacks would yield results comparable to those that would be obtained by testing all stacks.

(c) If two or more add-on control devices are used for the same emission stream, then you must measure emissions at the outlet of each device. For example, if one add-on control device is a concentrator with an outlet for the high-volume, dilute stream that

has been treated by the concentrator, and a second add-on control device is an oxidizer with an outlet for the low-volume, concentrated stream that is treated with the oxidizer, you must measure emissions at the outlet of the oxidizer and the high-volume dilute stream outlet of the concentrator.

(d) For each test run, determine the total gaseous organic emissions mass flow rates (M_f) for the inlet and the outlet of the add-on control device, using Equation 1 of this section. If there is more than one inlet or outlet to the add-on control device, you must calculate the total gaseous organic mass flow rate using Equation 1 of this section for each inlet and each outlet and then total all of the inlet emissions and total all of the outlet emissions.

$$M_f = Q_{sd} C_c (12)(0.0416)(10^{-6}) \quad (\text{Eq. 1})$$

Where:

M_f = Total gaseous organic emissions mass flow rate, kg per hour (kg/h).

C_c = Concentration of organic compounds as carbon in the vent gas, as determined by Method 25 or Method 25A, ppmv, dry basis.

Q_{sd} = Volumetric flow rate of gases entering or exiting the add-on control device, as determined by Method 2, 2A, 2C, 2D, 2F, or 2G, dry standard cubic meters per hour (dscm/h). 0.0416 = Conversion factor for molar volume, kg-moles per cubic meter (mol/m^3) (@293 Kelvin (K)

and 760 millimeters of mercury (mmHg)).

(e) For each test run, determine the add-on control device organic emissions destruction or removal efficiency using Equation 2 of this section:

$$DRE = \frac{M_{fi} - M_{fo}}{M_{fi}} (100) \quad (\text{Eq. 2})$$

Where:

DRE = Organic emissions destruction or removal efficiency of the add-on control device, percent.

M_{fi} = Total gaseous organic emissions mass flow rate at the inlet(s) to the add-on control device, using Equation 1 of this section, kg/h.

M_{fo} = Total gaseous organic emissions mass flow rate at the outlet(s) of the add-on control device, using Equation 1 of this section, kg/h.

(f) Determine the emission destruction or removal efficiency of the add-on control device as the average of the efficiencies determined in the three test runs and calculated in Equation 2 of this section.

§ 60.397a Emission capture system efficiency.

You must use the procedures and test methods in this section to determine capture efficiency as part of the performance test required by § 60.393a. For purposes of this subpart, a spray booth air seal is not considered a natural

draft opening in a PTE or a temporary total enclosure provided you demonstrate that the direction of air movement across the interface between the spray booth air seal and the spray booth is into the spray booth. For purposes of this subpart, a bake oven air seal is not considered a natural draft opening in a PTE or a temporary total enclosure provided you demonstrate that the direction of air movement across the interface between the bake oven air seal and the bake oven is into the bake oven. You may use lightweight strips of fabric or paper, or smoke tubes to make such demonstrations as part of showing that your capture system is a PTE or conducting a capture efficiency test using a temporary total enclosure. You cannot count air flowing from a spray booth air seal into a spray booth as air flowing through a natural draft opening into a PTE or into a temporary total enclosure unless you elect to treat that spray booth air seal as a natural draft opening. You cannot count air

flowing from a bake oven air seal into a bake oven as air flowing through a natural draft opening into a PTE or into a temporary total enclosure unless you elect to treat that bake oven air seal as a natural draft opening.

(a) *Assuming 100 percent capture efficiency.* You may assume the capture system efficiency is 100 percent if both of the conditions in paragraphs (a)(1) and (2) of this section are met:

(1) The capture system meets the criteria in Method 204 of appendix M to 40 CFR part 51 for a PTE and directs all the exhaust gases from the enclosure to an add-on control device.

(2) All coatings and thinners used in the coating operation are applied within the capture system, and coating solvent flash-off and coating curing and drying occurs within the capture system. For example, this criterion is not met if parts enter the open shop environment when being moved between a spray booth and a curing oven.

(b) *Measuring capture efficiency.* If the capture system does not meet both of the criteria in paragraphs (a)(1) and (2) of this section, then you must use one of the five procedures described in paragraphs (c) through (g) of this section to measure capture efficiency. For the protocols in paragraphs (c) and (d) of this section, the capture efficiency measurement must consist of three test runs. Each test run must be at least 3 hours duration or the length of a production run, whichever is longer, up to 8 hours. For the purposes of this test, a production run means the time required for a single part to go from the beginning to the end of production, which includes surface preparation activities and drying or curing time.

(c) *Liquid-to-uncaptured-gas protocol using a temporary total enclosure or*

building enclosure. The liquid-to-uncaptured-gas protocol compares the mass of liquid VOC in materials used in the coating operation to the mass of VOC emissions not captured by the emission capture system. Use a temporary total enclosure or a building enclosure and the procedures in paragraphs (c)(1) through (6) of this section to measure emission capture system efficiency using the liquid-to-uncaptured-gas protocol.

(1) Either use a building enclosure or construct an enclosure around the coating operation where coatings and thinners are applied, and all areas where emissions from these applied coatings and thinners subsequently occur, such as flash-off, curing, and drying areas. The areas of the coating operation where capture devices collect

emissions for routing to an add-on control device, such as the entrance and exit areas of an oven or spray booth, must also be inside the enclosure. The enclosure must meet the applicable definition of a temporary total enclosure or building enclosure in Method 204 of appendix M to 40 CFR part 51.

(2) Use Method 204A or F of appendix M to 40 CFR part 51 to determine the mass fraction of VOC liquid input from each coating and thinner used in the coating operation during each capture efficiency test run.

(3) Use Equation 1 of this section to calculate the total mass of VOC liquid input (VOC_{used}) from all the coatings and thinners used in the coating operation during each capture efficiency test run.

$$VOC_{used} = \sum_{i=1}^n (VOC_i)(Vol_i)(D_i) \quad (\text{Eq. 1})$$

Where:

VOC_i = Mass fraction of VOC in coating or thinner, i , used in the coating operation during the capture efficiency test run, kg VOC per kg material.

Vol_i = Total volume of coating or thinner, i , used in the coating operation during the capture efficiency test run, liters.

D_i = Density of coating or thinner, i , kg material per liter material.

n = Number of different coatings and thinners used in the coating operation during the capture efficiency test run.

(4) Use Method 204D or E of appendix M to 40 CFR part 51 to measure the total mass, kg, of VOC emissions that are not captured by the emission capture system; they are measured as they exit the temporary total enclosure or building enclosure during each capture efficiency test run.

(i) Use Method 204D if the enclosure is a temporary total enclosure.

(ii) Use Method 204E if the enclosure is a building enclosure. During the

capture efficiency measurement, all organic compound emitting operations inside the building enclosure, other than the coating operation for which capture efficiency is being determined, must be shut down, but all fans and blowers must be operating normally.

(5) For each capture efficiency test run, determine the percent capture efficiency of the emission capture system using Equation 2 of this section:

$$CE = \frac{(VOC_{used} - VOC_{uncaptured})}{VOC_{used}} \times 100 \quad (\text{Eq. 2})$$

Where:

CE = Capture efficiency of the emission capture system vented to the add-on control device, percent.

VOC_{used} = Total mass of VOC liquid input used in the coating operation during the capture efficiency test run, kg.

$VOC_{uncaptured}$ = Total mass of VOC that is not captured by the emission capture system and that exits from the temporary total enclosure or building enclosure during the capture efficiency test run, kg.

(6) Determine the capture efficiency of the emission capture system as the average of the capture efficiencies measured in the three test runs.

(d) *Gas-to-gas protocol using a temporary total enclosure or a building enclosure.* The gas-to-gas protocol compares the mass of VOC emissions captured by the emission capture system to the mass of VOC emissions

not captured. Use a temporary total enclosure or a building enclosure and the procedures in paragraphs (d)(1) through (5) of this section to measure emission capture system efficiency using the gas-to-gas protocol.

(1) Either use a building enclosure or construct an enclosure around the coating operation where coatings and thinners are applied, and all areas where emissions from these applied coatings and thinners subsequently occur, such as flash-off, curing, and drying areas. The areas of the coating operation where capture devices collect emissions generated by the coating operation for routing to an add-on control device, such as the entrance and exit areas of an oven or a spray booth, must also be inside the enclosure. The enclosure must meet the applicable

definition of a temporary total enclosure or building enclosure in Method 204 of appendix M to 40 CFR part 51.

(2) Use Method 204B or C of appendix M to 40 CFR part 51 to measure the total mass, kg, of VOC emissions captured by the emission capture system during each capture efficiency test run as measured at the inlet to the add-on control device.

(i) The sampling points for the Method 204B or C measurement must be upstream from the add-on control device and must represent total emissions routed from the capture system and entering the add-on control device.

(ii) If multiple emission streams from the capture system enter the add-on control device without a single common duct, then the emissions entering the

add-on control device must be simultaneously or sequentially measured in each duct, and the total emissions entering the add-on control device must be determined.

(3) Use Method 204D or E of appendix M to 40 CFR part 51 to measure the total mass, kg, of VOC emissions that are not captured by the emission capture system; they are measured as they exit

the temporary total enclosure or building enclosure during each capture efficiency test run. To make the measurement, substitute VOC for each occurrence of the term VOC in the methods.

(i) Use Method 204D if the enclosure is a temporary total enclosure.

(ii) Use Method 204E if the enclosure is a building enclosure. During the capture efficiency measurement, all

organic compound emitting operations inside the building enclosure, other than the coating operation for which capture efficiency is being determined, must be shut down, but all fans and blowers must be operating normally.

(4) For each capture efficiency test run, determine the percent capture efficiency of the emission capture system using Equation 3 of this section:

$$CE = \frac{VOC_{captured}}{(VOC_{captured} + VOC_{uncaptured})} \times 100 \quad (\text{Eq. 3})$$

Where:

CE = Capture efficiency of the emission capture system vented to the add-on control device, percent.

$VOC_{captured}$ = Total mass of VOC captured by the emission capture system as measured at the inlet to the add-on control device during the emission capture efficiency test run, kg.

$VOC_{uncaptured}$ = Total mass of VOC that is not captured by the emission capture system and that exits from the temporary total enclosure or building enclosure during the capture efficiency test run, kg.

(5) Determine the capture efficiency of the emission capture system as the average of the capture efficiencies measured in the three test runs.

(e) *Panel testing to determine the capture efficiency of flash-off or bake oven emissions.* You may conduct panel

testing to determine the capture efficiency of flash-off or bake oven emissions using ASTM Method D5087–02 (Reapproved 2021), “Standard Test Method for Determining Amount of Volatile Organic Compound (VOC) Released from Solventborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement)” (incorporated by reference, *see* § 60.17), ASTM Method D6266–00a (Reapproved 2017), “Test Method for Determining the Amount of Volatile Organic Compound (VOC) Released from Waterborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement)” (incorporated by reference, *see* § 60.17), or the guidelines presented in “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-

Duty Truck Primer-Surfacer and Topcoat” EPA–453/R–08–002 (incorporated by reference, *see* § 60.17). You may conduct panel testing on representative coatings as described in “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat” EPA–453/R–08–002 (incorporated by reference, *see* § 60.17).

(1) Calculate the volume of coating solids deposited per volume of coating used for coating, *i*, or the composite volume of coating solids deposited per volume of coating used for the group of coatings including coating, *i*, used during the month in the spray booth(s) preceding the flash-off area or bake oven for which the panel test is conducted using Equation 4 of this section:

$$V_{sdep,i} = (V_{s,i})(TE_{c,i}) \quad (\text{Eq. 4})$$

Where:

$V_{sdep,i}$ = Volume of coating solids deposited per volume of coating used for coating, *i*, or composite volume of coating solids deposited per volume of coating used for the group of coatings including coating, *i*, in the spray booth(s) preceding the flash-off area or bake oven for which the panel test is conducted, liter of coating solids deposited per liter of coating used.

$V_{s,i}$ = Volume fraction of coating solids for coating, *i*, or average volume fraction of coating solids for the group of coatings including coating, *i*, liter coating solids

per liter coating, determined according to § 60.393a(g).

$TE_{c,i}$ = Transfer efficiency of coating, *i*, or average transfer efficiency for the group of coatings including coating, *i*, in the spray booth(s) for the flash-off area or bake oven for which the panel test is conducted determined according to § 60.393a(h), expressed as a decimal, for example 60 percent must be expressed as 0.60. (Transfer efficiency also may be determined by testing representative coatings. The same coating groupings may be appropriate for both transfer

efficiency testing and panel testing. In this case, all of the coatings in a panel test grouping would have the same transfer efficiency.)

(2) Calculate the mass of VOC per volume of coating for coating, *i*, or the composite mass of VOC per volume of coating for the group of coatings including coating, *i*, used during the month in the spray booth(s) preceding the flash-off area or bake oven for which the panel test is conducted, kg, using Equation 5 of this section:

$$VOC_i = (D_{c,i})(WvOC_{c,i}) \quad (\text{Eq. 5})$$

Where:

VOC_i = Mass of VOC per volume of coating for coating, *i*, or composite mass of VOC per volume of coating for the group of

coatings including coating, *i*, used during the month in the spray booth(s) preceding the flash-off area or bake oven

for which the panel test is conducted, kg VOC per liter coating.

$D_{c,i}$ = Density of coating, *i*, or average density of the group of coatings, including

coating, i , kg coating per liter coating, density determined according to § 60.393a(f)(2).

$W_{voc,c,i}$ = Mass fraction of VOC in coating, i , or average mass fraction of VOC for the group of coatings, including coating, i , kg VOC per kg coating, determined by EPA Method 24 (appendix A-7 to 40 CFR part 60) or the guidelines for combining analytical VOC content and formulation solvent content presented in Section 9 of "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat, EPA-453/R-08-002" (incorporated by reference, see § 60.17).

(3) As an alternative, you may choose to express the results of your panel tests in units of mass of VOC per mass of

coating solids deposited and convert such results to a percent using Equation 7 of this section. If you panel test representative coatings, then you may convert the panel test result for each representative coating either to a unique percent capture efficiency for each coating grouped with that representative coating by using coating specific values for the mass of coating solids deposited per mass of coating used, mass fraction VOC, transfer efficiency, and mass fraction solids in Equations 7 and 8 of this section; or to a composite percent capture efficiency for the group of coatings by using composite values for the mass of coating solids deposited per mass of coating used and average values for the

mass of VOC per volume of coating, average values for the group of coatings for mass fraction VOC, transfer efficiency, and mass fraction solids in Equations 7 and 8 of this section. If you panel test each coating, then you must convert the panel test result for each coating to a unique percent capture efficiency for that coating by using coating specific values for the mass of coating solids deposited per mass of coating used, mass fraction VOC, transfer efficiency, and mass fraction solids in Equations 7 and 8 of this section. Panel test results expressed in units of mass of VOC per mass of coating solids deposited must be converted to percent capture efficiency using Equation 6 of this section:

$$CE_i = (P_{m,i})(W_{sdep,i})(100)/(W_{voc,c,i}) \quad (\text{Eq.6})$$

Where:

CE_i = Capture efficiency for coating, i , or for the group of coatings including coating, i , for the flash-off area or bake oven for which the panel test is conducted, percent.

$P_{m,i}$ = Panel test result for coating, i , or for the coating representing coating, i , in the panel test, kg of VOC per kg of coating solids deposited.

$W_{sdep,i}$ = Mass of coating solids deposited per mass of coating used for coating, i , or composite mass of coating solids deposited per mass of coating used for the group of coatings, including coating,

i , in the spray booth(s) preceding the flash-off area or bake oven for which the panel test is conducted, kg of solids deposited per kg of coating used, from Equation 8 of this section.

$W_{voc,c,i}$ = Mass fraction of VOC in coating, i , or average mass fraction of VOC for the group of coatings, including coating, i , kg VOC per kg coating, determined by EPA Method 24 (appendix A-7 to 40 CFR part 60) or the guidelines for combining analytical VOC content and formulation solvent content presented in Section 9 of "Protocol for Determining the Daily Volatile Organic Compound Emission

Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat, EPA-453/R-08-002" (incorporated by reference, see § 60.17).

(4) Calculate the mass of coating solids deposited per mass of coating used for each coating or the composite mass of coating solids deposited per mass of coating used for each group of coatings used during the month in the spray booth(s) preceding the flash-off area or bake oven for which the panel test is conducted using Equation 7 of this section:

$$W_{sdep,i} = (W_{s,i})(TE_{c,i}) \quad (\text{Eq. 7})$$

Where:

$W_{sdep,i}$ = Mass of coating solids deposited per mass of coating used for coating, i , or composite mass of coating solids deposited per mass of coating used for the group of coatings including coating, i , in the spray booth(s) preceding the flash-off area or bake oven for which the panel test is conducted, kg coating solids deposited per kg coating used.

$W_{s,i}$ = Mass fraction of coating solids for coating, i , or average mass fraction of coating solids for the group of coatings including coating, i , kg coating solids per kg coating, determined by EPA Method 24 (appendix A-7 to 40 CFR part 60) or the guidelines for combining analytical VOC content and formulation solvent content presented in "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile

and Light-Duty Truck Primer-Surfacer and Topcoat, EPA-453/R-08-002" (incorporated by reference, see § 60.17).

$TE_{c,i}$ = Transfer efficiency of coating, i , or average transfer efficiency for the group of coatings including coating, i , in the spray booth(s) for the flash-off area or bake oven for which the panel test is conducted determined according to § 60.393a(h), expressed as a decimal, for example 60 percent must be expressed as 0.60. (Transfer efficiency also may be determined by testing representative coatings. The same coating groupings may be appropriate used for both transfer efficiency testing and panel testing. In this case, all of the coatings in a panel test grouping would have the same transfer efficiency.)

(f) *Alternative capture efficiency procedure.* As an alternative to the procedures specified in paragraphs (c) through (e) and (g) of this section, you may determine capture efficiency using any other capture efficiency protocol and test methods that satisfy the criteria of either the Data Quality Objective (DQO) or Lower Confidence Limit (LCL) approach as described in appendix A to subpart KK of 40 CFR part 63.

(g) *Panel testing to determine the capture efficiency of spray booth emissions from solvent-borne coatings.* You may conduct panel testing to determine the capture efficiency of spray booth emissions from solvent-borne coatings using the procedure in appendix A to this subpart.

TABLE 1 TO SUBPART MMa OF PART 60—OPERATING LIMITS FOR CAPTURE SYSTEMS AND ADD-ON CONTROL DEVICES
 [If you are required to comply with operating limits by § 60.392a(g), you must comply with the applicable operating limits in the following table.]

For the following device . . .	You must meet the following operating limit . . .	And you must demonstrate continuous compliance with the operating limit by . . .
1. Thermal oxidizer	a. The average combustion temperature in any 3-hour period must not fall below the combustion temperature limit established according to § 60.394a(a).	i. Collecting the combustion temperature data according to § 60.394a(i); ii. Reducing the data to 3-hour block averages; and iii. Maintaining the 3-hour average combustion temperature at or above the temperature limit.
2. Catalytic oxidizer	a. The average temperature measured just before the catalyst bed in any 3-hour period must not fall below the limit established according to § 60.394a(b); and either b. Ensure that the average temperature difference across the catalyst bed in any 3-hour period does not fall below the temperature difference limit established according to § 60.394a(b)(2); or c. Develop and implement an inspection and maintenance plan according to § 60.394a(b)(4).	i. Collecting the temperature data according to § 60.394a(i); ii. Reducing the data to 3-hour block averages; and iii. Maintaining the 3-hour average temperature before the catalyst bed at or above the temperature limit. i. Collecting the temperature data according to § 60.394a(i); ii. Reducing the data to 3-hour block averages; and iii. Maintaining the 3-hour average temperature difference at or above the temperature difference limit; or i. Maintaining an up-to-date inspection and maintenance plan, records of annual catalyst activity checks, records of monthly inspections of the oxidizer system, and records of the annual internal inspections of the catalyst bed. If a problem is discovered during a monthly or annual inspection required by § 60.394a(b)(4), you must take corrective action as soon as practicable consistent with the manufacturer's recommendations.
3. Regenerative carbon adsorber	a. The total regeneration desorbing gas (e.g., steam or nitrogen) mass flow for each carbon bed regeneration cycle must not fall below the total regeneration desorbing gas mass flow limit established according to § 60.394a(c). b. The temperature of the carbon bed after completing each regeneration and any cooling cycle must not exceed the carbon bed temperature limit established according to § 60.394a(c).	i. Measuring the total regeneration desorbing gas (e.g., steam or nitrogen) mass flow for each regeneration cycle according to § 60.394a(j); and ii. Maintaining the total regeneration desorbing gas mass flow at or above the mass flow limit. i. Measuring the temperature of the carbon bed after completing each regeneration and any cooling cycle according to § 60.394a(j); and ii. Operating the carbon beds such that each carbon bed is not returned to service until completing each regeneration and any cooling cycle until the recorded temperature of the carbon bed is at or below the temperature limit.
4. Condenser	a. The average condenser outlet (product side) gas temperature in any 3-hour period must not exceed the temperature limit established according to § 60.394a(d).	i. Collecting the condenser outlet (product side) gas temperature according to § 60.394a(k); ii. Reducing the data to 3-hour block averages; and iii. Maintaining the 3-hour average gas temperature at the outlet at or below the temperature limit.
5. Concentrators, including zeolite wheels and rotary carbon adsorbers.	a. The average desorption gas inlet temperature in any 3-hour period must not fall below the limit established according to § 60.394a(e).	i. Collecting the temperature data according to § 60.394a(l); ii. Reducing the data to 3-hour block averages; and iii. Maintaining the 3-hour average temperature at or above the temperature limit.

TABLE 1 TO SUBPART MMA OF PART 60—OPERATING LIMITS FOR CAPTURE SYSTEMS AND ADD-ON CONTROL DEVICES—
Continued

[If you are required to comply with operating limits by § 60.392a(g), you must comply with the applicable operating limits in the following table.]

For the following device . . .	You must meet the following operating limit . . .	And you must demonstrate continuous compliance with the operating limit by . . .
6. Emission capture system that is a PTE	a. The direction of the air flow at all times must be into the enclosure; and either b. The average facial velocity of air through all natural draft openings in the enclosure must be at least 200 feet per minute; or c. The pressure drop across the enclosure must be at least 0.007 inch water, as established in Method 204 of appendix M to 40 CFR part 51.	i. Collecting the direction of air flow, and either the facial velocity of air through all natural draft openings according to § 60.394a(m)(1) or the pressure drop across the enclosure according to § 60.394a(m)(2); and ii. Maintaining the facial velocity of air flow through all natural draft openings or the pressure drop at or above the facial velocity limit or pressure drop limit, and maintaining the direction of air flow into the enclosure at all times.
7. Emission capture system that is not a PTE ...	a. The average gas volumetric flow rate or duct static pressure in each duct between a capture device and add-on control device inlet in any 3-hour period must not fall below the average volumetric flow rate or duct static pressure limit established for that capture device according to § 60.394a(f). This applies only to capture devices that are not part of a PTE that meets the criteria of § 60.397a(a) and that are not capturing emissions from a downdraft spray booth or from a flashoff area or bake oven associated with a downdraft spray booth.	i. Collecting the gas volumetric flow rate or duct static pressure for each capture device according to § 60.394a(m); ii. Reducing the data to 3-hour block averages; and iii. Maintaining the 3-hour average gas volumetric flow rate or duct static pressure for each capture device at or above the gas volumetric flow rate or duct static pressure limit.

Appendix A to Subpart MMA of Part 60—Determination of Capture Efficiency of Automobile and Light-Duty Truck Spray Booth Emissions From Solvent-Borne Coatings Using Panel Testing

1.0 Applicability, Principle, and Summary of Procedure.

1.1 Applicability.

This procedure applies to the determination of capture efficiency of automobile and light-duty truck spray booth emissions from solvent-borne coatings using panel testing. This procedure can be used to determine capture efficiency for partially controlled spray booths (e.g., automated spray zones controlled and manual spray zones not controlled) and for fully controlled spray booths.

1.2 Principle.

1.2.1 The volatile organic compounds (VOC) associated with the coating solids deposited on a part (or panel) in a controlled spray booth zone (or group of contiguous controlled spray booth zones) partition themselves between the VOC that volatilize in the controlled spray booth zone (principally between the spray gun and the part) and the VOC that remain on the part (or panel) when the part (or panel) leaves the controlled spray booth zone. For solvent-borne coatings essentially all of the VOC associated with the coating solids deposited on a part (or panel) in a controlled spray booth zone that volatilize in the controlled spray booth zone pass through the waterwash and are exhausted from the controlled spray booth zone to the control device.

1.2.2 The VOC associated with the overspray coating solids in a controlled spray

booth zone partition themselves between the VOC that volatilize in the controlled spray booth zone and the VOC that are still tied to the overspray coating solids when the overspray coating solids hit the waterwash. For solvent-borne coatings almost all of the VOC associated with the overspray coating solids that volatilize in the controlled spray booth zone pass through the waterwash and are exhausted from the controlled spray booth zone to the control device. The exact fate of the VOC still tied to the overspray coating solids when the overspray coating solids hit the waterwash is unknown. This procedure assumes that none of the VOC still tied to the overspray coating solids when the overspray coating solids hit the waterwash are captured and delivered to the control device. Much of this VOC may become entrained in the water along with the overspray coating solids. Most of the VOC that become entrained in the water along with the overspray coating solids leave the water, but the point at which this VOC leave the water is unknown. Some of the VOC still tied to the overspray coating solids when the overspray coating solids hit the waterwash may pass through the waterwash and be exhausted from the controlled spray booth zone to the control device.

1.2.3 This procedure assumes that the portion of the VOC associated with the overspray coating solids in a controlled spray booth zone that volatilizes in the controlled spray booth zone, passes through the waterwash and is exhausted from the controlled spray booth zone to the control device is equal to the portion of the VOC associated with the coating solids deposited on a part (or panel) in that controlled spray booth zone that volatilizes in the controlled

spray booth zone, passes through the waterwash, and is exhausted from the controlled spray booth zone to the control device. This assumption is equivalent to treating all of the coating solids sprayed in the controlled spray booth zone as if they are deposited coating solids (i.e., assuming 100 percent transfer efficiency) for purposes of using a panel test to determine spray booth capture efficiency.

1.2.4 This is a conservative (low) assumption for the portion of the VOC associated with the overspray coating solids in a controlled spray booth zone that volatilizes in the controlled spray booth zone. Thus, this assumption results in an underestimate of conservative capture efficiency. The overspray coating solids have more travel time and distance from the spray gun to the waterwash than the deposited coating solids have between the spray gun and the part (or panel). Therefore, the portion of the VOC associated with the overspray coating solids in a controlled spray booth zone that volatilizes in the controlled spray booth zone should be greater than the portion of the VOC associated with the coating solids deposited on a part (or panel) in that controlled spray booth zone that volatilizes in that controlled spray booth zone.

1.3 Summary of Procedure

1.3.1 A panel test is performed to determine the mass of VOC that remains on the panel when the panel leaves a controlled spray booth zone. The total mass of VOC associated with the coating solids deposited on the panel is calculated.

1.3.2 The percent of the total VOC associated with the coating solids deposited on the panel in the controlled spray booth

zone that remains on the panel when the panel leaves the controlled section of the spray booth is then calculated from the ratio of the two previously determined masses. The percent of the total VOC associated with the coating solids deposited on the panel in the controlled spray booth zone that is captured and delivered to the control device equals 100 minus this percentage. (The mass of VOC associated with the coating solids deposited on the panel which is volatilized and captured in the controlled spray booth zone equals the difference between the total mass of VOC associated with the coating solids deposited on the panel and the mass of VOC remaining with the coating solids deposited on the panel when the panel leaves the controlled spray booth zone.)

1.3.3 The percent of the total VOC associated with the coating sprayed in the controlled spray booth zone that is captured and delivered to the control device is assumed to be equal to the percent of the total VOC associated with the coating solids deposited on the panel in the controlled spray booth zone that is captured and delivered to the control device. The percent of the total VOC associated with the coating sprayed in the entire spray booth that is captured and delivered to the control device can be calculated by multiplying the percent of the total VOC associated with the coating sprayed in the controlled spray booth zone that is captured and delivered to the control device by the fraction of coating sprayed in the spray booth that is sprayed in the controlled spray booth zone.

2.0 Procedure

2.1 You may conduct panel testing to determine the capture efficiency of spray booth emissions. You must follow the instructions and calculations in this appendix A, and use the panel testing procedures in ASTM D5087–02 (Reapproved 2021), “Standard Test Method for Determining Amount of Volatile Organic Compound (VOC) Released from Solventborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement)” (incorporated by reference, *see* § 60.17), or the guidelines presented in “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat” EPA-453/R-08-002 (incorporated by reference, *see* § 60.17). You must weigh panels at the points described in section 2.5 of this appendix A and perform calculations as described in

sections 3 and 4 of this appendix A. You may conduct panel tests on the production paint line in your facility or in a laboratory simulation of the production paint line in your facility.

2.2 You may conduct panel testing on representative coatings as described in “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat” EPA-453/R-08-002 (incorporated by reference, *see* § 60.17). If you panel test representative coatings, then you may calculate either a unique percent capture efficiency value for each coating grouped with that representative coating, or a composite percent capture efficiency value for the group of coatings. If you panel test each coating, then you must convert the panel test result for each coating to a unique percent capture efficiency value for that coating.

2.3 Identification of Controlled Spray Booth Zones.

You must identify each controlled spray booth zone or each group of contiguous controlled spray booth zones to be tested. (For example, a controlled bell zone immediately followed by a controlled robotic zone.) Separate panel tests are required for non-contiguous controlled spray booth zones. The flash zone between the last basecoat zone and the first clearcoat zone makes these zones non-contiguous.

2.4 Where to Apply Coating to the Panel.

If you are conducting a panel test for a single controlled spray booth zone, then you must apply coating to the panel only in that controlled spray booth zone. If you are conducting a panel test for a group of contiguous controlled spray booth zones, then you must apply coating to the panel only in that group of contiguous controlled spray booth zones.

2.5 How to Process and When to Weigh the Panel.

The instructions in this section pertain to panel testing of coating, *i*, or of the coating representing the group of coatings that includes coating, *i*.

2.5.1 You must weigh the blank panel. (Same as in bake oven panel test.) The mass of the blank panel is represented by $W_{blank,i}$ (grams).

2.5.2 Apply coating, *i*, or the coating representing coating, *i*, to the panel in the controlled spray booth zone or group of contiguous controlled spray booth zones being tested (in plant test), or in a simulation

of the controlled spray booth zone or group of contiguous controlled spray booth zones being tested (laboratory test).

2.5.3 Remove and weigh the wet panel as soon as the wet panel leaves the controlled spray booth zone or group of contiguous controlled spray booth zones being tested. (Different than bake oven panel test.) This weighing must be conducted quickly to avoid further evaporation of VOC. The mass of the wet panel is represented by $W_{wet,i}$ (grams).

2.5.4 Return the wet panel to the point in the coating process or simulation of the coating process where it was removed for weighing.

2.5.5 Allow the panel to travel through the rest of the coating process in the plant or laboratory simulation of the coating process. You must not apply any more coating to the panel after it leaves the controlled spray booth zone (or group of contiguous controlled spray booth zones) being tested. The rest of the coating process or simulation of the coating process consists of:

2.5.5.1 All of the spray booth zone(s) or simulation of all of the spray booth zone(s) located after the controlled spray booth zone or group of contiguous controlled spray booth zones being tested and before the bake oven where the coating applied to the panel is cured,

2.5.5.2 All of the flash-off area(s) or simulation of all of the flash-off area(s) located after the controlled spray booth zone or group of contiguous controlled spray booth zones being tested and before the bake oven where the coating applied to the panel is cured, and

2.5.5.3 The bake oven or simulation of the bake oven where the coating applied to the panel is cured.

2.5.6 After the panel exits the bake oven, you must cool and weigh the baked panel. (Same as in bake oven panel test.) The mass of the baked panel is represented by $W_{baked,i}$ (grams).

3.0 Panel Calculations

The instructions in this section pertain to panel testing of coating, *i*, or of the coating representing the group of coatings that includes coating, *i*.

3.1 The mass of coating solids (from coating, *i*, or from the coating representing coating, *i*, in the panel test) deposited on the panel equals the mass of the baked panel minus the mass of the blank panel as shown in Equation A–1.

$$W_{sdep,i} = W_{baked,i} - W_{blank,i} \text{ (Eq. A-1)}$$

Where:

$W_{sdep,i}$ = Mass of coating solids (from coating, *i*, or from the coating representing coating, *i*, in the panel test) deposited on the panel, grams.

3.2 The mass of VOC (from coating, *i*, or from the coating representing coating, *i*, in the panel test) remaining on the wet panel when the wet panel leaves the controlled spray booth zone or group of contiguous controlled spray booth zones being tested

equals the mass of the wet panel when the wet panel leaves the controlled spray booth zone or group of contiguous controlled spray booth zones being tested minus the mass of the baked panel as shown in Equation A–2.

$$W_{rem,i} = W_{wet,i} - W_{baked,i} \text{ (Eq. A-2)}$$

Where:

$W_{rem,i}$ = Mass of VOC (from coating, i, or from the coating representing coating, i, in the panel test) remaining on the wet panel when the wet panel leaves the controlled spray booth zone or group of

contiguous controlled spray booth zones being tested, grams.

3.3 Calculate the mass of VOC (from coating, i, or from the coating representing coating, i, in the panel test) remaining on the wet panel when the wet panel leaves the

controlled spray booth zone or group of contiguous controlled spray booth zones being tested per mass of coating solids deposited on the panel as shown in Equation A-3.

$$P_{m,i} = (W_{rem,i}) / (W_{sdep,i}) \text{ (Eq. A-3)}$$

Where:

$P_{m,i}$ = Mass of VOC (from coating, i, or from the coating representing coating, i, in the panel test) remaining on the wet panel when the wet panel leaves the controlled spray booth zone or group of contiguous controlled spray booth zones being tested per mass of coating solids deposited on the panel, grams of VOC remaining per gram of coating solids deposited.

$W_{rem,i}$ = Mass of VOC (from coating, i, or from the coating representing coating, i, in the panel test) remaining on the wet panel when the wet panel leaves the controlled spray booth zone or group of contiguous controlled spray booth zones being tested, grams.

$W_{sdep,i}$ = Mass of coating solids (from coating, i, or from the coating representing coating, i, in the panel test) deposited on the panel, grams.

4.0 Converting Panel Result to Percent Capture

The instructions in this section pertain to panel testing of for coating, i, or of the coating representing the group of coatings that includes coating, i.

4.1 If you panel test representative coatings, then you may convert the panel test result for each representative coating from section 3.3 of this appendix A either to a unique percent capture efficiency value for each coating grouped with that representative coating by using coating specific values for the mass fraction coating solids and mass fraction VOC in section 4.2 of this appendix A, or to a composite percent capture efficiency value for the group of coatings by using the average values for the group of coatings for mass fraction coating solids and mass fraction VOC in section 4.2 of this appendix A. If you panel test each coating, then you must convert the panel test result for each coating to a unique percent capture efficiency value by using coating specific

values for the mass fraction coating solids and mass fraction VOC in section 4.2 of this appendix A. The mass fraction of VOC in the coating and the mass fraction of solids in the coating must be determined by Method 24 (appendix A-7 to 40 CFR part 60) or by following the guidelines for combining analytical VOC content and formulation solvent content presented in "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat" EPA-453/R-08-002 (incorporated by reference, see § 60.17).⁵

4.2 The percent of VOC for coating, i, or composite percent of VOC for the group of coatings including coating, i, associated with the coating solids deposited on the panel that remains on the wet panel when the wet panel leaves the controlled spray booth zone or group of contiguous controlled spray booth zones being tested is calculated using Equation A-4.

$$P_{vocpan,i} = (P_{m,i})(W_{s,i})(100) / (W_{vocc,i}) \text{ (Eq. A-4)}$$

Where:

$P_{vocpan,i}$ = Percent of VOC for coating, i, or composite percent of VOC for the group of coatings including coating, i, associated with the coating solids deposited on the panel that remains on the wet panel when the wet panel leaves the controlled spray booth zone (or group of contiguous controlled spray booth zones) being tested, percent.

$P_{m,i}$ = Mass of VOC (from coating, i, or from the coating representing coating, i, in the panel test) remaining on the wet panel when the wet panel leaves the controlled spray booth zone or group of contiguous controlled spray booth zones being tested per mass of coating solids deposited on the panel, grams of VOC remaining per gram of coating solids deposited.

$W_{s,i}$ = Mass fraction of coating solids for coating, i, or average mass fraction of coating solids for the group of coatings including coating, i, grams coating solids per gram coating, determined by EPA Method 24 (appendix A-7 to 40 CFR part 60) or by following the guidelines for combining analytical VOC content and formulation solvent content presented in "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat, EPA-453/R-08-002" (incorporated by reference, see § 60.17).

$W_{vocc,i}$ = Mass fraction of VOC in coating, i, or average mass fraction of VOC for the group of coatings including coating, i, grams VOC per grams coating, determined by EPA Method 24

(appendix A-7 to 40 CFR part 60) or the guidelines for combining analytical VOC content and formulation solvent content presented in "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations," EPA-453/R-08-002 (incorporated by reference, see § 60.17).

4.3 The percent of VOC for coating, i, or composite percent of VOC for the group of coatings including coating, i, associated with the coating sprayed in the controlled spray booth zone (or group of contiguous controlled spray booth zones) being tested that is captured in the controlled spray booth zone or group of contiguous controlled spray booth zones being tested, $CE_{zone,i}$ (percent), is calculated using Equation A-5.

$$CE_{zone,i} = 100 - P_{vocpan,i} \text{ (Eq. A-5)}$$

Where:

$CE_{zone,i}$ = Capture efficiency for coating, i, or for the group of coatings including

coating, i, in the controlled spray booth zone or group of contiguous controlled

spray booth zones being tested as a percentage of the VOC in the coating, i, or of the group of coatings including coating, i, sprayed in the controlled spray booth zone or group of contiguous controlled spray booth zones being tested, percent.

4.4 Calculate the percent of VOC for coating, i, or composite percent of VOC for

the group of coatings including coating, i, associated with the entire volume of coating, i, or with the total volume of all of the coatings grouped with coating, i, sprayed in the entire spray booth that is captured in the controlled spray booth zone or group of contiguous controlled spray booth zones being tested, using Equation A-6. The volume of coating, i, or of the group of

coatings including coating, i, sprayed in the controlled spray booth zone or group of contiguous controlled spray booth zones being tested, and the volume of coating, i, or of the group of coatings including coating, i, sprayed in the entire spray booth may be determined from gun on times and fluid flow rates or from direct measurements of coating usage.

$$CE_i = (CE_{zone,i})(V_{zone,i})/(V_{booth,i}) \quad (\text{Eq. A-6})$$

Where:

CE_i = Capture efficiency for coating, i, or for the group of coatings including coating, i, in the controlled spray booth zone (or group of contiguous controlled spray booth zones) being tested as a percentage of the VOC in the coating, i, or of the group of coatings including coating, i, sprayed in the entire spray booth in which the controlled spray booth zone (or group of contiguous controlled spray booth zones) being tested, percent.

$V_{zone, i}$ = Volume of coating, i, or of the group of coatings including coating, i, sprayed

in the controlled spray booth zone or group of contiguous controlled spray booth zones being tested, liters.

$V_{booth, i}$ = Volume of coating, i, or of the group of coatings including coating, i, sprayed in the entire spray booth containing the controlled spray booth zone (or group of contiguous controlled spray booth zones) being tested, liters.

4.5 If you conduct multiple panel tests for the same coating or same group of coatings in the same spray booth (either because the coating or group of coatings is controlled in non-contiguous zones of the spray booth, or

because you choose to conduct separate panel tests for contiguous controlled spray booth zones), then you may add the result from section 4.4 for each such panel test to get the total capture efficiency for the coating or group of coatings over all of the controlled zones in the spray booth for the coating or group of coatings.

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