Composites MACT Guidance

April 21, 2003

Note: This Guidance is intended to serve as a short introduction to the MACT standard for composites production. Owners and managers of composites manufacturing companies are strongly encouraged to read and understand the official EPA NESHAP (MACT standard) codified at 40 CFR Part 63 Subpart WWWW. More information and the rule itself are available from www.acmanet.org/ga/mact.cfm and www.epa.gov/ttn/atw/rpc/rpcpg.html.

A. Introduction

On April 21, 2003, EPA published new control standards for air emissions from composites manufacturing plants in the Federal Register. These "maximum achievable control technology", or MACT, standards apply to all composites fabrication plants with styrene emissions exceeding ten tons per year. Plants in existence in August 2001 will have three years to comply. Plants constructed since then must comply immediately.

The standards for existing plants and most new plants will require use of low-emitting resins and work practices to reduce emissions. Some new plants with emissions over 100 tons per year will have to use add-on control system.

A more detailed discussion follows.

B. What is MACT?

When Congress amended the Clean Air Act in 1990, it directed EPA to list categories of *sources* that emit any of 189 *hazardous air pollutants*. The list of HAP established by Congress included styrene, methyl methacrylate, and methylene chloride, and in 1992 EPA listed Reinforced Plastics Composites Production as a category of sources emitting HAP.

Congress also told EPA to establish control requirements for each listed category of HAP sources. For each category, the requirements were to be based on what EPA determined was the *maximum achievable control technology*.

Congress further told EPA that MACT for *new sources* could be no less stringent than the level of control achieved by the single best controlled similar source, and for *existing sources* MACT could be no less stringent than the level of controlled achieved by the average of the best controlled 12% of similar sources. These minimum stringency levels for new and existing sources are called the *floors*.

EPA promulgates MACT requirements in the form of National Emission Standards for Hazardous Air Pollutants. The NESHAP for Reinforced Plastics Composites Production was published in the Federal Register on April 21, 2003. The composites NESHAP is codified as Subpart WWWW, of Part 63, of Title 40, of the Code of Federal Regulations. Official references to the MACT rule will often take the form of *40 CFR Part 63 Subpart WWWW*.

C. Who has to comply with MACT?

Any reinforced plastics composites production operation located at a *major source* must comply with the composites production NESHAP. A major source is a facility with the potential to emit of 10 tons per year of any single HAP, or 25 tpy or more of any combination of HAP.[1] Major sources of HAP are required to have *Title V operating permits* from their states.

A reinforced plastic composites production facility is one in which reinforced and/or non-reinforced plastic composites products or molding compounds are manufactured using thermoset resins and/or gel coats that contain styrene.

Operations making boat hulls and decks and/or making molds for making hulls and decks are required to comply with the boat building NESHAP (40 CFR Part 63 Subpart VVVV) instead of the composites production NESHAP. Guidance for plants making both boat and non-boat composites products is provided at 40 CFR 63.5787.

Research and development operations, plants that only repair composites products, and plants that use less than 1.2 tpy resin and gel coat are not required to comply with the composites NESHAP. See 40 CFR 63.5785. Certain other exemptions are provided in 40 CFR 63.5790(c) and (d).

D. When is MACT required?

New sources constructed after August 2, 2002, must comply on startup.

Existing sources must comply by April 21, 2006.

The final rule sometimes allows sources to comply by "averaging" the emissions reductions among their various regulated activities. Sources that average must show compliance on a twelve-month rolling average basis. Accordingly, sources using averaging to demonstrate compliance with emission limits for open molding and centrifugal casting must start collecting data on April 21, 2006 and must demonstrate compliance 12 month later.

After their compliance date, sources must notify EPA of their compliance status twice annually.

E. New Source vs. Existing Source

A composites production facility is a new source if its construction commenced after August 2, 2001 (the publication date for the proposed rule), and if no other composites production operations existed at that site. 40 CFR 63.5795(a). You "commenced construction" before August 2, 2001 if before that date you had either (i) entered into contracts for the construction of the facility that could not be cancelled without significant loss or (ii) you had actually begun a continuous program of on-site construction. If you "commenced construction" before August 2, 2001, but after the date on which your state received approval for its Title I operating permit program, you may have been required to get a pre-construction permit under Section 112(g) of the Clean Air Act for your facility.

All composites production operations subject to the rule that are not new sources are considered existing sources. 40 CFR 63.5795(b).

---

[1] A plant with potential emissions above the thresholds can escape major source designation and MACT requirements by securing a *federally enforceable state operating permit* that limits its operations so that its emissions are kept below the thresholds. Such sources are called *synthetic minor* or *synthetic area* sources.

F. MACT Requirements

In general, the NESHAP divides composites production operations into three groups: those that must use add-on control to reduce HAP emissions by 95%, those that must comply with certain emission limits by employing pollution prevention controls, and those that are required to comply with certain work practice standards.

- Sources are required to reduce HAP emissions by 95% for the following operations:
  - Existing centrifugal casting and continuous lamination/casting operations with combined HAP emissions of 100 tpy or more. 40 CFR 63.5805(b).
  - New open molding, centrifugal casting, continuous lamination/casting, pultrusion, SMC manufacturing (compounding), mixing, and BMC manufacturing (compounding) operations with combined emissions of 100 tpy or more. 40 CFR 635805(d).
    - Exception: Operations at new sources making *large open molded parts* or *large pultruded parts* are instead required to comply with the emission limits shown in Table 3, and emissions from these operations are not counted toward the 100 tpy threshold for 95% control. 40 CFR 63.5805(d)(2) and 63.5799. Large open molded parts are those that, when the final finished part is enclosed in the smallest rectangular six-sided box into which the part can fit, the total interior volume of the box exceeds 250 cubic feet, or any interior side of the box exceeds 50 square feet. Large pultruded parts are those that exceed an outside perimeter of 24 inches or have more than 350 reinforcements. 40 CFR 63.5805(d)(2)(ii) and (iii).
- Sources are required to comply with the work practices standards shown in Table 4 to Subpart WWWW for the following operations:
  - Closed molding operations using compression/injection molding
  - Cleaning operations
  - HAP-containing materials storage operations
  - SMC manufacturing (compounding) operations
  - Mixing operations
  - BMC manufacturing (compounding) operations
  - Pultrusion operations manufacturing parts with 1,000 or more reinforcements and a cross section area of 60 square inches or more that is not subject to the 95 percent organic HAP emission reduction requirement. See Footnote f to Table 3 and Section 9 of Table 4 to Subpart WWWW.
- Sources are required to comply with the emission limits shown in Table 3 to Subpart WWWW for the following operations:
  - All operations not subject to the 95% control requirement or to the work practice standards shown in Table 4 to Subpart WWWW or not otherwise specifically excluded. 40 CFR 63.5805(a) and (b).

G. Compliance options for open molding and centrifugal casting

With the exception of operations subject to 95% control, open molding and centrifugal casting[2] operations may comply by using one of the following options:

- Demonstrate that each resin and gel coat complies with the HAP content limit shown in the fourth column of Table 3 to Subpart WWWW. 40 CFR 63.5810(d).
- Demonstrate that the actual emission factor for each resin and gel coat application type, calculated using either source tests or the formulas shown in Table 1 to Subpart WWWW, does not exceed the HAP emission limit shown in the third column of Table 3 to Subpart WWWW. 40 CFR 63.5810(a).
- Demonstrate that the weighted average of the emission factors for all resin and gel coat application over a 12-month period, calculated using either source tests or the formulas shown in Table 1 to Subpart WWWW, does not exceed the weighted average of the HAP emission limits shown in the third column of Table 3 to Subpart WWWW. 40 CFR 63.5810(b).
- Meet the HAP emission limit shown in Table 7 to Subpart WWWW for one operation type, and use the same resin for all operations of that type. 40 CFR 63.5810(c). This provision will allow a source, for example, to apply a 46.2% HAP resin for corrosion resistant applications using a combination of mechanical non-atomized, filament, and manual application, even though Table 3 would limit the HAP content for filament and manual application to 42% and 40%, respectively.

H. Compliance options for pultrusion

With the exception of a) operations subject to 95% control and b) operations subject only to work practice controls as described in Footnote f to Table 3 to Subpart WWWW, pultrusion operations are required to reduce HAP emissions by at least 60%, and can do so by using one of the following options:

- Employ capture and control technology that achieves emission reductions of 60%. 40 CFR 63.5830(a).
- Employ wet area enclosures and resin drip collection systems meeting certain criteria. 40 CFR 63.5830(b).
- Employ direct die injection systems with resin drip collection systems that meet certain criteria. 40 CFR 63.5830(c).
- Employ preform injection systems meeting certain criteria. 40 CFR 63.5830(d).
- Use any combination of the above options, provided that either a) each pultrusion machine satisfies the 60% reduction requirement, or b) the weighted average emission reduction is at least 60%, when wet area enclosures are assumed to achieve a reduction of 60% and direct die and preform injection a reduction of 90%. 40 CFR 63.5830(e).

---

[2] See Footnotes d and e to Table 3 to Subpart WWWW for definitions and exceptions regarding the requirements for centrifugal casting.

I. Compliance options for continuous lamination/casting

With the exception of operations subject to 95% control, continuous lamination and continuous casting operations can comply by using one of the following options:

- Employ controls to reduce HAP emissions by at least 58.5%.
- Employ controls to limit HAP emissions to no more than 15.7 pounds per ton of resin, gel coat, and any added HAP.

Detailed instructions for complying with the requirements for continuous lamination and continuous casting are provided in 40 CFR 63.5865 through 63.5890, and in Tables 10, 11 and 12 to Part 63 Subpart WWWW.

J. Procedural Requirements

The procedures for implementing the MACT standard are set out in the "General Provisions" for all MACT standards, 40 CFR 63.1 through 63.10, as well as in Subpart WWWW itself. Under them:

- Every source that will be subject to the standard must notify EPA within 120 days after the publication of the standard in the Federal Register.
- Composites fabrication facilities that are not subject to the standard (for example, because their emissions are low) must document the reasons for this and keep them on file.
- Before beginning construction work on a new facility that will be subject to the standard, the owner must notify EPA (or a State approved to administer the standard) and get approval. 40 CFR 63.

As described in 40 CFR 63.5905 through 63.5920, and in Tables 13 and 14 to Subpart WWWW, sources are required to submit certain notifications and reports, and to maintain certain records, including those shown below:

Report	Submission deadline
Initial notification for existing sources	August 21, 2003
Notifications for new sources	Before construction begins (and other dates)
Notification of compliance status for operations using averaging to comply with emission limits	May 21, 2007
Notification of compliance status for operations complying with HAP content limits, application equipment requirements, or emission limits (except those using averaging)	May 21, 2006
Notifications for sources complying by use of add-on control	Starting 60 days before the required control device performance test, which should be conducted well before the compliance date of April 21, 2006 for existing sources and on start-up for new sources
Compliance report	Semiannually
Startup, shutdown, malfunction (SSM) report for sources complying by use of add-on control	Within 2 working days action inconsistent with SSM plan

K. Enforcement

In most cases, states or local air pollution agencies will enforce the composites NESHAP. 40 CFR 63.5925. Sources will typically work with these agencies to modify their Title V permits to reflect the applicable provisions of the composites NESHAP.

For many sources, modifying their Title V permit to include MACT requirements will be the most challenging part of complying with the NESHAP. The NESHAP contains many complicated compliance options, and permits will need to be carefully crafted to preserve the maximum flexibility for sources.

L. Definitions

Sources and permitting agencies will need to use the official definitions provided in the NESHAP. See 40 CFR 63.5935. Many terms commonly used in the industry have precise meanings given to them in the rule, including *corrosion-resistant resin*, *non-atomized application*, *filament application*, and *filled resin*.