Secondary Aluminum MACT
Appendix A: Thermal Chip Dryers

AM-421 2010

Thermal Chip Dryers

A thermal chip dryer is a device that uses heat to evaporate water, oil, or oil/water mixtures from unpainted/uncoated aluminum chips. Then the aluminum chips can be reclaimed and used as clean charge at an aluminum processing unit.

Emission Limits

An owner or operator of a thermal chip dryer must limit emissions of dioxin/furan toxic equivalents (D/F TEQ) to no more than 3.5×10^{-5} grains per ton (gr/ton) [2.50 micrograms per Megagram (µg/Mg)] of feed/charge. It may be necessary to install an afterburner to the exhaust of the thermal chip dryer in order to meet this emission limit.

Compliance Demonstration

The thermal chip dryer may not be operated with anything other than unpainted/uncoated aluminum. When controlling emissions with an afterburner to meet the limit, the owner/operator must record the type of materials charged to the unit for each operating cycle or time period established in the performance test. For each 6-month reporting period, the owner/operator must certify that the charged materials were all unpainted/uncoated aluminum.

The owner/operator must operate the afterburner according to the approved OM&M plan. Refer back to the main *Secondary Aluminum MACT and Area Source Requirements* standard fact sheet for details on the OM&M plan.

Performance Test

An initial performance test is required within 180 days of when you first start operating a new unit. When controlled by an afterburner, the average operating temperature of the afterburner will also be measured during the performance test. A repeat performance test is required every five years following the initial test. If you must conduct an initial performance test to demonstrate compliance, you must submit a test plan 60 days prior to the scheduled test date. The plan should detail the test methods and procedures that will be followed during the test, including items like how the feed/charge rate will be measured, etc.

Each performance test for demonstrating compliance with D/F emissions limits shall include USEPA Methods 1-4 and 23. The following methods shall also be used during each performance test:

- √ each test must be performed at the outlet of the afterburner
- √ each test must be performed at the highest capacity of the process with charge materials representative of the range of materials processed
- √ for a continuous process, the test must consist of 3 runs, each of the length specified in the test method or, if not specified, a minimum of three hours
- √ for a batch process, the test must consist of 3 runs, each conducted over the entire process operating cycle
- √ for multiple units exhausted through a common stack, each run must be conducted over a period of time during which each of the units completes at least one entire operating cycle or for 24 hours, whichever is shorter for each afterburner, the owner/operator must

continuously monitor the exit of the combustion chamber and record the temperature every 15 minutes during the test.

The operating parameter value or range for the afterburner operating temperature shall be established by determining each 15-minute block average temperature during the three test runs. Then determine the 3-hour block average temperatures during the three test runs.

How are these block averages measured? The continuous temperature monitoring device records temperature in 15-minute block averages and 3-hour block averages. For example, if 15-minute blocks last from 3:00 to 3:15, 3:15 to 3:30, etc., then a 3-hour block could last from 3:00 to 6:00.

A test will be considered complete and sufficient to demonstrate compliance when the average emissions rate measured during all three runs is less than or equal to the applicable emission limit or standard.

The same tests required for the performance test must be used to establish any operating parameters and maximum or minimum or range of values. Any test performed to establish the operating parameters must be submitted along with the notification of compliance status report. Refer back to the main *Secondary Aluminum MACT and Area Source Requirements* fact sheet for details on the reporting requirements. Work practice standards and design criteria may not change for the emissions units once an operating parameter has been established.

Monitoring and Record Keeping

A device to measure and record the feed/charge shall be installed, operated, maintained, and calibrated according to procedures included in the OM&M plan. Each charge to the process shall be measured and recorded.

Following the performance test, the owner/operator must maintain the 3-hour average temperature in the afterburner at or above the average temperature established during the test. To demonstrate compliance with this condition, the afterburner must be monitored continuously and readings of its temperature recorded every 15 minutes. Then the average temperature over each 3-hour period must be calculated and recorded.

The owner/operator must install, operate, maintain, and calibrate a device to monitor and record the operating temperature of the afterburner. The device must be installed at the exit of the combustion zone and have a response range from 0 to 1.5 times the average temperature established during the performance test. Calibration of the device shall be performed according to NIST methods.

An annual inspection is also required, for which a record of the results and any actions taken must be maintained on file. The inspection must include:

- inspect all burners, pilot assemblies, and pilot sensing devices and clean pilot sensor
- ensure proper adjustment of combustion air
- inspect internal structures (e.g., baffles) to ensure structural integrity
- inspect dampers, fans, and blowers for proper operation
- check for proper sealing
- check motors for proper operation
- inspect combustion chamber refractory lining and clean and replace lining as needed
- check afterburner shell for corrosion and/or hot spots
- documentation during the burn cycle that follows the inspection, showing the afterburner is operating properly and all necessary adjustments were made
- verify that the equipment is maintained in good operating condition.

Following the inspection, all necessary repairs must be completed according to the OM&M plan.

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