

Chrome Platers Apply MACT Standards



Introduction

In 1995, the United States Environmental Protection Agency (EPA) published the final Maximum Achievable Control Technology (MACT) standard for chromium electroplaters and anodizers as required by the Clean Air Act Amendments (CAAA) of 1990. Basic responsibilities under this law are as follows:

- Notify EPA if your facility falls under the rule.
- Meet new chromium emissions limits.
- Keep required records.
- Establish operation and maintenance plans.

This rule applies to all facilities performing hard chromium electroplating, decorative chromium electroplating, and chromium anodizing. It applies to tanks where an electrolytic process occurs. The rule does not apply to rinse, etching, or cleaning tanks; or to chrome conversion tanks using no electric current. Chromium emissions are limited by the rule. Specific pollution control technologies are not required but some effective ones are suggested.

EPA has published a guidebook entitled "How to Comply with the Chromium Electroplating and Anodizing National Emissions Standard for Hazardous Air Pollutants." To view this guidebook, you can download it free of charge at EPA's Web site at <http://nsdi.epa.gov/ttn/atw/chrome/ceaguide.pdf>.

Initial notification

Owners or operators of affected sources (each chromium electroplating or chromium anodizing tank) must notify KDHE in writing that they are subject to the standard. For facility operations that began before July 25, 1995, initial notification should have already been sent. For new or modified facilities, send initial notification upon start-up.

Send initial notification to
Bureau of Air and Radiation
Kansas Department of Health and Environment
1000 SW Jackson, Suite 310
Topeka, KS 66612

Send a copy to
Air Permits and Compliance Branch
U.S. EPA, Region 7
901 N. 5th Street
Kansas City, KS 66101

Decorative chromium electroplating and anodizing operations do not need a Class I permit in Kansas if fume suppressants are used. Also, any decorative chromium electroplating operation that uses a trivalent chromium bath that incorporates a wetting agent as a bath ingredient does not need a Class I (Title V) permit.

However, if your facility is required to get an air permit because of other emissions, chromium operations should be included in that permit. Note that you should already be in compliance with the MACT rule or compliant upon new operations start-up.

Source categories and their emission limits

The MACT standard effectively treats all operations as area sources and subdivides existing hard chromium electroplating into large and small facilities. Affected sources are each individual hard chromium electroplating, decorative chromium electroplating, and chromium anodizing tank. Table 2 describes the emission limits. For questions regarding what emission limits your facility falls under, call 800-578-8898.

Record keeping and reporting requirements

You must keep records at least five years. In addition to the records outlined below, you must meet all record-keeping requirements of Subpart A of the General Provisions to 40 CFR Part 63, unless the MACT rule specifically states otherwise.

Initial performance tests and compliance reports

Decorative chromium electroplaters or chromium anodizers using a wetting agent-type fume suppressant do not need an initial performance test if using the standard value for surface tension, 45 dynes/cm. Compliance status is due 30 days after the compliance date.

Trivalent chromium electroplaters using a wetting agent-type fume suppressant do not need an initial performance test. Compliance status is due 30 days after the compliance date. If any change is made in the bath chemistry or method of control, submit notification of changes within 30 days.

All other owners or operators of affected sources must conduct an initial performance test (IPT). Initial performance tests are required in order to demonstrate initial compliance and establish the values of parameters that must be monitored daily. The values of parameters listed in Table 1 are established in the initial performance test and monitored for compliance. Use approved test methods and procedures (per the MACT standard) and test under representative operating conditions. Compliance status is due 30 days after the compliance date.

Table 1: Parameters for types of control devices

| Control device | Parameters to establish and monitor |
|--|---|
| Composite mesh pad (CMP) or packed-bed scrubber/CMP system | Pressure drop across the unit |
| Packed-bed scrubber (PBS) | Pressure drop across the unit Velocity pressure at the inlet to the control device |
| Fiber-bed mist eliminator | Pressure drop across the eliminator and control device |
| Foam blanket | Blanket thickness (or use value of 2.5 cm) |
| Chemical fume suppressant | Surface tension (or use value of 45 dynes/cm) |

Monitoring reports

Once monitoring parameters are established from the initial performance test, monitor those parameters daily except for foam-blanket thickness and surface-tension parameters. When recording monitoring data, include date, time, value, and a description of the device being monitored.

For foam-blanket thickness, initially measure at least once per hour of tank operation. After 40 hours without a measurement that is below one inch (2.5 cm), monitoring frequency can decrease to once every four hours of tank operation. Once no measurement is below one inch during another 40 hours of tank operation, monitoring frequency can decrease to once every eight hours of tank operation.

If the measurement is ever below one inch, monitoring frequency resumes at once per hour, and the preceding schedule can be followed to decrease monitoring frequency.

For chemical-fume suppressants, initially measure surface tension once every four hours. After 40 hours without a value in excess of the IPT value, monitoring frequency can decrease to once every eight hours of tank operation. Once no measurement exceeds the IPT value during 40 hours of tank operation, monitoring frequency can decrease to once every 40 hours of tank operation.

If the measurement ever exceeds the IPT value, monitoring frequency resumes at once per hour, and the preceding schedule can be followed to decrease monitoring frequency.

Inspection reports

Include the date of inspection, identification of device, description of device's working condition, and any corrective action taken (for add-on control devices, e.g. CMP or PBS, and monitoring equipment).

Table 2: Emission limits

| Type of tank | Small facility emission limit [maximum cumulative potential rectifier capacity (MCPRC) less than or equal to 60 million amp hr/yr] | Large facility emission limit (MCPRP greater than 60 million amp hr/yr) |
|--|--|--|
| New, hard chromium electroplating (hexavalent) | 0.015 mg/dscm (milligram per dry standard cubic meter of ventilation air) | |
| Existing, hard chromium electroplating (hexavalent) | 0.03 mg/dscm (based on packed-bed scrubber) | 0.015 mg/dscm (based on composite mesh pad) |
| New and existing decorative chromium electroplaters (hexavalent chromium bath) | 0.01 mg/dscm or surface tension less than or equal to 45 dynes/cm or foam-blanket thickness greater than 2.5 cm | |
| New and existing decorative chromium electroplaters (trivalent chromium bath) | Notify EPA that a trivalent chromium process incorporating a wetting agent in the bath components (as supplied from the vendor) is being used, and provide bath components. Notify EPA if a change in the bath is made which puts it in a different compliance status. | |
| New and existing chromium anodizing | 0.01 mg/dscm or surface tension less than or equal to 45 dynes/cm or foam-blanket thickness greater than 2.5 cm | |

Table 3: Work practice standards to incorporate into operation and maintenance plans

| Control techniques | Work practice standards | Frequency |
|---|---|---|
| Composite mesh pad (CMP) system or CMP/PBS system | <ol style="list-style-type: none"> 1. Visually inspect device to ensure proper drainage, no chromic acid buildup on pads, and no evidence of chemical attack on structural integrity of the device. 2. Visually inspect back portion of mesh pad closest to fan to ensure there is no breakthrough of chromic acid mist. 3. Visually inspect ductwork from tanks to control device to ensure there are no leaks. 4. Perform wash-down of CMPs in accordance with manufacturer’s recommendations. | <ol style="list-style-type: none"> 1. Quarterly 2. Quarterly 3. Quarterly 4. Manufacturer |
| Packed-bed scrubber (PBS) system | <ol style="list-style-type: none"> 1. Visually inspect device to ensure proper drainage, no chromic acid buildup on pads, and no evidence of chemical attack on structural integrity of the device. 2. Visually inspect back portion of chevron blade, mist eliminator to ensure that it is dry with no breakthrough of chromic-acid mist. 3. Visually inspect ductwork from tanks to control device to ensure there are no leaks. 4. Add fresh makeup water to the top of packed bed. ^{a,b} | <ol style="list-style-type: none"> 1. Quarterly 2. Quarterly 3. Quarterly 4. When added |
| Fiber-bed mist eliminator ^c | <ol style="list-style-type: none"> 1. Inspect fiber-bed unit and prefiltering device to ensure proper drainage, no chromic acid buildup in units, and no evidence of chemical attack on structural integrity of the device. 2. Visually inspect ductwork from tanks to control device to ensure there are no leaks. 3. Perform wash-down of fiber elements in accordance with manufacturer’s recommendations. | <ol style="list-style-type: none"> 1. Quarterly 2. Quarterly 3. Manufacturer |
| Air pollution control device not listed | To be performed by the source for EPA approval. | Proposed by source |
| Monitoring equipment | | |
| Pilot tube | Backflush with water, or remove from duct and rinse with fresh water. Replace in duct and rotate 180 degrees to ensure same zero reading is obtained. | Quarterly |
| Stalagmometer | Follow manufacturer’s recommendations. | Manufacturer |

^a If greater than 50 percent of the scrubber water is drained (e.g., for maintenance purposes), makeup water may be added to the scrubber basin.
^b For horizontal-flow scrubbers, top is defined as the section of the unit directly above the packing media. For vertical-flow units, top is defined as the area downstream from the packing material.
^c Work practice standards for the control device installed upstream of the fiber-bed mist eliminator to prevent plugging do not apply as long as work practice standards for the fiber-bed unit are followed.

Records

Records that must be kept include, but are not limited to, the following:

- Initial notification form
- Initial performance report (if applicable)
- Monitoring reports (described above)
- Inspection reports (described above)
- All maintenance on process tanks, equipment, add-on control devices, and monitoring equipment
- All malfunctions of process, add-on control, and monitoring equipment (records must include occurrence, duration, and cause, if known)
- Actions taken during malfunction, if they deviate from the operation and maintenance plan (see operation and maintenance plans)
- Other records (e.g., checklists) showing consistency with the operation and maintenance plan (see operation and maintenance plans)
- Specific identification of periods of excess emissions
- Total process operating time of the affected source during the reporting period
- If using actual cumulative rectifier capacity to determine facility size, it must be recorded monthly and the total capacity expended to date recorded for each reporting period.

- Description of control device and monitoring equipment (if applicable)
- Description of how manufacturer says to operate and use the control device and monitoring equipment
- Checklist to document the operation and maintenance of the control device and monitoring equipment (incorporate manufacturer guidelines)
- List of work practice standards that apply to the facility
- Maintenance procedures to prevent equipment and process malfunctions
- Procedures to identify malfunctions and to implement corrective action

Decorative platers using a trivalent bath have no requirements for work practice standards or continuous compliance monitoring. All other affected sources must incorporate applicable work practice standards (Table 3) into their operation and maintenance plans.

Operation and maintenance plans

A written operation and maintenance plan that specifies operation and maintenance criteria is required. Plans must contain systematic procedures for identifying malfunctions and ensuring that malfunctions do not occur as a result of poor maintenance or other preventable conditions. These plans must be implemented by the compliance date and are incorporated by reference into any applicable air permit. The operation and maintenance plan should include the following:

Where can you get more information?

SBEAP operates a toll-free hotline that you can call for additional technical assistance. In addition, SBEAP has specialists who review current control technologies and identify pollution prevention opportunities. They will walk through your facility and submit a confidential report detailing recommendations. For free technical assistance call SBEAP at Kansas State University at 800-578-8898. Additional information is available on our Web site at www.sbeap.org.



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