# LACKS – KRAFT PLATER
# ENVIRONMENTAL MALFUNCTION ABATEMENT PLAN (MAP)

**For**

**LACKS Enterprises, Inc.**

**KRAFT PLATER**

**5675 Kraft Avenue**

**Cascade Township, Michigan**

**Michigan SRN # N7374**

**MI-ROP-N7374-2015**

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## Facility Wide

**Maintenance records** will consist primarily of the computer based EAM preventive maintenance system. Additional maintenance records may include PM Work Orders, Maintenance Work Requests, checklists, purchase orders, and other documents which describe the maintenance tasks and corrective actions. All records will be maintained for a minimum of five (5) years.

All **Malfunction Alarms** will be activated immediately within the building and will consist of both audible and visual alarms and will be recorded by the automated system. The alarm will also appear in the plating laboratory on a system monitor.

| Operating Variable | Monitoring Method | Monitoring Frequency | Normal Operating Range | Recordkeeping Requirements |
|---|---|---|---|---|
| Opacity | Non-certified visual observation | Once each week during operation | Other than uncombined water vapor, there must be no visible emission (0% opacity) from a stack. | Record the following observations for each stack: date, time, visible emissions observed (yes/no). |
| Condition of the automated alarm system | Test each alarm for proper operation | Each quarter | The sensor sends an alarm signal and the alarm is recorded. | The test results and corrective actions will be recorded in Preventive Maintenance (PM) program. |

**Malfunction Corrective Actions:**

If visible emissions are observed, notify the plating supervisor to initiate immediate shut down of the affected process and begin an inspection of the system. Prepare a Maintenance Work Request (MWR) to perform a determination of the cause of the visible emissions and initiate the necessary corrective actions. Record the date, time, duration of the malfunction, who was notified and the corrective actions on the MWR.

**Malfunction Reporting Requirements:**

1.) All malfunctions will be reported immediately to the Maintenance Manager and/or Plating Supervisor who in turn will report the malfunction to the Plant Manager and the Protective Services Central Dispatch at 616-554-7180.

2.) The Environmental Manager, or designate, will make the required notifications to EGLE in accordance with the applicable rules and permit requirements.

**Primary Responsibility**:

Maintenance Manager

## Chrome Etch Tanks and Chrome Plate Tanks – Composite Mesh Pad Scrubbers and Surface Tension

| Operating Variable | Monitoring Method | Monitoring Frequency | Normal Operating Range | Recordkeeping Requirements |
|---|---|---|---|---|
| Pressure drop across the CMP system | Continuous pressure drop monitoring device (water gauge) | Continuously during operation | **Cr Etch**: 1.5-6.5" water gauge Evaporator: 0.25-4.25" **Cr Plate**: 1.5"-5.5" water gauge Evaporator: 0.5-4.5" | 1.) Alarms will be recorded by the automated system. 2.) Daily pressure drop readings will be recorded by lab personnel. |
| Pressure drop across the HEPA filter stage | Visual of the magnehelic | Weekly | 0.1 – 3.0" water gauge | Maintenance records |
| **Chrome Etch** Wash down water flow rate to each pad. | Flow meter (GPM) | During pad wash down | 20 GPM minimum wash rate **Pad #1:** every 12 hours for a minimum of 20 seconds | Alarms for low flow will be recorded by the automated monitoring system. |
| **Chrome Plate** Wash down water flow rate to each pad. | Flow meter (GPM) | During pad wash down | 40 GPM minimum wash rate **Pad #1:** each hour for a minimum of 1 minute **Pad #2:** each day for a minimum of 1 minute **Pad#3:** each week manually until clear | Alarms for low flow will be recorded by the automated monitoring system. |
| Confirmation of pad wash down | Visual | Each week of operation | Flow to the wash down water collection tank | Maintenance records |
| Condition of CMP system | Visual inspection | Once per quarter | Proper drainage, no chromic acid build-up on the pads or gaps allowing bypass, no evidence of chemical attack on the structural integrity. | Maintenance records |
| Condition of the back portion of the mesh pad closest to the fan. | Visual inspection | Once per quarter | No breakthrough of chromic acid mist | Maintenance records |
| Ductwork from tanks to the scrubber | Visual inspection | Once per quarter | No leaks, cracks or gaps | Maintenance records |

| Operating Variable | Monitoring Method | Monitoring Frequency | Normal Operating Range | Recordkeeping Requirements |
|---|---|---|---|---|
| Condition of pads | Visual inspection performed under the supervision of the Plant Engineer – Plating Operations or designate. | Annual | Remove top covers – inspect for gaps around the pads which would allow air to bypass. | Composite mesh pad scrubber system – Annual PM's checklist. |
| Chrome etch tanks surface tension | Tensiometer | Each day of operation | Tank 1: </= 52 dynes/cm<br>Tank 2: </= 52 dynes/cm<br>Tank 3: </= 42.82 dynes/cm | Surface tension results will be recorded each day by lab personnel. |
| Chrome plate tanks surface tension | Tensiometer | Each day of operation | Tank 1: </= 40 dynes/cm<br>Tank 2: </= 40 dynes/cm<br>Tank 3: </= 39 dynes/cm | Surface tension results will be recorded each day by lab personnel. |

**Additional Requirements:**

Each quarterly inspection report will include a description of the working condition of the scrubber, any observed problems, corrective actions and will be reviewed by the inspector's supervisor as evidenced by the supervisor's name and review date.

**Malfunction Reporting Requirements:**

1.) All malfunctions will be reported immediately to the Maintenance Manager and/or Plating Supervisor who in turn will report the malfunction to the Plant Manager and the Protective Services Central Dispatch at 616-554-7180.
2.) The Environmental Manager, or designate, will make the required notifications to EGLE in accordance with the applicable rules and permit requirements.

**Primary Responsibility**:

Maintenance Manager

## Electroless Copper Tanks and Strip Tanks Packed Bed Scrubbers

| Operating Variable | Monitoring Method | Monitoring Frequency | Normal Operating Range | Recordkeeping Requirements |
|---|---|---|---|---|
| Pressure drop across the packed bed | Continuous pressure drop monitoring device ("water gauge) | Continuously during operation | Recommended pressure drop<br>EC copper : 0.2" - 1.5"<br>Strip : 1.0" - 3.5" | 1.) Alarms will be recorded by the automated system.<br>2.) Daily pressure drop readings will be recorded by lab personnel. |
| Water flow to the packed bed (circulating rate) | Continuous flow meter (GPM). | Continuously during operation | Scrubber minimum flow rate<br>EC copper: 140 GPM<br>Strip: 205 GPM | Alarms for low flow will be recorded by an automated system. |
| Water bleed-off rate | Continuous flow meter (GPM). | Continuously during operation | EC copper: 0.6 GPM minimum<br>Strip: 3 GPM minimum | Alarms for low flow will be recorded by an automated system. |
| Condition of packed bed | Visual inspection | Once per quarter | Proper drainage, no build-up on beds, no evidence of chemical attack on the structural integrity. | Maintenance records |
| Condition of back portion of the mist eliminator | Visual inspection | Once per quarter | No evidence of chemical breakthrough. | Maintenance records |
| Ductwork from tanks to the scrubber | Visual inspection | Once per quarter | No leaks, cracks or gaps | Maintenance records |

**Malfunction Corrective Actions:**

1.) Notify the plating supervisor to initiate immediate shut down of the affected process and begin an inspection of the system. Cease operating until normal operation of the scrubber is restored.
2.) Prepare a Maintenance Work Request (MWR) to perform a determination of the cause of the visible emissions and initiate the necessary corrective actions. Record the date, time, duration of the malfunction, who was notified and the corrective actions on the MWR.
3.) If applicable, modify the MAP to incorporate the actions taken to correct and to prevent a reoccurrence of the malfunction.

**Additional Requirements:**

Each quarterly inspection report will include a description of the working condition of the scrubber, any observed problems, corrective actions and will be reviewed by the inspector's supervisor as evidenced by the supervisor's name and review date.

**Malfunction Reporting Requirements:**

1.) All malfunctions will be reported immediately to the Maintenance Manager and/or Plating Supervisor who in turn will report the malfunction to the Plant Manager and the Protective Services Central Dispatch at 616-554-7180.
2.) The Environmental Manager, or designate, will make the required notifications to EGLE in accordance with the applicable rules and permit requirements.

**Primary Responsibility**:
Maintenance Manager

## Pre-Etch, Neutralizer, Catalyst, Accelerator, Copper Plating, and Nickel-Plating Tanks Fan and Ventilation Systems

| Operating Variable | Monitoring Method | Monitoring Frequency | Normal Operating Range | Recordkeeping Requirements |
|---|---|---|---|---|
| Fan operation | Electrical current draw | Continuous – automated monitoring system | Electrical current draw when the plater is in operation. | Alarms for loss of electrical current draw will be recorded by an automated system. |
| Condition of the ductwork, fans, motors, belts, support structures and stacks. | Visual inspection | Once per quarter | No leaks, cracks, gaps in the ductwork and stacks or operating problems with the fans and motors. | Maintenance records |

**Malfunction Corrective Actions:**
If problems are observed, notify the plating supervisor to initiate inspection of the system. Prepare a Maintenance Work Request (MWR) to perform a determination of the cause of the malfunction and initiate the necessary corrective actions. Record the date, time, duration of the malfunction, who was notified and the corrective actions on the MWR.

**Malfunction Reporting Requirements:**
1.) All malfunctions will be reported immediately to the Maintenance Manager and/or Plating Supervisor.

2.) The Environmental Manager, or designate, will make the required notifications to EGLE in accordance with the applicable rules and permit requirements.

**Primary Responsibility**:
Maintenance Manager

| Fulton Pulse natural gas fired 1.9 MMBtu/hr Boilers | | | |
|---|---|---|---|
| **Operating Variable** | **Monitoring Method** | **Monitoring Frequency** | **Normal Operating Range** |
| Temperature | Visually inspected. Automatically monitored by computer control system. | Each day of operation | 200$^{o}$F |
| **Daily In-House Maintenance and Inspections:** Observe operating temperature and general conditions. Ensure that the flow of combustion and ventilating air to the boiler is not obstructed. Ensure boiler area is free of combustible materials, including flammable vapors and liquids. | | | |
| **Monthly In-House Maintenance and Inspections:** Inspect air intake and exhaust vent pipes for broken seals at the joints. Ensure that the screens on the air intake and exhaust vent terminal are free of dirt or foreign matter which may block the terminals. Check air intake and exhaust vent outlet for any blockage or restrictions. Check for leaks in exhaust piping. Immediately repair all leaks. Ensure maintenance of system pressure. Check condensate trap to ensure it is clear of debris and is not backing up into the boilers. | | | |
| **Annual Maintenance and Inspections** (Done by the Service Technician): Change the flame rod on units utilizing a flame rod. Clean/replace flapper valve gaskets. Verify proper combustion and adjust as necessary. Lubricate the modulation motor arms, gas and exhaust butterfly valves and ensure the motion of the valves is smooth. Remove the low water cut off probe and clean, replace the probe in the boiler. Change the spark plug. Check air intake and exhaust vent outlet for any blockage or restrictions. Check for any leaks in exhaust piping and heating system or boiler piping. Check the air intake and exhaust vent piping for sagging. Follow purge procedure. Follow start up procedure. With the boiler running, check for visible cracks at fittings and joints. Check for any blockages in condensate lines, and condensate trap. If a pH Neutralization Kit has been installed, check quantity of media in kit. | | | |
| **Malfunction Corrective Actions:**<br>1.) Boiler automatically shuts down.<br>2.) Boilers are set up to auto-load based on need. Redundant pumps are set up for boiler hot water recirculation.<br>3.) Notify the Maintenance Manager<br>4.) Contact the Service Technician | | | |
| **Responsible Personnel:** Maintenance Manager | | | |