



### ADDITIONAL TECHNICAL INFORMATION FOR A MISCELLANEOUS METAL COATING<sup>1</sup> PROCESS

The following information will be used for the technical review of a permit to install application for a **miscellaneous metal coating process**. This information is in addition to the general requirements outlined in the AQD document "Information for an Administratively Complete Permit to Install Application", Part 2 - Additional Supporting Information, Items A through F. All of the information may not be needed for each application. Also, this document may not be all inclusive. Additional information beyond that identified may be necessary to complete the technical review of any individual application. In the event a determination is made that new additional information is needed for a technical review, this document will be updated.

All referenced guidance documents are available at <http://www.deq.state.mi.us/aps> or you may contact the Permit Section at 517-373-7023.

Miscellaneous metal coating is a broad general category intended to include the coating of any type of metal parts regulated under Rule 621 of the Michigan Air Pollution Control Rules. The types of metal parts include vehicle parts, machinery, structural components, electronic equipment, wire, pipe and numerous other industrial and consumer products.

Rule 621 does not apply to certain specific categories. Subrules (8) through (10) list the sources which are not included in the miscellaneous metal coating category. These categories may be covered by another specific state or federal regulation. For example, metal coating processes covered by Rule 610 are exempt from Rule 621 and include the coating of cans, coils, large appliances, metal furniture, magnet wire, and automobiles and light-duty trucks. Subrule (9)(e) specifies that the coating of some parts, consisting of both metallic and plastic components, may be exempt from the limits of Rule 621 and subject to the requirements of Rule 632. Refer to the Additional Technical Information sheets for A Metal Coil Coating Process, A Metal Furniture Coating Process and A Plastic Parts Coating Process.

The Michigan Air Pollution Control Rules are available on the AQD website at [www.michigan.gov/deqair](http://www.michigan.gov/deqair).

**NOTE:** Coating lines emitting up to 10 tons per year of volatile organic compounds may be eligible for a general permit. The use of a general permit provides a streamlined permitting alternative to the normal permitting procedure for processes that meet specified applicability criteria. Information for the general permit is available on the Internet at [www.michigan.gov/deqair](http://www.michigan.gov/deqair). Select "Air Permits" then "Permit to Install/New Source Review".

#### A. Process Description

1. Describe the coating process including the following:
  - a) Make, model, and dimensions of each coating booth.
  - b) The type of overspray control on each booth (dry filter, waterwash, etc.).
  - c) Coating method (manual or automatic, overhead conveyORIZED, automatic conveyor belt or table).
  - d) Application equipment (dip tank, spray guns, flow coater).
  - e) A description of any ovens (dry off, bake and/or curing), the method of heating and the amount of any fuel to be used in one hour and one year.
  - f) Type of coating/finishing operations (stains, washcoats, sealers, topcoats, basecoats, enamels, etc.)
  - g) Face velocity for each coating spray booth in feet per minute.
  - h) Exhaust rate through all related stacks (booths, ovens, flash-off and drying tunnels/areas), in cubic feet per minute.
2. Describe the parts to be coated.
3. Describe each coating, reducer and clean-up solvent as received, consisting of the following information:

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<sup>1</sup> "Coating" includes but is not limited to paint, lacquer, varnish, ink, shellac, enamel, sealer, glue, adhesive, and other materials applied to various surfaces.

- a) The density in pounds per gallon, the VOC content and the percent by volume of solids in the material before it is reduced.
  - b) A listing of each component<sup>2</sup> in each coating, reducer and clean-up solvent. In most cases, Material Safety Data Sheets are sufficient. This information will be used to determine compliance with Rule 225 which requires an analysis of Toxic Air Contaminant (TAC) emissions and their impacts. TAC emissions may result from individual components in the coating or from by-products created during the curing process. Therefore, multiple information sources and a chemical reaction analysis may be necessary to estimate emissions of TACs. For additional and more detailed documentation you may include, or in the future may be asked to include, additional sources of data such as Environmental Data Sheets, Environmental Constants Sheets or formulation data.
  - c) For each specific component provide:
    - i. The specific chemical name, such as xylene, methanol or lead chromate, and the respective Chemical Abstract Service (CAS) number. If after a rigorous effort has been made, the component does not appear to have a CAS number, identify the component by a generic or common name (i.e., aromatic hydrocarbon, alcohol, glycol ether, chromium pigment) and provide all available information on the chemical family, properties, characteristics, composition, etc. Lack of adequate chemical identification may delay the analysis of the TAC emissions.
    - ii. The percent of the component in the coating, reducer or clean-up solvent by weight.
4. The coating and reducer mixing ratio, by volume (i.e., one part reducer is added to two parts coating).
  5. The normal and maximum amounts of coating and reducer mixture to be applied in one hour and one year.

## B. Regulatory Discussion

The following state air pollution control regulations may be applicable. Please review these regulations carefully to determine if they apply to your process and summarize the results in the application. The Air Pollution Control Rules may be viewed and downloaded from the AQD website at: [www.michigan.gov/deqair](http://www.michigan.gov/deqair).

1. State of Michigan, Department of Environmental Quality, Act 451 of 1994, Natural Resources and Environmental Protection Act, Part 55 Air Pollution Control and the following promulgated rules:
  - a) Rules 215 and 216 apply to an existing facility which has a current Renewable Operating Permit (ROP). A Permit to Install issued for the installation of new equipment or modifications to existing equipment is incorporated into an ROP pursuant to Rules 215 and 216.
  - b) Rule 220 applies to a major source and/or a major modification at a source which is located in a non-attainment area. A non-attainment area is one where the National Ambient Air Quality Standards (NAAQS) are not being met. Rule 220 requires compliance with the lowest achievable emission rate (LAER) and an emission reduction (offset) for each non-attainment air contaminant emitted in significant quantities as defined by Rule 119(e). However, a source may choose to "net out" of the requirements of Rule 220. Refer to "Guidelines for a Netting Demonstration" for additional detailed information.
  - c) If the process or equipment was installed or modified after April 17, 1992, Rules 224 – 230 apply. Rule 224 requires the application of Best Available Control Technology for toxics (T-BACT) for all non VOC toxic air contaminants (TACs). T-BACT does not apply to emissions of VOCs. Rule 225 limits the emission impacts of TACs and requires a demonstration that the proposed emission of each TAC complies with a health-based screening level. Compliance can be demonstrated using any of three methods described in Rule 227(1) including the use of computerized dispersion modeling. Refer to "Guidelines for Conducting a Rule 224 T-BACT Analysis," "TACs-Demonstrating Compliance with Rule 225," and "Dispersion Modeling Guidance" for additional detailed information.
  - d) If the process or equipment was installed or modified after August 1, 1979, Rule 702 applies. This rule requires Best Available Control Technology (BACT) for new sources of volatile organic compounds (VOCs). Refer to "Instructions for Conducting a BACT Analysis" for additional detailed information. Rule 702(d) specifies that an emission limit for any new source of VOC emissions shall not exceed the maximum allowable emission rate specified in Part 6 of the rules that would otherwise apply if the source was an existing source. Rule 621 would be the applicable rule for an existing miscellaneous

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<sup>2</sup> "Component" includes organic solvents, water, pigments, resins, catalysts, curing agents, accelerators, and other materials.

metal parts coating process. "Existing source" and "new source" are defined in Rule 601 and Rule 701 respectively.

- e) Rule 901 prohibits emissions of an air contaminant in quantities that cause either a) injurious effects to human health or safety, animal life, plant life of significant economic value, or property; or b) unreasonable interference with the comfortable enjoyment of life and property.
2. Federal Prevention of Significant Deterioration (PSD), 40 CFR Part 52.21. The federal PSD regulations apply to a major source and/or a major modification at a source which is located in an attainment area. An attainment area is one where all the NAAQS are being met. However, as with the non-attainment permitting, a source subject to the PSD regulations may choose to "net out" of the requirements. Refer to "Federal PSD Requirements," "Instructions for Conducting a BACT Analysis," and "Guidelines for a Netting Demonstration" for additional detailed information.
  - The Clean Unit test is an alternate method for determining PSD applicability. It encourages industries to invest in control equipment by providing greater operational flexibility after the control equipment is installed. Refer to "Federal PSD Requirements" and the "PSD Workbook" which is available on the Internet at <http://www.deq.state.mi.us/aps/downloads/permits/PSD%20Workbook.pdf>.
3. The PSD increments (40 CFR 52.21 (c)) and the NAAQS (40 CFR 52.21(d)) apply to all sources throughout the United States, regardless of size. Compliance with these air quality standards can be demonstrated using computerized dispersion modeling. An applicant for a PSD permit is required to submit PSD increment modeling for PM-10, SO<sub>2</sub> and NO<sub>x</sub>, and NAAQS modeling for PM-10, SO<sub>2</sub>, NO<sub>x</sub>, CO, Ozone, and Lead as part of the application. Modeling for sources not subject to PSD may be done by the AQD. Refer to "Guidelines for Dispersion Modeling" for additional detailed information.
4. Federal Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 60, may contain subparts which apply to various coating processes. These federal regulations should be consulted carefully to determine applicability to your process.
5. National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, Subpart M, Surface Coating of Miscellaneous Metal Parts and Products, may apply to certain metal coating processes. This regulation applies to any new, reconstructed, or existing affected source, as defined in 40 CFR, Part 63, §63.3882, that is a major source, is located at a major source, or is part of a major source of emissions of hazardous air pollutants (HAPs), and uses 250 gallons per year or more of coatings that contain HAPs in the surface coating of miscellaneous metal parts and products. The regulation, which is available on the USEPA Technology Transfer Air Toxics Website at <http://www.epa.gov/ttn/atw/misc/miscpg.html>, lists sixteen applicability exemptions. This regulation should be consulted carefully to determine applicability to your process.
6. If a specific MACT does not apply: Section 112(g) regulations of the federal Clean Air Act require any constructed or reconstructed major source of Hazardous Air Pollutants (HAPs) be equipped with Maximum Achievable Control Technology (MACT) for individual and total HAPs greater than 10 and 25 tons per year, respectively. Refer to "Guidelines for Conducting a 112(g) Analysis" for additional detailed information.

### **C. Control Technology Analysis**

1. Rule 702 BACT applies to all sources of VOCs proposed to be installed within the State of Michigan. A Rule 702 BACT analysis is very similar to a PSD top-down BACT analysis. For those sources completing a PSD top-down BACT analysis for VOCs, a Rule 702 BACT analysis is not required. Michigan's air pollution control rules also define BACT as an emission limit. Rule 702 BACT should be applied on a flexible grouping of equipment – subdivisions of emission units and/or groupings of emission units – as long as it is logical to do so. Logical means that the principles on which the groupings (or subdivisions) are made are consistent with federal guidance and sound engineering practices. Refer to "Instructions for Conducting a BACT Analysis" for additional detailed information.
2. Best Available Control Technology for Toxics (T-BACT) means the maximum degree of emission reduction which the Department determines is reasonably achievable for each process that emits toxic air contaminants (TACs) taking into account energy, environmental and economic impacts, and other costs. T-BACT does not apply to VOCs. The analysis must be specific to the process and the TACs subject to a T-BACT review. T-BACT limits can be expressed as an emission limit, control equipment requirements,

and/or work practice standards. Refer to “Guidelines for Conducting a Rule 224 T-BACT Analysis” for additional detailed information.

3. Lowest achievable emission rate (LAER) applies to a major source and/or a major modification at a source located in a non-attainment area. Currently the only two pollutants which may be subject to LAER in Michigan are VOCs and NO<sub>x</sub>. LAER is defined as the lowest emission limitation contained in any State Implementation Plan (SIP) or the lowest emission limitation achieved in practice. Such an emission limit is presumed to be LAER for that source class and category. If an applicant proposes to meet this presumptive LAER, no site-specific control technology determination will be necessary. When an applicant believes the presumptive LAER limit is not achievable, a site-specific determination is required. This determination should include consideration of raw material changes, process changes, and add-on control equipment. The cost of these changes is not considered. Raw material and process changes should be evaluated through technology transfer (i.e., the likelihood that such a change will transfer from one industry to another), based on the manufacture of similar products or use of similar raw materials or fuels. Add-on controls should be evaluated based on the physical and chemical characteristics of the pollutant-bearing exhaust stream.
4. PSD Top-down BACT applies to a major source and/or a major modification at a source of any criteria pollutant located in an attainment area. The Clean Air Act defines BACT as “an emission limitation based on the maximum degree of reduction for each pollutant.” BACT should be applied to a flexible grouping of equipment – subdivisions of emission units and/or groupings of emission units – as long as it is logical to do so. Logical means that the principles on which the groupings (or subdivisions) are made are consistent with federal guidance and sound engineering practices. Refer to “Instructions for Conducting a BACT Analysis” for additional detailed information.