



ADDITIONAL TECHNICAL INFORMATION FOR STORAGE TANKS

The following information will be used for the technical review of a permit to install application for a **storage tank**. 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.

A. Process Description

1. Describe the type of tank: horizontal tank, fixed roof (cone or dome), internal floating roof, external floating roof, domed external floating roof, or pressurized.
2. Specify the design capacity of the tank and all of the following that apply: shell height, shell diameter, shell length, vent location, vent height, and pressure relief vent setting.
3. For internal and external floating roof tanks, describe the primary and secondary seal system design. Also, include the roof fittings (hatches, wells, etc.), the size and number of roof support columns (if the roof is not self supporting), and the deck type (welded or bolted) or roof type (pontoon or double deck).
4. Describe each mixture stored, including the following information:
 - a) The organic content in percent and inorganic content in percent, if any.
 - b) The average liquid storage temperature for each month. The EPA Tanks program can provide this information.
 - c) The monthly and annual throughput rate of the mixture.
 - d) For each component of the mixture provide:
 - i. The specific chemical name, such as xylene or methanol, 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 liquid weight percent
 - iii. The true vapor pressure at the average actual liquid storage temperature.
 - iv. The liquid density
 - v. The molecular weight(Include items (iii), (iv) and (v) only if the information is not provided in the EPA Tanks program.)
5. Provide the maximum hourly pumping or loading rate of each mixture, and the maximum pumping or loading rate corresponding to the screening level averaging time (i.e., maximum 8 hour rate for a compound with an 8-hour averaging time screening level). Include the time required to fill the tank and the maximum number of transfers into the tank per 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.

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) 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.
 - c) 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.
 - d) Rules 604 - 607 and 623 address the requirements for existing storage tanks.
 - e) Rules 703 and 704 address the requirements for new storage tanks.
2. 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, SO₂ and NO_x, and NAAQS modeling for PM-10, SO₂, NO_x, CO, Ozone, and Lead as part of the application. Modeling for sources not subject to PSD may be done by the AQD. Refer to “Dispersion Modeling Guidance” for additional detailed information.
3. Federal Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 60, Subparts K, Ka, and Kb contain requirements for certain storage tanks.
4. Federal National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63 may contain requirements for storage tanks at affected facilities. See the list below for MACT standards that may be applicable.

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. 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.

D. Emissions Summary and Calculations

To assist calculating emissions from storage tanks, the U.S. Environmental Protection Agency (EPA) has published emission factors. Also, EPA has a computer program available to calculate emissions from storage tanks. Both documents can be accessed from the Internet at the following address: www.epa.gov/ttn/chief -

Click on “Emission Factors” then “AP-42 Compilation of Air Pollution Emission Factors” and “Chapter 7 Liquid Storage Tanks”. Click on “Tanks” for the emission estimation software.

MACT Standards

Source Category	MACT Subpart	Process Description
Aerospace Industry	GG	Surface coating operations
Asphalt Roofing & Processing	LLLLL	Asphalt roofing manufacturing and asphalt processing
Auto & Light Duty Truck	IIII	Surface coating operations
Benzene Waste Operations	FF	Benzene waste handling & processing
Cellulose Product Manufacturing	UUUU	Production of various cellulose products
Fabric Printing, Coating, & Dyeing	OOOO	Fabric printing, coating, & dyeing
Flexible Polyurethane Foam Production	III	Flexible polyurethane foam production
Generic MACT	YY	Production of various products
Hazardous Organic NESHAP (HON)	G	Allowable emission level for emission points
Hydrochloric Acid Production	NNNNN	Hydrochloric acid and fumed silica production
Large Appliance	NNNN	Surface coating operations
Magnetic Tape	EE	Magnetic tape production
Mercury Cell Chlor-Alkali Plants	IIIII	Chlorine production
Metal Can	KKKK	Surface coating operations
Metal Furniture	RRRR	Surface coating operations
Misc. Coating Manufacturing	HHHHH	Manufacturing of surface coatings
Misc. Metal Parts and Products	MMMM	Surface coating operations
Misc. Organic Chemical Production & Processes (MON)	FFFF	Production of various organic chemicals
Natural Gas Transmission and Storage	HHH	Pipeline transmission and underground storage of natural gas
Off-Site Waste Recovery Operations	DD	Treatment, recovery, disposal of wastes from off-site locations
Oil & Natural Gas Production	HH	Oil and natural gas production operations
Organic Liquids Distribution	EEEE	Distribution operations of non-gasoline organic liquids
Pesticide Active Ingredient Production	MMM	Production of various pesticide active ingredients
Petroleum Refineries	CC	Petroleum refineries
Pharmaceuticals Production	GGG	Production of various pharmaceutical products
Plastic Parts	PPPP	Surface coating operations
Polyether Polyols Production	PPP	Production of polyether polyols from ethylene oxide and propylene oxide
Polymers & Resins I	U	Production of various polymers and resins
Polymers & Resins II	W	Production of various polymers and resins
Polymers & Resins III	OOO	Production of various polymers and resins
Polymers & Resins IV	JJJ	Production of various polymers and resins
Pulp & Paper (non-combust) MACT I & (non-chem) MACT III	S	Pulp and paper production
Reinforced Plastic Composites Production	WWWW	Reinforced plastic composites production
Semiconductor Manufacturing	BBBBB	Semiconductor manufacturing
Shipbuilding & Ship Repair	II	Surface coating operations
Steel Pickling-HCL Process	CCC	HCl steel pickling
Tetrahydrobenzaldehyde Manufacture	F	Manufacturing of Tetrahydrobenzaldehyde
Wood Building Products	QQQQ	Surface coating operations
Wood Furniture	JJ	Surface coating operations