STATE OF MISSOURI

PERMIT BOOK

# DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

# PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 072015-012

Project Number: 2013-09-024
Installation Number: 217-0004

Parent Company: 3M Company

Parent Company Address: 3M Center, Building 0224-05-W-03, St. Paul, MN 55144

Installation Name: 3M Nevada

Installation Address: 2120 East Austin Blvd., Nevada, MO 64772

Location Information: Vernon County, S10, T35N, R3W

Application for Authority to Construct was made for:
A VOC PAL for an existing commercial graphics plant in Nevada, Missouri. This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required.*

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☐ Standard Conditions (on reverse) are applicable to this permit.

☑ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

JUL 20 2015
EFFECTIVE DATE

Kyra L Moore
DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. The permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060(12)(A)10. "Conditions required by permitting authority."*

3M Nevada
Vernon County, S10, T35N, R3W

1. Superseding Condition
   The conditions of this permit supersede all special conditions found in the construction permits and amendments previously issued by the Air Pollution Control Program listed in Table 1.

**Table 1: Previously Issued Construction Permits and Amendments for which all special conditions are being superseded**

| Permit Number | | Permit Number |
|---|---|---|
| 0782-002 | | 1098-017 |
| 0590-011 | | 1098-017A |
| 0590-012 | | 1098-017B |
| 0291-003 | | 042004-002 |
| 0395-012 | | 042004-002A |
| 0895-025 | | 042004-002B |
| 1195-009 | | 042004-002C |
| 1095-014 | | 042004-002D |
| 1195-018 | | 042004-002E |
| 0396-019 | | 042004-002F |

2. VOC PAL
   A. 3M Nevada shall emit less than 437.58 tons of VOC in any consecutive 12-month period from the entire installation. Emissions from the entire installation shall include emissions from startups, shutdowns, and malfuctions.

   B. 3M Nevada shall track VOC emissions and calculate monthly and 12-month rolling total VOC emissions from the entire installation. VOC calculations shall be performed according to one of the methods approved in Special Condition 14 and detailed in Appendix B.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

3. Operational Requirement
3M Nevada shall keep all volatile VOC containing material in sealed containers whenever the materials are not in use. 3M Nevada shall provide and maintain suitable, easily read, permanent markings on all VOC containers used.

4. Destruction Devices - Thermal Oxidizers
   A. 3M Nevada shall use thermal oxidizers on continuously controlled emission sources at all times emissions may occur. 3M Nevada shall use thermal oxidizers on intermittently controlled emissions sources during all times a control efficiency is claimed for compliance with the VOC PAL. The thermal oxidizers shall be operated and maintained in accordance with the manufacturer's specifications.

   B. The operating temperature of the thermal oxidizers shall be continuously monitored and recorded during all periods of time a control efficiency is claimed for compliance with the VOC PAL. The three-hour average operating temperature of the thermal oxidizers shall be maintained at a temperature greater than or equal to the average operating temperature established during the most recent performance test.

   C. 3M Nevada shall assess each thermal oxidizer's valve operation and leakage at least annually.

   D. 3M Nevada shall maintain an operating and maintenance log for the thermal oxidizers for a period of ten years which shall include the following:
      1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions;
      2) Maintenance activities, with inspection schedule, repair actions, etc.

5. Intermittently Controlled Sources
   A. 3M Nevada shall identify each emission source as never controlled, continuously controlled, or intermittently controlled. This list shall be submitted semi-annually for review.

   B. For each intermittently controlled emission source, 3M Nevada shall monitor the bypasses of the control device using at least one of the following procedures:

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

1) *Flow control position indicator.* 3M Nevada shall install, calibrate, maintain, and operate according to the manufacturer's specification a flow control position indicator that provides a record indicating whether the exhaust stream from the emission source was directed to a thermal oxidizer or bypass. The time and flow control position shall be recorded at least once per hour as well as every time the flow direction is changed. The flow control position indicator shall be installed at the entrance to the bypass line that diverts the exhaust stream away from the thermal oxidizer.
2) *Car-seal or lock-and-key valve closures.* 3M Nevada shall secure any bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve or damper is maintained in the closed position, and the exhaust stream is not diverted to the bypass.
3) *Valve closure continuous monitoring.* 3M Nevada shall ensure that any bypass valve or damper is in the closed position through continuous monitoring of the valve position when the emission source is in operation and using a control device in VOC emissions calculations. The monitoring system shall be inspected at least once every month to verify that the monitor indicates valve position.
4) *Automatic shutdown system.* 3M Nevada shall use an automatic shutdown system in which operation of the emission source is stopped when flow is diverted away from a control device. The automatic shutdown system shall be inspected at least once every month to verify that it detects diversions of flow and shuts down operations in the event of such a diversion.

C. 3M Nevada shall document periods of control and periods of bypass. 3M Nevada shall only include control efficiency in VOC emissions calculations during documented control periods.

6. Capture Devices –Partial and Total Enclosures

A. A permanent partial enclosure or a permanent total enclosure shall be established around all emission sources that are continuously or intermittently controlled.

B. 3M Nevada shall monitor the operating parameters established for each enclosure during the most recent performance test and maintain the

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

operating parameters at the performance test established value or within the performance test established range.

C. 3M Nevada shall maintain an operating and maintenance log for each permanent enclosure which shall include the following:
   1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions;
   2) Maintenance activities, with inspection schedule, repair actions, etc.

7. Performance Testing
   A. 3M Nevada shall conduct performance testing on each thermal oxidizer and each enclosure at least once every 60 months to revalidate the VOC capture and destruction efficiencies as required by §52.21(aa)(12)(ix).
      1) 3M Nevada is not required to conduct repeat performance testing for an enclosure if the following requirements are met:
         a) 3M Nevada submits an explanation no later than 54 months after the date of the previous enclosure testing indicating scientifically valid reasons that the enclosures continue to achieve the capture efficiency documented by the last performance test.
         b) The Air Pollution Control Program shall have 90 days to object to 3M Nevada's scientifically valid reasons. If the Air Pollution Control Program does not object within the 90 day period then 3M Nevada is not required to conduct the repeat capture performance test for those enclosures.

   B. The destruction efficiency of each thermal oxidizer shall be established according to the EPA test methods and procedures in §63.827(d) and/or §63.3360(e).

   C. The capture efficiency of each enclosure shall be established according to the protocols for testing with temporary total enclosures that are specified in Methods 204 and 204A through F of 40 CFR Part 51, Appendix M. During the performance test, the permittee shall identify an operating parameter for each enclosure and establish a value or range of values for the operating parameter at which the enclosure achieves the tested capture efficiency.

   D. 3M Nevada shall retain copies of the most recent approved performance test(s) on-site. 3M Nevada shall retain documentation from the Missouri

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

Air Pollution Control Program approving each performance test, capture efficiency, and destruction efficiency.

E. A completed Proposed Test Plan Form (enclosed) shall be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and shall be approved by the Director prior to conducting the required emission testing.

F. Two copies of a written report of the performance test results shall be submitted to the Director within 60 days of completion of any required testing. The report shall include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required EPA Method for at least one sample run.

G. The test report shall fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.

8. Startup, Shutdown, and Malfunction Requirement

A. 3M Nevada shall develop and implement an operating and maintenance plan to minimize instances of excess emissions during startup, shutdown, and malfunction. The operating and maintenance plan shall include detailed procedures for maintaining, repairing, and operating each emission source, each capture device, and each destruction device during periods of normal operation, startup, shutdown, and malfunction. The plan shall also include emission estimation procedures for periods of startup, shutdown, and malfunction.

B. Emissions from startups, shutdowns, and malfunctions shall be included in the 12-month rolling total VOC emission calculations required by Special Condition 2.B. Emission calculations during periods of startup, shutdown, and malfunction may differ from the normal operation VOC emissions calculation methodology in Appendix B. If using calculations different from Appendix B, 3M Nevada shall indicate the reason (startup, shutdown, and/or malfunction) and provide the Air Pollution Control Program with their calculation methodology.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

9. PAL Effective Period
The effective period of this PAL permit is ten years, commencing on the effective date of this PAL permit listed on the cover page.

10. Reopening of the PAL Permit
A. The Director may reopen this PAL permit to:
1) Correct typographical/calculation errors made in setting the PAL or reflect a more accurate determination of emissions used to establish the PAL;
2) Reduce the PAL if 3M Nevada creates creditable emissions reductions for use as offsets under §51.165(a)(3)(ii);
3) Revise the PAL to reflect an increase in the PAL as provided under §52.21(aa)(11);
4) Reduce the PAL to reflect newly applicable federal, state, or local requirements with compliance dates after the PAL effective date;
5) Reduce the PAL consistent with any other requirement, that is enforceable as a practical matter, and that Missouri may impose on 3M Nevada in Missouri's State Implementation Plan; and
6) Reduce the PAL if Missouri determines that a reduction is necessary to avoid causing or contributing to a NAAQS or PSD increment violation, or to an adverse impact on an air quality related value that has been identified for a Federal Class I area by a Federal Land Manager and for which information is available to the general public.

B. Except for the correction of a typographical/calculation errors that do not increase the PAL, all other reopenings shall be carried out in accordance with the public participation requirements of §52.21(aa)(5).

11. PAL Renewal
A. 3M Nevada shall submit a timely application to the Director to request renewal of this PAL. A timely application is one that is submitted at least six months prior to, but no earlier than 18 months prior to, the date of PAL expiration. If 3M Nevada submits a complete application to renew this PAL within this time period, then this PAL permit shall continue to be effective until a new PAL permit is issued.

B. A complete application shall contain the following information:
1) The information required by §52.21(aa)(3)(i) through (iii).
2) A proposed PAL level.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

3) The sum of the potential to emit of all VOC emission sources (with supporting documentation). Supporting documentation for modified and added sources shall include but is not limited to the records required by Special Condition 15.D.
4) Any other information 3M Nevada wishes the Director to consider in determining the appropriate level for renewing the PAL.

12. PAL Expiration
A. If this PAL is not renewed in accordance with Special Condition 11, the PAL shall expire at the end of the effective period and the following requirements shall apply:
1) 3M Nevada shall apply for and obtain construction permits for each VOC emission source.
2) Each Application for Authority to Construct shall be submitted at least six months prior to, but not earlier than 18 months prior to, the date of PAL expiration.
3) Until construction permits are issued for each VOC emission source, 3M Nevada shall continue to comply with this PAL permit.
4) Any physical change or change in the method of operation will be subject to major NSR requirements if such change meets the definition of major modification at §52.21(b)(2).
5) 3M Nevada shall continue to comply with each applicable federal, state, or local requirement that may have applied either during the PAL effective period or prior to the PAL effective period except for those emission limitations that were established pursuant to §52.21(r)(4), but were eliminated by the PAL in accordance with the provisions of §52.21(aa)(1)(ii)(c).

13. Increasing the PAL during the PAL effective period
A. If 3M Nevada wishes to increase the PAL during the PAL effective period, 3M Nevada shall:
1) Submit a complete application to request an increase in the PAL limit for a PAL major modification as required by §52.21(aa)(11)(i)(a). Such application shall identify the VOC emission source(s) contributing to the increase in emissions so as to cause plantwide emissions to equal or exceed the PAL.
2) As part of a complete application, 3M Nevada shall demonstrate that the sum of the baseline actual emissions of the small emission units, plus the sum of the baseline actual emissions of the significant and major units assuming application of BACT

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

equivalent controls, plus the sum of the allowable emissions of the new or modified emission unit(s) exceeds the PAL. The level of control that would result from BACT equivalent controls on each significant or major emission unit shall be determined by conducting a new BACT analysis at the time the application is submitted, unless the emission unit is currently required to comply with a BACT or LAER requirement that was established within the preceding ten years. In such a case, the assumed control level for the emission unit(s) shall be equal to the level of BACT or LAER with which the emission unit must currently comply.

3) 3M Nevada shall obtain a major NSR permit for all emission units identified in §52.21(aa)(11)(i)(a), regardless of the magnitude of the emissions increase resulting from them (that is, no significant levels apply). These emission units shall comply with any emissions requirements resulting from the major NSR process, even though they have also become subject to the PAL or continue to be subject to the PAL.

4) The PAL permit shall require that the increased PAL level shall be effective on the day any emission unit that is part of the PAL major modification becomes operational and begins to emit VOC.

B. The revised PAL permit shall be carried out in accordance with the public participation requirements of §52.21(aa)(5).

14. Monitoring Requirements

A. 3M Nevada shall conduct monitoring on each VOC emission source. Monitored VOC emissions shall be used to calculate monthly and 12-month rolling total VOC emissions as required by Special Condition 2.B. 3M Nevada shall use one of the following approved monitoring approaches:

1) 3M Nevada may monitor VOC emissions from activities using coatings or solvents using mass balance calculations that meet the following requirements:

a) Provide a demonstrated means of validating the published content of the VOC that is contained in or created by all materials used in the emission units;

b) Assume that the emission unit emits all of the VOC that is contained in or created by any raw material or fuel used in or at the emission unit, if it cannot otherwise be accounted for in the process; and

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

c) Where the vendor of a material or fuel, which is used in or at the emission unit, publishes a range of pollutant content for such material, 3M Nevada shall use the highest value of the range to calculate the VOC emissions unless the Director determines there is site-specific data or a site-specific monitoring program to support another content within the range.

2) 3M Nevada may use emission factors to monitor VOC emissions, provided the following requirements are met:
   a) All emission factors shall be adjusted, if appropriate, to account for the degree of uncertainty or limitations in the emission factors development;
   b) Emission factors shall be obtained from site-specific approved performance testing, AP-42, or FIRE;
   c) The emission unit shall operate within the designated range of use for the emission factor, if applicable; and
   d) If technically practicable, for significant or major emission units 3M Nevada shall conduct validation testing to determine a site-specific emission factor no later than six months after the PAL effective date. Validation testing is not required if the emission factors are supported by other scientifically valid means approved by the Director per §52.21(aa)(12)(ix).

3) 3M Nevada may use Emission Master® 8 to monitor VOC emissions from tanks containing volatile organic liquids:
   a) 3M Nevada shall maintain accurate records of the throughput of liquid through each tank each month.
   b) 3M Nevada shall use Emission Master® 8 to obtain each tank's annual breathing loss (lb/yr) and to obtain a working loss emission factor (lb/1,000 gal). The working loss emission factor and the monthly throughput of each tank shall be used to calculate monthly working losses from the tank. The annual breathing losses shall be divided by 12 to obtain monthly breathing losses for each tank.
   c) 3M Nevada shall retain copies of all Emission Master® 8 reports used to establish each tank's annual breathing losses and working loss emission factor.

4) 3M Nevada may use EPA's software TANKS4.0.9d to monitor VOC emissions from tanks containing volatile organic liquids:

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

a) 3M Nevada shall maintain accurate records of the throughput of liquid through each tank each month.
b) 3M Nevada shall use TANKS4.0.9d to obtain each tank's annual breathing loss (lb/yr) and to obtain a working loss emission factor (lb/1,000 gal). The working loss emission factor and the monthly throughput of each tank shall be used to calculate monthly working losses from the tank. The annual breathing losses shall be divided by 12 to obtain monthly breathing losses for each tank.
c) 3M Nevada shall retain copies of all TANKS4.0.9d reports used to establish each tank's annual breathing losses and working loss emission factor.

5) 3M Nevada may use other emission factors and/or calculation methodologies upon receiving written approval by the Air Pollution Control Program.

B. 3M Nevada shall record and report maximum potential emissions without considering federally enforceable emission limitations or operational restrictions for an emission unit during any period of time that there is no monitoring data, unless another method for determining emissions during such periods is approved by the Director.

15. Recordkeeping Requirements

A. 3M Nevada shall maintain all records required by this permit for five years from the date of such records and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include:
1) SDS or manufacturer specification sheets for all materials used; and
2) Each emission unit's 12-month rolling total emissions

B. 3M Nevada shall maintain the following records for the duration of the PAL effective period plus five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include:
1) A copy of the PAL permit application and any PAL permit revision/amendment applications; and
2) Each annual Title V compliance certification and the data relied on in certifying compliance.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

C. 3M Nevada shall maintain a complete list of all VOC sources modified or added to the installation after the effective date of this PAL using Attachment B.

D. 3M Nevada shall calculate potential VOC emissions from all modified or added sources using the maximum hourly design rate of the modified/added source and one of the VOC calculation methodologies in Appendix B. Other calculation methodologies may be used upon approval by the Air Pollution Control Program.

16. Reporting and Notification Requirements

A. 3M Nevada shall report to the Air Pollution Control Program's Compliance/Enforcement Section, no later than ten days after the end of the month during which records indicate an exceedance of the PAL limit established in Special Condition 2.A.

B. 3M Nevada shall submit a report no later than ten days after a deviation from PAL requirements, including periods where no monitoring is available. Deviation reports submitted pursuant to §70.6(a)(3)(iii)(B) satisfy this reporting requirement. Deviation reports shall contain the following information:

1) Identification of the owner and operator and the permit number;
2) The PAL requirement that experienced deviation;
3) Emissions resulting from the deviation; and
4) A signed statement by the responsible official certifying the truth, accuracy, and completeness of the information provided in the deviation report.

C. 3M Nevada shall submit semi-annual monitoring reports within 30 days after the end of each reporting period. The semi-annual monitoring report shall include the following information:

1) Identification of the owner and operator and the permit number;
2) Total annual VOC emissions (in tons per year) based on a 12-month rolling total for each month in the reporting period.
3) All data relied upon, including but not limited to, any Quality Assurance or Quality Control data, in calculating the monthly and 12-month rolling total VOC emissions. A report containing the information in Attachment C.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

4) A list of all VOC emission units modified[1] or added to 3M Nevada during the preceding six month period.
5) The number, duration, and cause of any deviations or monitoring malfunctions (other than the time associated with zero and span calibration checks), and any corrective action taken.
6) A notification of a shutdown of any monitoring system, whether the shutdown was permanent or temporary, the reason for the shutdown, the anticipated date that the monitoring system will be fully operational or replaced with another monitoring system, whether the emission unit(s) monitored by the monitoring system continued to operate, and the calculation of VOC emissions.
7) A signed statement by the responsible official certifying the truth, accuracy, and completeness of the information provided in the report.

D. All reports shall be submitted to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102.

17. Quality Assurance/Quality Control Plan

A. 3M Nevada shall maintain an operating and maintenance plan onsite at all times. A table of contents for the plan shall be submitted to the Director within 60 days after the effective date of this permit. The plan shall be a detailed, site-specific plan and shall include the following information:
1) A preventative maintenance plan for avoidance of excess emissions which shall include all maintenance activities, with inspection schedule, repair actions, and replacements inventory.
2) A range of operating conditions and parameters for normal operation.

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[1] Modification is not defined in §52.21(aa). For the purpose of this VOC PAL permit, modification shall be defined as:

- A change in controls – each emission source shall be designated as continuously, intermittently, or never controlled. Any change to this designation would be considered a modification.
- A change which increases the VOC PTE for the emission unit. The existing VOC PTE of each emission unit is provided in Attachment A.
- A change which triggers a different or new VOC standard.
- A change in the calculation methodology employed for the emission unit.

The above definition of modification is for VOC emissions only. For non-VOC pollutants associated with a change to a VOC emission source, 3M Nevada shall comply with the definitions of modification at 10 CSR 10-6.020(2)(M)49.C and §52.01(d).

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

3) A summary of operating conditions and parameters for each capture device and each destruction device that will be monitored for malfunction or breakdown and a description of the method of detecting and informing responsible plant personnel of any malfunctions or breakdowns, including alarm systems, lights, and other indicators.

4) A description of the generic corrective procedures that will be taken in the event of a malfunction or breakdown in order to restore compliance with the applicable emission limitations and permit conditions (e.g. reducing of production rate).

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: 2013-09-024
Installation ID Number: 217-0004
Permit Number:

3M Nevada
2120 East Austin Blvd.
Nevada, MO 64772

Complete: February 6, 2014

Parent Company:
3M Company
3M Center, Building 0224-05-W-03
St. Paul, MN 55144

Vernon County, S10, T35N, R3W

## REVIEW SUMMARY

- 3M Company has applied for a VOC PAL permit for their existing commercial graphics plant in Nevada, Missouri.

- HAPs are emitted from the installation's existing equipment and may be emitted from VOC emissions sources modified or added under the PAL. This PAL permit is for VOC emissions only and does not allow for an increase in HAP emissions. For any VOC sources modified or added under the PAL that are also HAP sources, 3M Nevada shall go through Missouri's normal construction permitting process for the HAP emissions by:
  - Determining the potential HAP emissions for all HAP sources associated with the project.
  - Determining if any construction permit exemption applies to the project under 10 CSR 10-6.061.
  - If all of the HAP sources associated with the project are not covered by a construction permit exemption, 3M Nevada is required to apply for and obtain a construction permit for all of the HAP sources associated with the project prior to constructing, reconstructing, or modifying the equipment or making the physical or operational change.

- 40 CFR Part 60, Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* applies to B2 Boiler 2 and B3 Boiler 3.

- 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels (including petroleum liquid storage vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984* applies to THEP 20,000 gallon Heptane Tank.

- 40 CFR Part 60, Subpart RR – *Standards of Performance for Pressure Sensitive Tape and Label Surface Coating Operations* applies to M42 Maker 42 Line, M47 Maker 47 Line, M48 Maker 48 Line and Adhesive Coater, M50 Maker 50 Line, and N3 Press Line.

- 40 CFR Part 60, Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* applies to Fire Pump Engine.

- 40 CFR Part 63, Subpart N – *National Emission Standards for HAPs for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks* applies to GA Chrome Stripping Tank.

- 40 CFR Part 63, Subpart KK – *National Emission Standards for the Printing and Publishing Industry* applies to N1 Press Line and N2 Press Line.

- 40 CFR Part 63, Subpart EEEE – *National Emission Standards for HAPs: Organic Liquids Distribution* applies to TMEK/TEA 15,000 gallon Methyl Ethyl Ketone or Ethyl Acetate Tank, TXYL 20,000 gallon Xylene Tank, and T100 15,000 gallon Cleaning Solvent Storage Tank.

- 40 CFR Part 63, Subpart JJJJ – *National Emission Standards for HAPs: Paper and Other Web Coating* applies to M40 Maker 40 Line, M41 Maker 41 Line, M42 Maker 42 Line, M43 Maker 43 Line, M44 Maker 44 Line, M45 Maker 45 Line, M46 Maker 46 Line, M47 Maker 47 Line, M48 Maker 48 Line and Adhesive Coater, M50 Maker 50 Line, N1 Press Line, N2 Press Line, and N3 Press Line.

- 40 CFR Part 63, Subpart ZZZZ – *National Emission Standards for HAPs for Stationary Reciprocating Internal Combustion Engines* applies to West Generator, East Generator, and Fire Pump Engine.

- 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for HAPs for Industrial, Commercial, and Institutional Boilers and Process Heaters* applies to B1 Boiler 1, B2 Boiler 2, and B3 Boiler 3.

- 40 CFR Part 63, Subpart HHHHH – *National Emission Standards for HAPs: Miscellaneous Coating Manufacturing* applies to TMEK/TEA 15,000 gallon Methyl Ethyl Ketone or Ethyl Acetate Tank, TXYL 20,000 gallon Xylene Tank, T100 15,000 gallon Cleaning Solvent Storage Tank, and MM Mix/Mill Operations.

- Permanent partial enclosures[2] or permanent total enclosures are required to capture VOC emissions from all continuously or intermittently controlled emission sources. Captured emissions are required to be routed to thermal oxidizers for destruction. 3M Nevada may only use control efficiency in their emissions calculations during time periods when captured emissions are routed to an operating thermal oxidizer.

[2] Permanent partial enclosures are permanent enclosures which meets the majority, but not all of the criteria in Method 204 for permanent total enclosures.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential plantwide emissions of VOC are conditioned to the installation's baseline actual emissions (as defined at §52.21(b)(48)) plus the significant level as required by §52.21(aa)(6).

- This installation is located in Vernon County, an attainment area for all criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability; however, 3M Nevada is required to include fugitive emissions of VOC, to the extent quantifiable, in their PAL calculations per §52.21(aa)(4)(i)(d).

- Ambient air quality modeling was not performed for this review. No model is readily available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions.

- Performance testing is required for the installation's permanent partial enclosures, permanent total enclosures, and thermal oxidizers. Repeat performance testing is required every five years to meet the re-validation requirement for PALs at §52.21(aa)(12)(ix).

- A Part 70 Operating Permit application is required for this installation within one year after the effective date of this PAL permit.

- Approval of this permit is recommended with special conditions.

## INSTALLATION DESCRIPTION

3M Company owns and operates an existing commercial graphics plant in Nevada, Missouri. The installation is a major source of VOC emissions. A Part 70 operating permit renewal application was submitted by 3M Company on February 5, 2010 and is currently under technical review. Until the Part 70 operating permit renewal is issued, the installation operates under their current Part 70 operating permit OP2005-023 and their Part 70 operating permit renewal application, Project 2010-02-029. The following permits have been issued to 3M Nevada from the Air Pollution Control Program:

**Table 3: Previously issued permits**

| Permit Number | Description |
|---|---|
| 0782-002 | DMC Paint Line (Dismantled) |
| 0184-013 | Storage/Extruder Fume Exhausts |
| 0884-005 | Three Roll Mill |
| 0585-001 | Corona Treater |
| 0988-003 | Replacement Boiler |
| 0289-005 | Roll Grinder |
| 0590-011 | Replacement of Line Drives for 42 Maker |
| 0590-012 | Five Aboveground Solvent Storage Tanks |
| 0291-003 | 47 Maker |
| 0395-012 | 48 Maker |
| 0895-025 | 533 Gallon Kettle |
| 0395-012A | Amendments to Permit 0395-012 |
| 1195-009 | 250 Gallon Kettle |
| 1095-014 | N3 Maker |
| 1195-018 | Chromium and Copper Electroplating |
| 0396-019 | 49 Maker |
| 0396-020 | Case Printer |
| 1195-018A | Amendments to Permit 1195-018 |
| 0596-010 | Temporary Permit for 40 Maker |
| 0596-011 | Temporary Permit for Corona Treaters |
| 0796-003 | New Lathe |
| 1096-003 | Distillation Unit |
| 0297-017 | Electrostatic Printer and Two Flexographic Printers |
| 1098-017 | Flexible sign face substrate production line |
| 0199-025 | New Parts Cleaning Vat |
| 0899-012 | Temporary permit for an air compressor |
| 012000-020 | Temporary permit for two 175 kW-hr diesel generators |
| 1098-017A | Amendment to Permit Number 1098-017 |
| 1098-017B | Amendment to Permit Number 1098-017A |
| 042004-002 | Flexible VOC permit |
| 042004-002A | Mixer |
| 042004-002B | Ductwork changes |
| 042004-002C | Line modification |
| 112007-007 | Temporary boiler permit - Expired |
| 112008-009 | Boilers |
| 042004-002D | Boiler recordkeeping |
| 042004-002E | Printing line |
| 042004-002F | Special condition changes |

3M Nevada received a flexible VOC permit, Permit 042004-002, from the State of Missouri in 2004. The flexible VOC permit was issued under a pilot project with EPA headquarters. The flexible VOC permit was issued considering the PAL provisions at §52.21(aa), but these provisions had not yet been incorporated into Missouri's State Implementation Plan. On June 27, 2006 Missouri incorporated the federal PAL regulation. On March 11, 2010 Missouri removed conditions from 3M Nevada's flexible VOC permit that were contingent on the incorporation of the federal PAL regulation.

## PROJECT DESCRIPTION

3M Company has applied to renew only the VOC PAL portion of their flexible VOC permit at their Nevada, Missouri commercial graphics plant.

The VOC PAL in Special Condition 2.A was established according the provisions of §52.21(aa)(6) as the BAE plus the VOC significant level from §52.21(b)(23)(i). The installation chose the 24-month period from September 2004 to August 2006 for their baseline period. A summary of the installation's BAE calculations are available in Appendix C. For a more detailed look at the installation's BAE calculations, refer to the Application for Authority to Construct. Emissions from VOC sources permanently shutdown after August 2006 were excluded from BAE calculations. Emissions from VOC sources operational at the time of application receipt, but installed after the baseline period were included in the BAE calculations at their VOC potential to emit as required by §52.21(aa)(6)(ii).

The use of the calculation methodologies in Appendix B are required to demonstrate compliance with the VOC PAL. 3M Nevada uses a database to track monthly and 12-month rolling total VOC emissions. The database calculates VOC emissions based upon monthly material throughput. 3M Nevada is required to accurately update and maintain their database such that it demonstrates compliance with Special Condition 14. It is the burden of the facility to ensure that their actual monthly material throughput is accurately entered into the database, the most accurate and up-to-date VOC contents supplied by the material manufacturer are listed in the database, the most accurate and up-to-date emission factors are in the database, the most accurate and up-to-date approved capture and destruction efficiencies are in the database, and the database calculates emissions using the required calculation methodologies in Appendix B. 3M Nevada shall not estimate monthly or annual throughputs in their database. If, upon inspection, Missouri Department of Natural Resources' personnel find an error within the database, the installation shall immediately fix the error in the VOC emissions data for all months in which the error appears. 3M Nevada is also required to account for daily emissions that occur as a result of startup, shutdown, and/or malfunction. Accordingly, 3M Nevada may use monthly inventory data to back calculate daily emissions prorated on each day's production rates during periods of startup, shutdown, and/or malfunction.

For equipment that is added or removed under authority of this PAL permit, 3M Nevada is required to maintain a record of these additions/removals per Special Condition 16.C using Attachment B. 3M Nevada shall verify all emission factors, capture efficiencies, and destruction efficiencies applied to equipment added to the installation. Emission factors for new equipment shall be obtained by mass balance or from AP-42, FIRE, TANKS4.0.9d, Emission Master® 8, or other sources may be used upon written approval by the Air Pollution Control Program. 3M Nevada shall retain copies of the most recent performance tests documenting the capture efficiencies and destruction efficiencies used in calculating VOC emissions.

The PAL is for VOC emissions only and does not allow for an increase in emissions of other pollutants. For any VOC sources modified or added under the PAL that are also sources of other pollutants, 3M Nevada shall go through Missouri's normal construction permitting process for the other pollutants by:

- Determining the potential emissions of each pollutant for all emission sources associated with the project.

- Determining if any construction permit exemptions apply to the project under 10 CSR 10-6.061.
- If all of the emissions sources associated with the project are not covered by a construction permit exemption(s), 3M Nevada is required to apply for and obtain a construction permit for all of the emissions sources associated with the project prior to constructing, reconstructing, or modifying the equipment or making the physical or operational change.

The VOC PAL set forth in this permit is effective for a period of ten years from the date of permit issuance. At least six months prior to, but not earlier than 18 months prior to, the expiration date of this permit, 3M Nevada is required to submit a request to either renew or terminate the PAL.

Once a request for renewal is received by the permitting authority, the PAL will continue as an enforceable requirement until a new PAL permit is issued. During the permit renewal process, the PAL will be reevaluated to determine if the PAL should be changed.

Any request for termination shall be accompanied by a proposed approach for allocating the PAL among the existing emission units for review and approval as required by §52.21(aa)(9). Each emission limit in the proposed approach shall be based on a 12-month rolling total calculation. In addition, 3M shall cease all operation of all new emission units installed since the issuance of the initial PAL permit (042004-002) and shall comply with the permitting requirements found in Sections (5), (6), (7), (8), and (9) of 10 CSR 10-6.060 as appropriate of those sources.

To increase the PAL, the permittee shall comply with the requirements of Special Condition 13. Until a new permit is issued, the permittee shall continue to comply with the currently effective PAL in Special Condition 2.A.

## EMISSIONS/CONTROLS EVALUATION

The calculation methodologies approved to demonstrate compliance with the VOC PAL are contained in Appendix B. Three different calculation methodologies are approved:

- Mass Balance using the VOC content from SDS and approved capture and destruction efficiencies.
- Emission Factors obtained from AP-42 (available at: http://www.epa.gov/ttn/chief/ap42/), FIRE (available at: http://cfpub.epa.gov/webfire/index.cfm?action=fire.SearchEmissionFactors), or other sources upon approval.
- TANKS4.0.9d
- Emission Master® 8

The following table provides an emissions summary for this project. Existing potential emissions were taken from the Application for Authority to Construct and are summarized in Attachment A. Existing actual emissions were taken from the installation's 2012 EIQ.

**Table 5: Emissions Summary (tons per year)**

| Pollutant | Regulatory *De Minimis* Levels | Existing Potential Emissions | Existing Actual Emissions (2013 EIQ) | New Installation Conditioned Potential |
|---|---|---|---|---|
| PM | 25.0 | N/D | N/A | N/A |
| $PM_{10}$ | 15.0 | N/D | 2.06 | N/A |
| $PM_{2.5}$ | 10.0 | N/D | 2.06 | N/A |
| $SO_x$ | 40.0 | N/D | 0.16 | N/A |
| $NO_x$ | 40.0 | N/D | 27.10 | N/A |
| VOC | 40.0 | 3,435.05 | 258.18 | <437.58 |
| CO | 100.0 | N/D | 22.75 | N/A |
| HAPs | 25.0 | Major | 76.22 | N/A |
| Xylene (1330-20-7) | 10.0 | Major | 66.08 | N/A |
| Toluene (108-88-3) | 10.0 | Major | 6.03 | N/A |

N/A = Not Applicable; N/D = Not Determined

## PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential plantwide emissions of VOC are conditioned to the installation's baseline actual emissions (as defined at §52.21(b)(48)) plus the significant level as required by §52.21(aa)(6).

## APPLICABLE REQUIREMENTS

3M Nevada shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements, please consult the installation's Part 70 operating permit.

### GENERAL REQUIREMENTS

- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
- 10 CSR 10-6.065 *Operating Permits*
- 10 CSR 10-6.170 *Restriction of PM to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220 *Restriction of Emission of Visible Air Contaminants*
- 10 CSR 10-6.165 *Restriction of Emission of Odors*

### SPECIFIC REQUIREMENTS

- 10 CSR 10-6.070 *New Source Performance Regulations*
  - 40 CFR Part 60, Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*

    - 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels (including petroleum liquid storage vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*
    - 40 CFR Part 60, Subpart RR – *Standards of Performance for Pressure Sensitive Tape and Label Surface Coating Operations*
    - 40 CFR Part 60, Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*
- 10 CSR 10-6.075 *MACT Regulations*
    - 40 CFR Part 63, Subpart N – *National Emission Standards for HAPs for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*
    - 40 CFR Part 63, Subpart KK – *National Emission Standards for the Printing and Publishing Industry*
    - 40 CFR Part 63, Subpart EEEE – *National Emission Standards for HAPs: Organic Liquids Distribution*
    - 40 CFR Part 63, Subpart JJJJ – *National Emission Standards for HAPs: Paper and Other Web Coating*
    - 40 CFR Part 63, Subpart ZZZZ – *National Emission Standards for HAPs for Stationary Reciprocating Internal Combustion Engines*
    - 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for HAPs for Industrial, Commercial, and Institutional Boilers and Process Heaters*
    - 40 CFR Part 63, Subpart HHHHH – *National Emission Standards for HAPs: Miscellaneous Coating Manufacturing*
- 10 CSR 10-6.260 *Restriction of Emission of Sulfur Compounds*
- 10 CSR 10-6.405 *Restriction of PM Emissions From Fuel Burning Equipment Used for Indirect Heating*

## AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was not performed for this review. No model is readily available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions.

## STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*, I recommend this permit be granted with special conditions.

_____ _____

Alana L. Hess, P.E. Date
New Source Review Unit

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated August 21, 2013, received September 10, 2013, designating 3M Company as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- U.S. EPA's Factor Information Retrieval System (FIRE).
- U.S. EPA software TANK4.0.9d.

**Attachment A**
Installation Equipment List

3M Nevada
Vernon County, S10, T35N, R3W
Project Number: 2013-09-024
Installation ID Number: 217-0004
Permit Number: _____

**Installation Equipment List and PTE at PAL issuance**

| Emission Point | Description | Designation | VOC PTE (tpy) |
|---|---|---|---|
| M41 | Maker 41 Line | Major | 394.20 |
| M42 | Maker 42 Line | Major | 277.17 |
| M43 | Maker 43 Line | Major | 988.65 |
| M44 | Maker 44 Line | Major | 169.07 |
| M45 | Maker 45 Line including two corona treaters | Major | 273.66 |
| M47 | Maker 47 Line | Major | 247.91 |
| M48 | Maker 48 Line including one corona treater and one adhesive coater | Major | 289.61 |
| N3 | N3 Press Line including four corona treaters | Major | 151.69 |
| MCR | Maker Cleaning Room | Major | 151.62 |
| M51 | Maker 51 Line | Major | 131.85 |
| M46 | Maker 46 Line including one corona treater | Significant | 75.78 |
| M50 | Maker 50 Line | Significant | 74.28 |
| N2 | N2 Press Line including two corona treaters | Significant | 88.30 |
| MM5H & MMother | Mix/Mill Operations | Significant | 63.53 |
| X4 | X4 Extruder Line including one printer, one ozonator, and three corona treaters | Significant | 42.32 |
| B1 | Boiler #1 | Small | <1.0 |
| B2 | Boiler #2 | Small | <1.0 |
| B3 | Boiler #3 | Small | <1.0 |
| COH | N1 Press Line Oven | Small | <1.0 |
| | M41 Maker 41 Line Oven | Small | <1.0 |
| | M42 Maker 42 Line Oven | Small | <1.0 |
| | M43 Maker 43 Line Oven | Small | <1.0 |
| | M44 Maker 44 Line Oven | Small | <1.0 |
| | N2 Press Line Oven | Small | <1.0 |
| | M47 Maker 47 Line Oven | Small | <1.0 |
| | M48 Maker 48 Line Oven | Small | <1.0 |
| | N3 Press Line Oven | Small | <1.0 |
| THEP | 20,000 gallon Heptane Tank | Small | <1.0 |
| TEA | 15,000 gallon Ethyl Acetate Tank | Small | <1.0 |
| TXYL | 20,000 gallon Xylene Tank | Small | <1.0 |
| TDBK | 15,000 gallon Diisobutyl Ketone Tank | Small | <1.0 |
| T100 | 15,000 gallon Cleaning Solvent Tank | Small | <1.0 |
| TT1 | 900 gallon Xylene Tempering Tank 1 | Small | <1.0 |
| TT2 | 900 gallon Xylene Tempering Tank 2 | Small | <1.0 |
| CDST1 | 30 gallon Solvent Recovery Still Cool-down Storage Tank #1 | Small | <1.0 |
| CDST2 | 30 gallon Solvent Recovery Still Cool-down Storage Tank #2 | Small | <1.0 |
| TST | 175 gallon Solvent Recovery Still Transfer Storage Tank | Small | <1.0 |

| | | | |
|---|---|---|---|
| M40 | Maker 40 Line | Small | <1.0 |
| N1 | N1 Press Line | Small | 35.04 |
| Fuel Oil | West Generator | Small | <1.0 |
| Fuel Oil | East Generator | Small | <1.0 |
| Fuel Oil | Fire Pump Engine | Small | <1.0 |
| 47CR | Maker 47 Cleaning Room | Small | 17.69 |
| PCR | Cleaning Room | Small | 35.80 |
| TO-AB | Thermal Oxidizers A and B | Small | 3.78 |
| TO-C | Thermal Oxidizer C | Small | 1.89 |
| TO-D | Thermal Oxidizer D | Small | <1.0 |
| TRS1 | Cleaning Solvent Process Tank 1 | Small | <1.0 |
| TRS2 | Cleaning Solvent Process Tank 2 | Small | <1.0 |
| TRS3 | Cleaning Solvent Process Tank 3 | Small | <1.0 |
| TF01 | 100,000 gallon Fuel Oil Storage Tank | Small | <1.0 |
| STILL | Resource Recovery #1 | Small | <1.0 |
| X2 | X2 Extruder Line including one corona treater | Small | 1.89 |
| X3 | X3 Extruder Line including three corona treaters | Small | 7.77 |
| MISC | Dock Space Heaters | Small | <1.0 |
| LAM | Press Department Laminator | Small | <1.0 |
| - | Print Shop Operations | Small | <1.0 |
| - | QA Screen Printer | Small | <1.0 |
| TP1 | GA Screen Test Printer #1 | Small | 4.60 |
| TP2 | GA Screen Test Printer #2 | Small | 4.60 |
| GA4 | Copper Plating Tank 1 | Small | <1.0 |
| GA5 | Copper Plating Tank 2 | Small | <1.0 |
| GA6 | Copper Plating Tank 3 | Small | <1.0 |
| GA3 | GA Chrome Stripping Tank | Small | <1.0 |
| GA7 & GA14 | GA Proof Press | Small | <1.0 |
| - | Cooling Towers | Small | <1.0 |
| - | Drum Washer | Small | 13.41 |
| TRUCK | Truck Loading Rack | Small | <1.0 |
| 4E Rack | MACT EEEE Transfer Racks | Small | <1.0 |
| 4E ELC | MACT EEEE Equipment Leaks | Small | <1.0 |
| 5H ELC | MACT HHHHH Equipment Leaks | Small | <1.0 |
| **Installation VOC PTE at PAL issuance (tpy):** | | | >437.58 |

**Attachment B**
Modified and Added VOC Sources

3M Nevada
Vernon County, S10, T35N, R3W
Project Number: 2013-09-024
Installation ID Number: 217-0004
Permit Number: _____

Duplicate this form as necessary.

| Project #1 | | | | |
|---|---|---|---|---|
| **Project Description** | | | **Date of Project Commencement** | **Date of Project Completion** |
| | | | | |
| **Project Emission Source(s)** | **Description** | **Date of Construction Commencement** | **Date of Initial Startup** | **VOC Designation** |
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| Project #2 | | | | |
|---|---|---|---|---|
| **Project Description** | | | **Date of Project Commencement** | **Date of Project Completion** |
| | | | | |
| **Project Emission Source(s)** | **Description** | **Date of Construction Commencement** | **Date of Initial Startup** | **VOC Designation** |
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| Project #3 | | | | |
|---|---|---|---|---|
| **Project Description** | | | **Date of Project Commencement** | **Date of Project Completion** |
| | | | | |
| **Project Emission Source(s)** | **Description** | **Date of Construction Commencement** | **Date of Initial Startup** | **VOC Designation** |
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**Attachment C**
Required Reporting Components

3M Nevada
Vernon County, S10, T35N, R3W
Project Number: 2013-09-024
Installation ID Number: 217-0004
Permit Number: _____

3M Nevada shall complete this worksheet for each month in the six month reporting period.
Duplicate this form as necessary.

| Emission Unit | Description | Status[3] | Control Efficiency[4] | Monthly VOC Emissions[5] (tons) | 12-Month Rolling Total VOC Emissions[6] (tons) | Notes[7] |
|---|---|---|---|---|---|---|
| M41 | Maker 41 Line | | | | | |
| M42 | Maker 42 Line | | | | | |
| M43 | Maker 43 Line | | | | | |
| M44 | Maker 44 Line | | | | | |
| M45 | Maker 45 Line including two corona treaters | | | | | |
| M47 | Maker 47 Line | | | | | |
| M48 | Maker 48 Line including one corona treater and one adhesive coater | | | | | |
| N3 | N3 Press Line including four corona treaters | | | | | |
| MCR | Maker Cleaning Room | | | | | |
| M51 | Maker 51 Line | | | | | |

[3] For each emission unit, list if the emission unit is new, existing, removed, or modified. Empty rows have been provided near the bottom of the table for the listing of new emission units. All VOC emission units at the installation shall be listed in this table. A modification is any of the following: a change in controls, a change which increases VOC PTE, a change which triggers a new or different VOC standard, or a change in the calculation methodology for this emission unit.
[4] For continuously controlled sources, this would be the stack tested efficiency. For intermittently controlled sources, this would be the overall percentage of control during the reporting period.
[5] Monthly emissions shall be calculated using the calculation methodologies in Appendix B.
[6] 12-Month Rolling Total Emissions (tons) = the sum of the most recent 12 months' Monthly Emissions (tons).
[7] For emission units listed as modified during the reporting period, please indicate:

- The type of modification
- For a change in control indicate the new control strategy (i.e. continuous, intermittent, or never) and if any new control device is being installed or if any existing control device will be used
- For changes in the calculation methodology, please indicate the new calculation methodology which will be used. If the new calculation methodology using an emission factor, please indicate the emission factor and source.
- For an increase in VOC PTE, please indicate the cause of the increase
    - if the cause is a physical modification increasing the MHDR, please provide the new MHDR and new PTE
    - if the cause in a formulation change, please indicate the new PTE
- For the triggering of a new or different VOC standard, please indicate the newly VOC applicable standard.

| | | | | | | |
|---|---|---|---|---|---|---|
| M46 | Maker 46 Line including one corona treater | | | | | |
| M50 | Maker 50 Line | | | | | |
| N2 | N2 Press Line including two corona treaters | | | | | |
| MM5H & MMother | Mix/Mill Operations | | | | | |
| X4 | X4 Extruder Line including one printer, one ozonator, and three corona treaters | | | | | |
| B1 | Boiler #1 | | | | | |
| B2 | Boiler #2 | | | | | |
| B3 | Boiler #3 | | | | | |
| COH | Press and Maker Ovens | | | | | |
| THEP | 20,000 gallon Heptane Tank | | | | | |
| TEA | 15,000 gallon Ethyl Acetate Tank | | | | | |
| TXYL | 20,000 gallon Xylene Tank | | | | | |
| TDBK | 15,000 gallon Diisobutyl Ketone Tank | | | | | |
| T100 | 15,000 gallon Cleaning Solvent Tank | | | | | |
| TT1 | 900 gallon Xylene Tempering Tank 1 | | | | | |
| TT2 | 900 gallon Xylene Tempering Tank 2 | | | | | |
| CDST1 | 30 gallon Solvent Recovery Still Cool-down Storage Tank #1 | | | | | |
| CDST2 | 30 gallon Solvent Recovery Still Cool-down Storage Tank #2 | | | | | |
| TST | 175 gallon Solvent Recovery Still Transfer Storage Tank | | | | | |
| M40 | Maker 40 Line | | | | | |
| N1 | N1 Press Line | | | | | |
| Fuel Oil | West Generator | | | | | |
| Fuel Oil | East Generator | | | | | |
| Fuel Oil | Fire Pump Engine | | | | | |
| 47CR | Maker 47 Cleaning Room | | | | | |
| PCR | Cleaning Room | | | | | |
| TO-AB | Thermal Oxidizers A and B | | | | | |
| TO-C | Thermal Oxidizer C | | | | | |
| TO-D | Thermal Oxidizer D | | | | | |
| TRS1 | Cleaning Solvent Process Tank 1 | | | | | |
| TRS2 | Cleaning Solvent Process Tank 2 | | | | | |
| TRS3 | Cleaning Solvent Process Tank 3 | | | | | |
| TF01 | Fuel Oil Storage Tank | | | | | |
| STILL | Resource Recovery #1 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| X2 | X2 Extruder Line including one corona treater | | | | | |
| X3 | X3 Extruder Line including three corona treaters | | | | | |
| MISC | Dock Space Heaters | | | | | |
| LAM | Press Department Laminator | | | | | |
| - | Print Shop Operations | | | | | |
| - | QA Screen Printer | | | | | |
| TP1 | GA Screen Test Printer #1 | | | | | |
| TP2 | GA Screen Test Printer #2 | | | | | |
| GA4 | Copper Plating Tank 1 | | | | | |
| GA5 | Copper Plating Tank 2 | | | | | |
| GA6 | Copper Plating Tank 3 | | | | | |
| GA3 | GA Chrome Stripping Tank | | | | | |
| GA7 & GA14 | GA Proof Press | | | | | |
| - | Cooling Towers | | | | | |
| - | Drum Washer | | | | | |
| TRUCK | Truck Loading Rack | | | | | |
| 4E Rack | MACT EEEE Transfer Racks | | | | | |
| 4E ELC | MACT EEEE Equipment Leaks | | | | | |
| 5H ELC | MACT HHHHH Equipment Leaks | | | | | |
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| | | | | | | |
| **Installation 12-Month Rolling Total VOC Emissions[8] (tpy):** | | | | | | |

[8] Installation 12-Month Rolling Total VOC Emissions (tpy) = the sum of each emission unit's 12-Month Rolling Total VOC Emissions (tons). **Installation 12-Month Rolling Total VOC Emissions of less than 437.58 tons indicates compliance with the VOC PAL.**

# APPENDIX A

## Abbreviations and Acronyms

**%**.....percent
**ºF** .....degrees Fahrenheit
**acfm** .....actual cubic feet per minute
**BACT**.....Best Available Control Technology
**BAE** .....Baseline Actual Emissions
**BMPs**.....Best Management Practices
**Btu**.....British thermal unit
**CAM**.....Compliance Assurance Monitoring
**CAS** .....Chemical Abstracts Service
**CEMS** .....Continuous Emission Monitor System
**CFR** .....Code of Federal Regulations
**CO** .....carbon monoxide
**$CO_2$** .....carbon dioxide
**$CO_2e$** .....carbon dioxide equivalent
**COMS** .....Continuous Opacity Monitoring System
**CSR** .....Code of State Regulations
**dscf** .....dry standard cubic feet
**EIQ**.....Emission Inventory Questionnaire
**EP** .....Emission Point
**EPA** .....Environmental Protection Agency
**EU**.....Emission Unit
**fps** .....feet per second
**ft** .....feet
**GACT**.....Generally Available Control Technology
**GHG**.....Greenhouse Gas
**gpm** .....gallons per minute
**gr** .....grains
**GWP** .....Global Warming Potential
**HAP** .....Hazardous Air Pollutant
**hr** .....hour
**hp** .....horsepower
**lb**.....pound
**lbs/hr**.....pounds per hour
**MACT** .....Maximum Achievable Control Technology
**µg/$m^3$** .....micrograms per cubic meter
**m/s** .....meters per second
**Mgal** .....1,000 gallons
**MW** .....megawatt
**MHDR**.....maximum hourly design rate
**MMBtu**.....Million British thermal units
**MMCF**.....million cubic feet
**NAAQS**....National Ambient Air Quality Standards
**NESHAPs** National Emissions Standards for Hazardous Air Pollutants
**$NO_x$**.....nitrogen oxides
**NSPS**.....New Source Performance Standards
**NSR**.....New Source Review
**PAL** .....Plantwide Applicability Limitation
**PM** .....particulate matter
**$PM_{2.5}$**.....particulate matter less than 2.5 microns in aerodynamic diameter
**$PM_{10}$**.....particulate matter less than 10 microns in aerodynamic diameter
**ppm** .....parts per million
**PSD** .....Prevention of Significant Deterioration
**PTE**.....potential to emit
**RACT**.....Reasonable Available Control Technology
**RAL** .....Risk Assessment Level
**SCC**.....Source Classification Code
**scfm** .....standard cubic feet per minute
**SDS** .....Safety Data Sheet
**SIC**.....Standard Industrial Classification
**SIP**.....State Implementation Plan
**SMAL** .....Screening Model Action Levels
**$SO_x$**.....sulfur oxides
**$SO_2$**.....sulfur dioxide
**tph**.....tons per hour
**tpy** .....tons per year
**VMT**.....vehicle miles traveled
**VOC**.....Volatile Organic Compound

# APPENDIX B

## VOC Emissions Calculation Methodology

3M Nevada shall complete mass balance calculations to determine VOC emissions from the following emission units existing at the installation at the time of permit issuance (emissions units installed after the date of permit issuance shall employ one of the emission calculation methodologies in Special Condition 14.A):

| Emission Point | Description |
|---|---|
| M41 | Maker 41 Line |
| M42 | Maker 42 Line |
| M43 | Maker 43 Line |
| M44 | Maker 44 Line |
| M45 | Maker 45 Line |
| M46 | Maker 46 Line |
| M47 | Maker 47 Line |
| M48 | Maker 48 Line including one adhesive coater |
| M50 | Maker 50 Line |
| M51 | Maker 51 Line |
| N1 | N1 Press Line |
| N2 | N2 Press Line |
| N3 | N3 Press Line |
| MCR | Maker Cleaning Room |
| MM5H & MMother | Mix/Mill Operations |
| X2 | X2 Extruder Line |
| X3 | X3 Extruder Line |
| X4 | X4 Extruder including one printer |
| M40 | Maker 40 Line |
| 47CR | Cleaning Room |
| PCR | Cleaning Room |
| STILL | Resource Recovery #1 |
| LAM | Press Department Laminator |
| - | Cooling Towers |
| - | Print Shop Operations |
| - | QA Screen Printer |
| TP1 | GA Screen Printer 1 |
| TP2 | GA Screen Printer 2 |
| GA7 & GA14 | GA Proof Press |

- 3M Nevada shall maintain records of the monthly usage of each ink, solvent, cleaning solution, or other VOC containing material.
- 3M Nevada shall retain MSDS or manufacturer product specification sheets indicating the density and VOC content of each ink, solvent, cleaning solution, or other VOC containing material. If an MSDS indicates a range of VOC contents, 3M Nevada shall use the highest value within the range for their calculations.
- 3M Nevada shall calculate the uncontrolled VOC emissions from each ink, solvent, cleaning solution, or other VOC containing material using the following equation:
  Material Usage (gal) x Material Density (lb/gal) x VOC Content (wt %) x 0.0005 (ton/lb)
- 3M Nevada shall sum the monthly uncontrolled VOC emissions from each ink, solvent, cleaning solution, or other VOC containing material used by an emission point to obtain the emission point's monthly uncontrolled VOC emissions.
- 3M Nevada shall install permanent partial enclosures or permanent total enclosures around all emission units that are routed intermittently or continuously to a control device.
- 3M Nevada shall include capture and control efficiencies in their calculations only during those periods of time when emissions are being sent to a thermal oxidizer. Capture and destruction efficiencies for the enclosures and thermal oxidizers shall be obtained from the most recent approved performance test. Monthly controlled VOC emissions shall be calculated as follows:
  Monthly uncontrolled VOC emissions (tons) x (1 – % Capture x % Destruction / 100)
- 3M Nevada shall use not use capture and destruction efficiencies when calculating emissions from start-up, shutdown, or malfunction.

# APPENDIX B Continued

## VOC Emissions Calculation Methodology

3M Nevada shall use emission factors to determine VOC emissions from the following emission units existing at the installation at the time of permit issuance (emission units installed after the date of permit issuance shall employ one of the emission calculation methodologies in Special Condition 14.A):

| Emission Point | Description | VOC Emission Factor |
|---|---|---|
| M45 | Two Enercon corona treaters | 0.072 lb/kW-hr |
| M46 | One Pillar Technologies corona treater | 0.071 lb/kW-hr |
| M48 | One Enercon corona treater | 0.072 lb/kW-hr |
| N2 | Two Enercon corona treaters | 0.072 lb/kW-hr |
| N3 | Four Enercon corona treaters | 0.072 lb/kW-hr |
| X2 | One Enercon corona treater | 0.072 lb/kW-hr |
| X3 | Three Pillar Technologies corona treaters | 0.071 lb/kW-hr |
| X4 | One ozonator | 1 lb/lb |
| | Three Enercon corona treaters | 0.072 lb/kW-hr |
| B1 | Boiler 1 – Fuel Oil #2 | 0.2 lb/1,000 gal |
| B2 | Boiler 2 – Fuel Oil #2 | 0.2 lb/1,000 gal |
| B3 | Boiler 3 – Fuel Oil #2 | 0.2 lb/1,000 gal |
| COH, B1, B2, B3, TO-AB, TO-C, TO-D, Dock Space Heaters | Installation Natural Gas Combustion | 5.5 lb/MMscf |
| - | West Generator | 49.3 lb/1,000 gal |
| - | East Generator | 49.3 lb/1,000 gal |
| - | Fire Pump Engine | 49.3 lb/1,000 gal |
| - | Drum Washer | 9.03 lb/cycle |

- 3M Nevada shall use the approved VOC emission factors listed in the above table, along with actual monthly throughput to calculate emissions as follows:

  Monthly VOC Emissions (tons) = Actual Monthly Throughput (units/month) x VOC Emission Factor (lb/unit) x 0.0005 (ton/lb)

# APPENDIX B Continued

## VOC Emissions Calculation Methodology

3M Nevada shall use either TANKS4.0.9d or Emission Master® 8 to determine VOC emissions from the following emission units existing at the time of permit issuance (emission units installed after the date of permit issuance shall employ one of the emission calculation methodologies in Special Condition 14.A):

| Emission Point | Description | Tank Type | Capacity (gallons) |
|---|---|---|---|
| THEP | Heptane Tank | Vertical Fixed Roof | 20,000 |
| TEA | Ethyl Acetate Tank | | 15,000 |
| TXYL | Xylene Tank | | 15,000 |
| TDBK | Diisobutyl Ketone Tank | | 15,000 |
| T100 | Cleaning Solvent Storage Tank | | 15,000 |
| TRS1 | Cleaning Solvent Process Tank 1 | | 8,000 |
| TRS2 | Cleaning Solvent Process Tank 2 | | 8,000 |
| TRS3 | Cleaning Solvent Process Tank 3 | | 8,000 |
| TF01 | Fuel Oil Storage Tank | | 100,000 |
| TT1 | Xylene Tempering Tank 1 | | 900 |
| TT2 | Xylene Tempering Tank 2 | | 900 |
| CDST1 | Solvent Recovery Still Cool-down Storage Tank #1 | | 30 |
| CDST2 | Solvent Recovery Still Cool-down Storage Tank #2 | | 30 |
| TST | Solvent Recovery Still Transfer Storage Tank | | 175 |

Emission Master® 8[9] requirements:

- 3M Nevada shall maintain accurate records of the throughput of liquid through each tank each month.
- 3M Nevada shall use Emission Master® 8 to obtain each tank's annual breathing loss (lb/yr) and to obtain a working loss emission factor (lb/1,000 gal). The working loss emission factor and the monthly throughput of each tank shall be used to calculate monthly working losses from the tank. The annual breathing losses shall be divided by 12 to obtain monthly breathing losses for each tank.
- 3M Nevada shall retain copies of all Emission Master® 8 reports used to establish each tank's annual breathing losses and working loss emission factor.

TANKS4.0.9d[9] requirements:

- 3M Nevada shall maintain accurate records of the throughput of liquid through each tank each month.
- 3M Nevada shall use TANKS4.0.9d to obtain each tank's annual breathing loss (lb/yr) and to obtain a working loss emission factor (lb/1,000 gal). The working loss emission factor and the monthly throughput of each tank shall be used to calculate monthly working losses from the tank. The annual breathing losses shall be divided by 12 to obtain monthly breathing losses for each tank.
- 3M Nevada shall retain copies of all TANKS4.0.9d reports used to establish each tank's annual breathing losses and working loss emission factor.

[9] Or newer version as approved by the Air Pollution Control Program.

# APPENDIX C

## BAE Calculations

| VOC Emission Unit | BAE (tpy) from September 2004 – August 2006 |
|---|---|
| Maker 40 Line | - |
| Maker 41 Line | 29.81 |
| Maker 42 Line | 18.37 |
| Maker 43 Line | 10.79 |
| Maker 44 Line | 11.25 |
| Maker 45 Line | - |
| Maker 45 Line Corona Treater | 1.64 |
| Maker 46 Line | 6.40 |
| Maker 46 Line Corona Treater | 0.22 |
| Maker 47 Line | 11.42 |
| Maker 48 Line | 23.12 |
| Maker 48 Line Corona Treater | - |
| Maker 49 Line | Removed after baseline period |
| Maker 50 Line | 12.80 |
| N1 Press Line | 2.39 |
| N1 Press Line Corona Treaters | Removed after baseline period |
| N2 Press Line | 10.40 |
| N2 Press Line Corona Treaters (2) | - |
| N3 Press Line | 13.97 |
| N3 Press Line Corona Treaters (4) | 4.22 |
| Mix-Mill Operations (including cleaning) | 53.04 |
| Tank T100 | 0.87 |
| Tank TDBK | 0.56 |
| Tank THEP | 0.15 |
| Tank TMEK/TEA | 0.40 |
| Tank TXYL | 0.14 |
| Thermal Oxidizers: AB, C, D | 0.84 |
| COH Coating Ovens | 0.70 |
| Boiler 1 | 0.24 |
| Cleaning Room (47CR) | 2.38 |
| Cleaning Room (49CR) | - |
| Cleaning Room (MCR) | 25.30 |
| Cleaning Room (PCR) | 5.78 |
| TRS 1 | 0.52 |
| TRS 2 | 0.52 |
| TRS 3 | 1.14 |
| Valves & Flanges | - |
| X2 Extruder | 0.43 |
| X2 Corona Treater | 0.69 |
| X3 Extruder | 0.43 |
| X3 Corona Treater | 0.79 |
| **Emission Units Installed after August 2006 and operational on September 10, 2013** | |
| **VOC Emission Unit** | **Potential to Emit (tpy)** |
| Maker 41 Line Modification, installed October 2006 | 74.17 |
| Maker 48 Line Adhesive Coater, installed May 2012 | 7.98 |
| Boiler 2, installed June 2008 | 0.39 |
| Boiler 3, installed June 2008 | 0.39 |
| GA Screen Printer 1, installed September 2006 | 4.60 |
| GA Screen Printer 2, installed February 2013 | 4.60 |
| Drum Washer, installed September 2009 | 9.89 |
| X3 Corona Treater, installed July 2013 | 1.55 |
| X4 Extruder & Ozonator, installed October 2009 | 42.32 |
| **Installation BAE (tpy):** | 397.58 |
| **VOC Significant Level (tpy):** | 40.0 |
| **VOC PAL (tpy):** | 437.58 |

Mr. Todd Cantrell
Plant Manager
3M Nevada
2120 East Austin Blvd.
Nevada, MO 64772

RE: New Source Review Permit - Project Number: 2013-09-024

Dear Mr. Cantrell:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application, and with your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Alana Rugen, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:arl

Enclosures

c: Southwest Regional Office
PAMS File: 2013-09-024

Permit Number: