

**MISSOURI**  
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: **012018-003**      Project Number: 2017-10-016  
Installation Number: 009-0062

Parent Company:            Architectural Systems, Inc.

Parent Company Address: P.O. Box 519, Monett, MO 65708

Installation Name:        Architectural Systems, Inc.

Installation Address:     707 West Highway 60, Monett, MO 65708

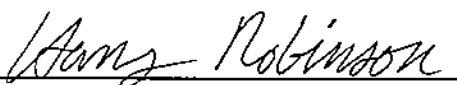
Location Information:     Barry County, S6, T25N, R27W

Application for Authority to Construct was made for:

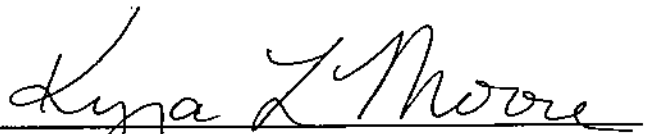
A paint burn off oven and the ability to use powder coat spraying in existing spray booths.  
This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

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



Prepared by  
Hans Robinson  
New Source Review Unit



Director or Designee  
Department of Natural Resources

JAN 17 2018

Effective Date

## 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. Permittee should notify the Enforcement and Compliance Section of 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 Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's 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 source(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 using the contact information below.

Contact Information:  
Missouri Department of Natural Resources  
Air Pollution Control Program  
P.O. Box 176  
Jefferson City, MO 65102-0176  
(573) 751-4817

The regional office information can be found at the following website:  
<http://dnr.mo.gov/regions/>

**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 paragraph (12)(A)10. "Conditions required by permitting authority."*

Architectural Systems, Inc. (ASI)  
Barry County, S6, T25N, R27W

1. **Superseding Condition**
  - A. The conditions of this permit supersede the following special conditions found in the previously issued construction permit 072008-010 issued by the Air Pollution Control Program.
    - 1) Special Condition 1 Emission Limitation for Volatile Organic Compounds (VOCs)
    - 2) Special Condition 3 NO<sub>x</sub> limit
2. **VOC and PM<sub>2.5</sub> Emission Limitations**
  - A. Architectural Systems, Inc. shall emit less than 250.0 tons of VOCs in any consecutive 12-month period from the entire installation (see emission points listed in Table 1). Include the startup, shutdown, and malfunction emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050.
  - B. ASI shall emit less than 10.0 tons of PM<sub>2.5</sub> in any consecutive 12-month period from powder coating (EP-01B) and the natural gas burn-off combustion (EP-04). Include the startup, shutdown, and malfunction emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050.
  - C. Attachment A and Attachment B or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 2.A and 2.B.
3. **Use of Alternative Materials**
  - A. Before using an alternative powder coat (EP-01B) that differs from a material listed in the Application for Authority to Construct, ASI shall calculate the potential to emit of each individual HAP contained in the alternative powder coat.

**SPECIAL CONDITIONS:**

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

- B. ASI shall seek approval from the Air Pollution Control Program's New Source Review Unit before use of the alternative material if the individual HAP potential emissions for the alternative material are greater than the SMAL for any HAP listed in Appendix A.
- C. If a coating that contains a HAP listed in Appendix A is applied at the installation, ASI shall develop and keep records for individual HAP potential to emit to show compliance with Special Condition 3.A. These records shall include, at minimum, the following information:
- 1) Installation name
  - 2) Installation ID
  - 3) Permit number
  - 4) List of all coatings and their individual HAP content (in weight percent) as well as each individual HAPs' SMAL found in Appendix A. If a coating SDS lists a range of values for the HAP content, use the largest value in the range to demonstrate compliance. If there are multiple coatings used which contain the same individual HAP, list the HAP content from the worst case coating (i.e. the coating which contains the highest HAP content).
  - 5) For each individual HAP, include a HAP potential to emit (PTE) calculation using the following equation:
 
$$\text{HAP PTE} = 10 \text{ tpy } PM_{2.5} \text{ limit} \times \text{largest individual HAP content (\%)} \quad (\text{eq 1})$$
  - 6) Indication of compliance with Special Condition 3.A (i.e. indication that all HAPs have a PTE below the individual SMAL listed in Appendix A)
4. Burn Off Oven Operational Requirement (EP-04)
- A. ASI shall exclusively use the burn off oven to remove paint/residue from tools/metal parts. The oven shall be fueled exclusively by natural gas.
  - B. No PVC, chlorinated, or hazardous materials shall be introduced into the oven.
  - C. The burn off oven shall be operated with an afterburner/secondary combustion chamber. A temperature of at least 1,400 degrees Fahrenheit shall be maintained in the secondary combustion chamber.

**SPECIAL CONDITIONS:**

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

- D. The burn off oven shall be operated with a digital gauge that continuously indicates the temperature in the secondary combustion chamber. The temperature shall be recorded at least twice per batch cycle while operating. The batch cycle start and stop times shall be recorded. The times that the temperature is recorded shall be indicated.
  
- 5. **Powder Coating Spray Booth Requirement**  
ASI shall operate no more than four (4) powder coating electrostatic spray guns within any of the six (6) existing spray booths (EP-01).
  
- 6. **Record Keeping and Reporting Requirements**
  - A. Architectural Systems, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.
  
  - B. Architectural Systems, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, by mail at P.O. Box 176, Jefferson City, MO 65102 or by email at [AirComplianceReporting@dnr.mo.gov](mailto:AirComplianceReporting@dnr.mo.gov), no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (5) REVIEW

Project Number: 2017-10-016  
Installation ID Number: 009-0062  
Permit Number: 012018-003

Installation Address:  
Architectural Systems, Inc.  
707 West Highway 60  
Monett, MO 65708

Parent Company:  
Architectural Systems, Inc.  
P.O. Box 519  
Monett, MO 65708

Barry County, S6, T25N, R27W

REVIEW SUMMARY

- Architectural Systems, Inc. has applied for authority to install a paint burn off oven and powder coat booth.
- The application was deemed complete on 10/16/2017.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process arise from the combustion of natural gas and the powder coat material.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart M, *National Emission Standards for Surface Coating of Miscellaneous Metal Parts and Products* applies to the proposed equipment.
- MACT standard 40 CFR Part 63, Subpart D, *Industrial, Commercial, and Institutional Boilers and Process Heaters* applies to EP-02, EP-03, and EP-04 listed in Table 1.
- No new controls are being added as a part of this permitting action. The fabric filters and spray booths used to control PM/PM<sub>10</sub>/PM<sub>2.5</sub> from coating operations were made practically enforceable by Special Condition 4 of CP 072008-010 and applied to the new electrostatic spray gun powder coating operation.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. All emissions for this project are below de minimis. Potential emissions of VOC from the entire installation are conditioned below 250 tpy. Potential PM<sub>2.5</sub> emissions from the project are conditioned below the de minimis level.
- This installation is located in Barry 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.
- Ambient air quality modeling was not performed since potential emissions of the application are conditioned below de minimis levels and SMALs.
- Emissions testing is not required for the equipment as a part of this permit. Testing may be required as part of other state, federal or applicable rules.
- The requirements of this construction permit shall be included in the installation's Part 70 operating permit renewal application which is required to be submitted by no later than October 17, 2017
- Approval of this permit is recommended with special conditions.

#### INSTALLATION DESCRIPTION

Located in Monett, Missouri in Barry County, Architectural Systems, Inc. (ASI) applies coatings to architectural subsections which are required to meet the specifications of Architectural Aluminum Manufacturers Association publication number AAMA 605.2-2000. They are a high performance architectural coating manufacturer that uses aluminum extrusions to make prefabricated metal storefronts. The installation received a 250 tpy VOC limit and a 40 tpy NOx limit in Construction Permit (CP) 072008-010 to avoid becoming a major source of VOC and to avoid modeling NOx. The installation is a major source for HAPs and is required to obtain a Part 70 operating permit.

Aluminum extrusions receive a dip in a cleaning solution (caustic) then a rinse in a dip tank. The extrusions are then dipped into a phosphate solution and go through two additional rinse steps. No emissions are reported from this equipment. The pretreatment cleaning and the phosphate coating and rinsing processes are a wet process with no anticipated emissions. The emissions (EP-03) from this source consists of the natural gas combustion emissions from the three process heaters each rated at 0.25 MMBtu/hr.

EP-01 is the painting spray booth area which consists of a total of six stacks, S1 through S6, where a combination of three coats of primer and paint are applied. The aluminum extrusions enter the paint booth area consisting of six booths. The extrusions proceed through the booths and the coatings are applied. The first two booths apply the primer or base coat, and the following booths apply the remaining color or clear coats. The extrusions then proceed to the drying oven for final curing, to the coating manufacturer's specifications, of the applied coatings. A complete list of emission points is included in Table 1 below.

**Table 1: Installation Wide Emission Points**

Emission Points	Emission Point Description	Pollutants	Project Status
EP-01A	Liquid paint spray coating (6 booths total, S1 through S6)	PM/PM <sub>10</sub> /PM <sub>2.5</sub> , VOC, HAPs	Existing
EP-01B	Powder coating (6 booths total, S1 through S6) <sup>3</sup>	PM/PM <sub>10</sub> /PM <sub>2.5</sub> , HAPs <sup>2</sup>	New
EP-02	Natural gas fired drying oven (1.3 MMBtu/hr)	PM/PM <sub>10</sub> /PM <sub>2.5</sub> , SO <sub>2</sub> , NOx, VOC, CO, HAPs	Existing
EP-03	Three (3) natural gas phosphate process heaters (0.25 MMBtu/hr each)	PM/PM <sub>10</sub> /PM <sub>2.5</sub> , SO <sub>2</sub> , NOx, VOC, CO, HAPs	Existing
EP-04	Natural gas paint burn off-oven (0.8 MMBtu/hr) <sup>1</sup>	PM/PM <sub>10</sub> /PM <sub>2.5</sub> , SO <sub>2</sub> , NOx, VOC, CO, HAPs	New
EP-05	Haul Roads	PM/PM <sub>10</sub> /PM <sub>2.5</sub>	Existing

<sup>1</sup>EP-04 is replacing original 0.2 MMBtu/hr paint burn off-oven.

<sup>2</sup>While EP-01B can potentially emit solid HAPs, none of the coatings reviewed for this project contained HAPs.

<sup>3</sup>While powder coat guns may be operated in any of the existing six (6) spray booths, the facility will only operate four (4) powder coat spray guns in addition to the six (6) solvent based spray guns (i.e. there are only six spray booths at the installation – S1, S2, S3, S4, S5, and S6 – which may be used for solvent based spray coating and powder coating.)

The installation is considered major for HAPs. The company provided information indicating that they have not exceeded 250 tons per year in actual VOC emissions. The MACT, Subpart M MMM will apply to the equipment associated with this project. A MACT, Subpart M MMM facility using high performance coatings has the option to comply with the emission limit for high performance coating operations using the compliant materials approach, the emission rate without add-on controls approach, or the emission rate with add on controls approach. The rule also allows for a facility - specific emission limit approach. Therefore, this project is not subject to the requirements of Missouri Rule 10 CSR 10-6.060, Section (9), Hazardous Air Pollutant Permits even though the potential to emit for several individual HAPs and the combined HAPs exceed the major source levels of 10.0/25.0 tons per year, respectively. MACT, Subpart H H H H H H does not apply the new powder coating operation since powder coating is exempt and because the installation is a major source.

The following New Source Review permits have been issued to Architectural Systems, Inc. from the Air Pollution Control Program.

**Table 2: Permit History**

Permit Number	Description
072008-010	Construction of a spray booth, drying oven, phosphate washer/coating operation, paint hook burn off oven



## PROJECT DESCRIPTION

As a part of this project, Architectural Systems, Inc. (ASI) will be removing and replacing their 0.2 MMBtu/hr burn-off oven previously included in Construction Permit (CP) 072008-010 with a 0.8 MMBtu/hr natural gas burn-off oven (EP-04). Originally, the facility was permitted to operate six spray booths and six electrostatic spray guns. Now, with the issuance of this permit, ASI will be able to spray powder coatings from the same booths (originally only liquid paints were used by the facility). This constitutes a modification in the spray operations and; therefore, requires a separate PM<sub>2.5</sub> powder coating limit. While there are six liquid coat spray guns, there will only be four powder coat spray guns (10 guns total). All liquid coat and powder coating guns may be operated in any of the existing six spray booths (S1, S2, S3, S4, S5, S6). As a worst case, all particulate was considered to be smaller than 2.5 microns since PM<sub>2.5</sub> has the most restrictive de minimis threshold. While all powder coating SDS sheets provided by ASI at the time of this permit's issuance contain no HAPs, future coatings could potentially contain HAPs.

ASI has voluntarily taken a 10 tpy PM<sub>2.5</sub> limit in order to avoid dispersion modeling. Emissions tracking for the 10 tpy PM<sub>2.5</sub> limit will include total throughput of powder coating and paint burn off particulate emissions from natural gas combustion. With the issuance of this permit, ASI will need to amend their current Part 70 operating permit to include the new equipment.

Since natural gas combustion will produce some VOC emissions, the 250 tpy VOC limit from CP 072008-010 is being superseded in order to prevent the facility from becoming a major source of VOC. CP 072008-010 also placed a 40 tpy NO<sub>x</sub> limit on the installation. However, the only sources of NO<sub>x</sub> at the facility are from natural gas combustion (which cumulatively release very little NO<sub>x</sub>). Therefore the NO<sub>x</sub> limit is being superseded (removed) as a part of this permitting action since the limit was unnecessary. Since all HAPs from natural gas combustion are below their individual SMAL, no limits or modeling is required for HAPs.

Powder coating is performed at the request of ASI clients and does not 'debottleneck' the amount of materials being processed by the facility (i.e. the amount of prefabricated metal storefronts produced by the facility will not increase). Rather, the powder coating is an additional process which some existing materials may need depending on the product specifications. Powder coatings are generally applied at the request of clients for products such as window frames, paneling, custom sunscreen panels, etc. However, extra materials will not be brought to ASI such that haul road emissions increases would occur (and therefore additional haul road emissions were not considered as a part of this permit). Structural items which need coating in the past have been brought to a secondary ASI facility (site ID 145-0063; Granby, MO) for powder coating and then brought back to this (Monett) facility. As of the issuance of this permit, items will no longer need to travel between the two facilities for coating and therefore haul road emissions may actually decrease depending on client coating requirements.

## EMISSIONS/CONTROLS EVALUATION

The emission factors for the paint burn off oven which combusts natural gas were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.4 *Natural Gas Combustion* (July, 1998)

Powder coating will occur using an electrostatic spray gun to limit overspray. According to the EPA document entitled, *Sources and Control of Volatile Organic Air Pollutants*, APTI Course 482, Third Edition (November 2002) airless spray coating of large flat surfaces can achieve 75% transfer efficiency. Since the existing spray booths are fully enclosed, they were given a default 100% particulate capture efficiency. Spray booths are equipped with paint arrestor filters which were determined to achieve 90% control of particulate matter and the operation of them is practically enforceable by CP 072008-010, Special Condition 4.A.

The following table provides an emissions summary for this project. Existing potential emissions were taken from the New Installation Conditioned Potential Emissions of Table 1 from CP 072008-010. Existing actual emissions were taken from the installation's 2016 EIQ. Potential emissions of the application represent the controlled potential of the new equipment, assuming continuous operation (8760 hours per year).

Table 3: Emissions Summary (tpy)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions (2016 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	N/A	N/A	N/D	N/D
PM <sub>10</sub>	15.0	N/A	1.63E-02	N/D	N/D
PM <sub>2.5</sub>	10.0	N/A	1.63E-02	< 10.0	N/D
SO <sub>2</sub>	40.0	N/A	3.20E-03	2.06E-03	N/D
NO <sub>x</sub>	40.0	0.88	0.5	0.34	N/D
VOC	40.0	< 250	35.4	0.02	< 250
CO	100.0	N/A	0.5	0.29	N/D
HAPs	10.0/25.0	N/A	34.40	N/D	N/D
Glycol Ethers	5.0*	N/A	1.18	N/A	N/D
Ethyl Benzene	10.0	N/A	1.36	N/A	N/D
Xylene	10.0	N/A	5.90	N/A	N/D
Dimethyl Phthalate	10.0	N/A	6.49	N/A	N/D
Toluene	10.0	N/A	8.85	N/A	N/D
Methyl Isobutyl Ketone	10.0	N/A	4.72	N/A	N/D
Naphthalene	10.0	N/A	6.39	N/A	N/D

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

\* The HAP is listed at the Screen Modeling Action Level (SMAL); it is not a de minimis level. The de minimis level for this HAP is 10 tpy.

\*\* ASI was originally permitted with a 40 tpy NOx limit. Since the NOx limit is being removed as a part of this permitting action, and because true NOx emissions were originally 0.88 tpy, the table above does not list the 40 tpy NOx limit as a part of Existing Potential Emissions.

## 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 emissions of PM<sub>2.5</sub> are conditioned below de minimis levels.

## APPLICABLE REQUIREMENTS

Architectural Systems, Inc. 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 for your installation, please consult your operating permit.

## GENERAL REQUIREMENTS

- *Operating Permits*, 10 CSR 10-6.065
- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
  - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

## SPECIFIC REQUIREMENTS

- *MACT Regulations*, 10 CSR 10-6.075

- *National Emission Standards for Surface Coating of Miscellaneous Metal Parts and Products*, 40 CFR Part 63, Subpart M MMM
- *MACT Regulations*, 10 CSR 10-6.075
  - *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*, 40 CFR Part 63, Subpart D D D D D
- *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-6.405

#### STAFF RECOMMENDATION

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

#### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated 10/2/2017, received 10/5/2017, designating Architectural Systems, Inc. as the owner and operator of the installation.

#### OTHER RELIED UPON DOCUMENTS

- E-mail Communications between Architectural Systems and the Missouri Air Pollution Control Program. This includes supplemental data submitted along with the e-mails.

## Attachment A – VOC Compliance Worksheet

Architectural Systems, Inc.  
 Barry County, S6, T25N, R27W  
 Project Number: 2017-10-016  
 Installation ID Number: 009-0062  
 Permit Number: **012018-003**

This sheet covers the period from \_\_\_\_\_ to \_\_\_\_\_  
 (month, year) (month, year)

This Section shall be used to calculate emissions for EP-01A, EP-02, EP-03, and EP-04				
Column 1	Column 2 (a)	Column 3	Column 4	Column 5
Material Used (name, type)	Amount of material used (include units)	Density of material used (lbs/gal) obtained from SDS	VOC content (%) obtained from SDS	VOC emissions (tons)
<b>(b) Total monthly natural gas usage in from all combustion sources (scf):</b>				
<b>(c) Total monthly VOC emissions from Natural Gas Combustion (tons):</b>				
<b>(d) Total VOC emissions calculated for this month (tons):</b>				
<b>(e) 12-month rolling VOC emissions total from previous month's worksheet (tons):</b>				
<b>(f) Monthly VOC emissions total from previous year's worksheet (tons):</b>				
<b>(g) Current 12 month rolling total of VOC emissions (tons): [(d)+(e)-(f)]</b>				

**Instructions:**

- (a) Choose appropriate VOC calculation method for units reported:
  - 1. If usage is in tons: [Column 2] x [Column 4] = [Column 5]
  - 2. If usage is in pounds: [Column 2] x [Column 4] x [0.0005] = [Column 5]
  - 3. If usage is in gallons: [Column 2] x [Column 3] x [Column 4] x [0.0005] = [Column 5]
- (b) Total natural gas throughput from all sources (EP-02, EP-03, EP-04) in standard cubic feet (scf)
- (c) Natural Gas VOC emissions: [Row (b)] / [10<sup>6</sup> scf per MMscf] x [5.5 lb VOC per MMscf obtained from AP-42 Section 1.4] x [0.0005] = [Column 5]
- (d) Summation of Column 5.
- (e) 12-month rolling VOC emissions total from previous month's worksheet (tons).
- (f) Monthly VOC emissions total from previous year's worksheet (tons).
- (g) Calculate the new 12 month rolling VOC emissions total. **A total of less than 250.0 tons per year indicates compliance.** Include the startup, shutdown, and malfunction emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050

## Attachment B – PM<sub>2.5</sub> Compliance Worksheet

Architectural Systems, Inc.  
 Barry County, S6, T25N, R27W  
 Project Number: 2017-10-016  
 Installation ID Number: 009-0062  
 Permit Number: **012018-003**

This sheet covers the period from \_\_\_\_\_ to \_\_\_\_\_  
 (month, year) (month, year)

This section shall be used to calculate emissions from EP-01B			
Column 1	Column 2 (a)	Column 3	Column 5
Material Used (name, type)	Amount of material used (include units, tons, lbs or gallons)	Density of material used obtained from SDS (lbs/gal)	PM <sub>2.5</sub> emissions (tons)
(b) Total monthly natural gas usage in from EP-04 burn off oven (scf):			
(c) Total Monthly PM <sub>2.5</sub> emissions from Natural Gas Combustion (tons):			
(d) Total PM <sub>2.5</sub> emissions calculated for this month (tons):			
(e) 12-month rolling PM <sub>2.5</sub> emissions total from previous month's worksheet (tons):			
(f) Monthly PM <sub>2.5</sub> emissions total from previous year's worksheet (tons):			
(g) Current 12 rolling month total of PM <sub>2.5</sub> emissions (tons): [(d)+(e)-(f)]			

**Instructions:**

- (a) Choose appropriate PM<sub>2.5</sub> calculation method for units reported:
    - 1) If usage is in tons: [Column 2] x [Column 4] x [0.025] = [Column 5]
    - 2) If usage is in pounds: [Column 2] x [Column 4] x [0.025] x [0.0005] = [Column 5]
    - 3) If usage is in gallons: [Column 2] x [Column 3] x [0.025] x [0.0005] = [Column 5]
  - (b) Total natural gas throughput for only the burn off oven (EP-04) in standard cubic feet (scf)
  - (c) Natural Gas VOC emissions: [Row (b)] / [10<sup>6</sup> scf per MMscf] x [7.6 lb VOC per MMscf obtained from AP-42 Section 1.4] x [0.0005] = [Column 5]
  - (d) Summation of Column 5.
  - (e) 12-month rolling PM<sub>2.5</sub> emissions total from previous month's worksheet (tons).
  - (f) Monthly PM<sub>2.5</sub> emissions total from previous year's worksheet (tons).
  - (g) Calculate the new 12 month rolling PM<sub>2.5</sub> emissions total. **A total of less than 10.0 tons per year indicates compliance.** Include the startup, shutdown, and malfunction emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050
- Note 1:** The [0.025] factor above accounts for the 100% capture, and 90% filter efficiency, and 25% overspray such that 2.5% of solid particulate will escape the booth as emissions.

## Appendix A: Table of HAPs and SMAL (continues for two pages)

ACETALDEHYDE	75-07-0	9		Y	H	CARBARYL	63-25-2	10	V	Y	Y	DICHLOROPROPANE, [1,2]	78-07-8	1		Y	H
ACETAUDE	60-36-5	1		Y	H	CARBON DISULFIDE	75-15-0	1		Y	H	DICHLOROPROPENE, [1,3]	64-72-6	1		Y	N
ACETONITRILE	75-05-8	4		Y	H	CARBON TETRACHLORIDE	56-23-5	1		Y	H	DICHLORVOS	62-73-7	0.2		Y	N
ACETOPHENONE	98-96-2	1		Y	N	CARBONYL SULFIDE	463-98-1	5		Y	H	DETHANOLAMINE	111-42-2	5		Y	N
ACETYLAMINOFLUORINE, [2-]	53-80-3	0.005	V	Y	Y	CATECHOL	120-80-9	5		Y	H	DETHYL SULFATE	64-67-6	1		Y	N
ACROLEIN	107-02-8	0.04		Y	H	CHLORAMBEN	133-90-4	1		Y	Y	DETHYLENE GLYCOL MONOBUTYL ETHER	112-94-5	5	P	Y	N
ACRYLAMIDE	79-06-1	0.02		Y	H	CHLORDANE	57-74-9	0.01		Y	Y	DMETHOXYBENZDNE, [3,3-]	119-90-4	0.1	V	Y	Y
ACRYLIC ACID	79-10-7	0.6		Y	H	CHLORINE	7782-90-5	0.1		H	H	DMETHYL BENZDNE, [3,3-]	119-93-7	0.008	V	Y	Y
ACRYLONITRILE	107-13-1	0.3		Y	H	CHLOROACETIC ACID	79-11-3	0.1		Y	H	DMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02		Y	N
ALLYL CHLORIDE	107-05-1	1		Y	H	CHLOROACETOPHENONE, [2-]	532-27-4	0.06		Y	H	DMETHYL FORMANDE	68-12-2	1		Y	H
AMINOBPHEINYL, [4-]	52-67-1	1	V	Y	H	CHLOROBENZENE	108-90-7	10		Y	H	DMETHYL HYDRAZINE, [1,1-]	67-14-7	0.008		Y	H
ANILINE	62-53-3	1		Y	H	CHLOROBENZYLATE	510-15-8	0.4	V	Y	Y	DMETHYL PHTHALATE	131-11-3	10		Y	N
ANISDINE, [ORTHO-]	90-04-0	1		Y	H	CHLOROFORM	67-65-3	0.9		Y	H	DMETHYL SULFATE	77-78-1	0.1		Y	N
ANTHRACENE	120-12-7	0.01	V	Y	N	CHLOROMETHYL METHYL ETHER	107-30-2	0.1		Y	N	DMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1		Y	N
ANTIMONY COMPOUNDS		5	H	N	Y	CHLOROPRENE	128-98-8	1		Y	N	DMETHYLANILINE, [N-1-]	121-69-7	1		Y	N
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y	CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y	DNITRO-O-CRESOL, [4,5-] (Not 6)	524-52-1	0.1	E	Y	Y
ANTIMONY POTASSIUM TARTRATE	23100-74-5	1	H	N	Y	CHROMIUM COMPOUNDS		5	L	N	Y	DNITROPHENOL, [2,4-]	51-28-5	1		Y	N
ANTIMONY TRIOXIDE	1308-64-4	1	H	N	Y	CHRYSOLE	218-01-9	0.01	V	Y	N	DNITROTOLUENE, [2,4-]	121-14-2	0.02		Y	H
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y	COBALT COMPOUNDS		0.1	M	N	Y	DOXAINE, [1,4-]	123-91-1	6		Y	H
ARSENIC COMPOUNDS		0.005	I	N	Y	COKE OVEN EMISSIONS	8007-45-2	0.03	H	Y	H	DPHEMETHYLHYDRAZINE, [1,2-]	122-66-7	0.09	V	Y	Y
ASBESTOS	1332-21-4	0	A	N	Y	CRESOL, [META-]	108-38-4	1	B	Y	H	DPHEMETHANE DISOCYANATE, [4,4-]	101-09-8	0.1	V	Y	N
BENZ(A)ANTHRACENE	56-96-3	0.01	V	Y	H	CRESOL, [ORTHO-]	95-48-7	1	B	Y	H	EPICHLOROHYDRIN	106-89-8	2		Y	H
BENZENE	71-43-2	2		Y	H	CRESOL, [PARA-]	106-44-5	1	B	Y	H	ETHOXYETHANOL, [2-]	110-80-5	10	P	Y	H
BENZDNE	92-87-5	0.0003	V	Y	H	CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	H	ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P	Y	N
BENZO(A)PYRENE	65-32-8	0.01	V	Y	H	CUMENE	98-02-6	10		Y	N	ETHYL ACRYLATE	140-88-5	1		Y	N
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	H	CYANIDE COMPOUNDS		0.1	O	Y	N	ETHYL BENZENE	102-41-4	10		Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	H	DDE	72-26-9	0.01	V	Y	Y	ETHYL CHLORIDE	75-00-3	10		Y	N
BENZOTRICHLORIDE	98-07-7	0.008		Y	H	DI(2-ETHYLMETHYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N	ETHYLENE GLYCOL	107-21-1	10		Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	H	DIAMTOLUENE, [2,4-]	95-60-7	0.02		Y	H	ETHYLENE GLYCOL MONOBUTYL ETHER (Not listed)	111-76-2				
BERYLLIUM COMPOUNDS		0.008	J	H	Y	DIAZOMETHANE	334-88-3	1		Y	N	ETHYLENE GLYCOL MONOETHYL ETHER	112-25-4	5	P	Y	H
BERYLLIUM SALTS		2E-05	J	H	Y	DBENZA(H)ANTHRACENE	53-70-3	0.01	V	Y	H	ETHYLENE IURE (AZURINE)	161-52-4	0.003		Y	N
BPHENYL, [1,1-]	60-62-4	10	V	Y	H	DDXNS FURANS		6E-07	D, V	Y	H	ETHYLENE OXIDE	75-21-8	0.1		Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	H	DBENZOFURAN	133-64-9	5	V	Y	H	ETHYLENE THIOUREA	96-45-7	0.6		Y	Y
BIS(CHLOROMETHYL)ETHER	542-85-1	0.0003		Y	H	DBROMO-3-CHLOROPROPANE, [1,2-]	95-12-8	0.01		Y	N	FORMALDEHYDE	50-00-0	2		Y	N
BROMOFORM	75-25-2	10		Y	N	DBROMOETHANE, [1,2-]	105-93-4	0.1		Y	N	GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P	Y	N
BROMOETHANE	74-83-9	10		Y	N	DBUTYL PHTHALATE	64-74-2	10		Y	Y	GLYCOL ETHER (DETHYLENE GLYCOL ETHERS)		5	P	Y	H
BUTADIENE, [1,3-]	106-99-0	0.07		Y	H	DICHLOROBENZENE, [1,4-]	105-65-7	3		Y	H	HEPTACHLOR	76-44-8	0.02		Y	N
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	H	DICHLOROBENZENE, [3,3-]	91-94-1	0.2	V	Y	Y	HEXACHLOROBENZENE	116-74-1	0.01		Y	H
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	H	DICHLOROETHANE, [1,1-]	78-34-3	1		Y	N	HEXACHLOROBUTADIENE	87-60-3	0.9		Y	N
CADMIUM COMPOUNDS		0.01	K	H	Y	DICHLOROETHANE, [1,2-]	107-05-2	0.8		Y	N	HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F	Y	N
CALCIUM CYANAMIDE	166-62-7	10		Y	Y	DICHLOROETHYLENE, [1,1-]	78-35-4	0.4		Y	H	HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F	Y	N
CAPROLACTAM (Not listed)	105-60-2					DICHLOROMETHANE	75-09-2	10		N	N	HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F	Y	N
CAPTAN	133-09-2	10		Y	Y	DICHLOROPHENOXYACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y	HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F	Y	N

## Appendix A: Table of HAPs and SMAL (continues for two pages)

Chemical Name	CAS No.	Concentration	Y	N	Chemical Name	CAS No.	Concentration	Y	N	Chemical Name	CAS No.	Concentration	Y	N			
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		Y	N	NITROSODIMETHYLAMINE, [H]	62-76-9	0.001		Y	N	TRIMETHYLPENTANE, [2,2,4]	640-84-1	5	Y	N	
HEXACHLOROETHANE	67-72-1	5		Y	N	NITROSOMORPHOLINE, [H]	58-89-2	1		Y	N	URETHANE [ETHYL CARBAMATE]	51-79-0	0.8	Y	N	
HEXAMETHYLENE, -1,6-DISOCYANATE	422-06-0	0.02		Y	N	NITROSO-N-METHYLUREA, [H]	634-93-5	0.0002		Y	N	VINYL ACETATE	108-05-4	1	Y	N	
HEXAMETHYLPHOSPHORAMIDE	680-31-9	0.01		Y	N	OCTACHLORONAPHTHALENE	2234-13-1	0.01	V	Y	N	VINYL BROMIDE	660-60-2	0.6	Y	N	
HEXANE, [H]	110-64-3	10		Y	N	PARATHION	66-36-2	0.1		Y	Y	VINYL CHLORIDE	75-01-4	0.2	Y	N	
HYDRAZINE	302-01-2	0.004		N	H	PCB [POLYCHLORINATED BIPHENYLS]	1336-35-3	0.008	X	Y	Y	XYLENE, [META]	105-38-3	10	G	Y	N
HYDROGEN CHLORIDE	7647-01-0	10		H	H	PENTACHLORONITROBENZENE	82-06-8	0.3		Y	N	XYLENE, [ORTHO]	55-47-6	10	G	Y	N
HYDROGEN FLUORIDE	7664-39-3	0.1		H	H	PENTACHLOROPHENOL	87-86-5	0.7		Y	N	XYLENE, [PARA]	106-42-3	10	G	Y	N
HYDROQUINONE	123-31-9	1		Y	N	PHEIOL	108-95-2	0.1		Y	N	XYLENES (MIXED ISOMERS)	1330-29-7	10	G	Y	N
INDENO(1,2,3-CD)PYRENE	193-38-5	0.01	V	Y	N	PHENYLENEDIAMINE, [PARA-]	106-60-3	10		Y	N						
ISOPHORONE	78-59-1	10		Y	N	PHOSGENE	75-44-5	0.1		Y	N						
LEAD COMPOUNDS		0.01	Q	N	Y	PHOSPHINE	7803-51-2	5		H	N						
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	58-89-9	0.01	F	Y	N	PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1		H	N						
MALEIC ANHYDRIDE	108-31-6	1		Y	N	PHthalic ANHYDRIDE	85-44-9	5		Y	N						
MANGANESE COMPOUNDS		0.8	R	N	Y	POLYCYCLIC ORGANIC MATTER		0.01	V	Y	N						
MERCURY COMPOUNDS		0.01	S	N	N	PROPANE SULFONE, [1,3-]	1120-71-4	0.03		Y	Y						
METHANOL	67-56-1	10		Y	N	PROPIONALDEHYDE (BETA-)	87-67-8	0.1		Y	N						
METHOXYCHLOR	72-43-8	10	V	Y	N	PROPIONALDEHYDE	123-36-0	5		Y	N						
METHOXYETHANOL, [2-]	109-86-4	10	P	Y	N	PROPOXUR [BAYGON]	114-29-1	10		Y	Y						
METHYL CHLORIDE	74-87-3	10		Y	N	PROPYLENE OXIDE	75-50-9	5		Y	N						
METHYL ETHYL KETONE (2 listed)	78-93-3					PROPYLENEMINE, [1,2-]	75-56-8	0.003		Y	N						
METHYL HYDRAZINE	60-34-4	0.06		Y	N	QUINOLINE	81-22-5	0.006		Y	N						
METHYL IODIDE	74-88-4	1		Y	N	QUINONE	106-51-4	5		Y	N						
METHYL ISOBUTYL KETONE	108-10-1	10		Y	N	RADIONUCLIDES		Note 1	Y	N	Y						
METHYL ISOCYANATE	624-83-9	0.1		Y	N	SELENIUM COMPOUNDS		0.1	W	H	Y						
METHYL METHACRYLATE	80-82-6	10		Y	N	STYRENE	100-42-5	1		Y	N						
METHYL TERT-BUTYL ETHER	1234-04-4	10		Y	N	STYRENE OXIDE	95-09-3	1		Y	N						
METHYLCYCLOPENTADIENYL MANGANESE	12108-13-3	0.1	R	H	Y	TETRACHLOROBENZO-P-DIOXIN [2,3,7,8]	1746-01-0	6E-07	D,V	Y	Y						
METHYLENE BIS(2-CHLOROANILINE), [4,4-]	101-14-4	0.2	V	Y	Y	TETRACHLOROETHANE, [1,1,2,2-]	79-34-5	0.3		Y	N						
METHYLENEDIAMINE, [4,4-]	101-77-9	1	V	Y	N	TETRACHLOROETHYLENE	127-18-4	10		H	N						
METHYLNAPHTHALENE, [2-]	91-67-6	0.01	V	Y	N	TITANIUM TETRACHLORIDE	7850-45-0	0.1		H	N						
MINERAL FIBERS		0	T	H	Y	TOLUENE	106-88-3	10		Y	N						
NAPHTHALENE	91-20-3	10	V	Y	N	TOLUENE DISOCYANATE, [2,4-]	684-84-8	0.1		Y	N						
NAPHTHYLAMINE, [ALPHA-]	134-32-7	0.01	V	Y	N	TOLUIDINE, [ORTHO-]	95-83-4	4		Y	N						
NAPHTHYLAMINE, [BETA-]	91-58-6	0.01	V	Y	N	TOXAPHENE	8091-35-2	0.01		Y	N						
NICKEL CARBONYL	13463-39-9	0.1	U	H	Y	TRICHLOROETHANE, [1,1,2-]	79-00-5	1		Y	N						
NICKEL COMPOUNDS		1	U	H	Y	TRICHLOROETHANE, [1,1,1-]	79-00-5	10		H	N						
NICKEL REFINERY DUST		0.08	U	H	Y	TRICHLOROETHYLENE	79-01-6	10		Y	N						
NICKEL SUBSULFIDE	12036-72-2	0.04	U	H	Y	TRICHLOROPHENOL, [2,4,5-]	95-95-4	1		Y	N						
NITROBENZENE	98-95-3	1		Y	N	TRICHLOROPHENOL, [2,4,6-]	88-06-2	6		Y	N						
NITROBIPHENYL, [4-]	52-93-3	1	V	Y	N	TRETHYLAMINE	121-44-8	10		Y	N						
NITROPHENOL, [4-]	100-02-7	5		Y	N	TRIFLURALIN	1582-08-8	9		Y	Y						
NITROPROPANE, [2-]	79-46-9	1		Y	N												

Legend	
Group ID	Aggregate Group Name
A	Asbestos
B	Cresols/Cresylic Acid (isomers and mixtures)
C	2,4-D, Salts and Esters
D	Dibenzofurans, Dibenzodioxins
E	4,6 Dinitro-o-cresol, and Salts
F	Lindane (all isomers)
G	Xylenes (all isomers and mixtures)
H	Antimony Compounds
I	Arsenic Compounds
J	Beryllium Compounds
K	Cadmium Compounds
L	Chromium Compounds
M	Cobalt Compounds
N	Coke Oven Emissions
O	Cyanide Compounds
P	Glycol Ethers
Q	Lead Compounds (except elemental Lead)
R	Manganese Compounds
S	Mercury Compounds
T	Fine Mineral Fibers
U	Nickel Compounds
V	Polycyclic Organic Matter
W	Selenium Compounds
X	Polychlorinated Biphenyls (Aroclors)
Y	Radionuclides

Note 1: The SMAL for radionuclides is defined as the effective dose equivalent to 0.3 millirems per year for 7 years exposure associated with a cancer risk of 1 in 1 million.



## APPENDIX B

### Abbreviations and Acronyms

<b>%</b> .....percent	<b>Mgal</b> .....1,000 gallons
<b>°F</b> .....degrees Fahrenheit	<b>MW</b> .....megawatt
<b>acfm</b> .....actual cubic feet per minute	<b>MHDR</b> .....maximum hourly design rate
<b>BACT</b> .....Best Available Control Technology	<b>MMBtu</b> ....Million British thermal units
<b>BMPs</b> .....Best Management Practices	<b>MMCF</b> .....million cubic feet
<b>Btu</b> .....British thermal unit	<b>MSDS</b> .....Material Safety Data Sheet
<b>CAM</b> .....Compliance Assurance Monitoring	<b>NAAQS</b> ....National Ambient Air Quality Standards
<b>CAS</b> .....Chemical Abstracts Service	<b>NESHAPs</b> National Emissions Standards for Hazardous Air Pollutants
<b>CEMS</b> .....Continuous Emission Monitor System	<b>NO<sub>x</sub></b> .....nitrogen oxides
<b>CFR</b> .....Code of Federal Regulations	<b>NSPS</b> .....New Source Performance Standards
<b>CO</b> .....carbon monoxide	<b>NSR</b> .....New Source Review
<b>CO<sub>2</sub></b> .....carbon dioxide	<b>PM</b> .....particulate matter
<b>CO<sub>2e</sub></b> .....carbon dioxide equivalent	<b>PM<sub>2.5</sub></b> .....particulate matter less than 2.5 microns in aerodynamic diameter
<b>COMS</b> .....Continuous Opacity Monitoring System	<b>PM<sub>10</sub></b> .....particulate matter less than 10-microns in aerodynamic diameter
<b>CSR</b> .....Code of State Regulations	<b>ppm</b> .....parts per million
<b>dscf</b> .....dry standard cubic feet	<b>PSD</b> .....Prevention of Significant Deterioration
<b>EIQ</b> .....Emission Inventory Questionnaire	<b>PTE</b> .....potential to emit
<b>EP</b> .....Emission Point	<b>RACT</b> .....Reasonable Available Control Technology
<b>EPA</b> .....Environmental Protection Agency	<b>RAL</b> .....Risk Assessment Level
<b>EU</b> .....Emission Unit	<b>SCC</b> .....Source Classification Code
<b>fps</b> .....feet per second	<b>scfm</b> .....standard cubic feet per minute
<b>ft</b> .....feet	<b>SDS</b> .....Safety Data Sheet
<b>GACT</b> .....Generally Available Control Technology	<b>SIC</b> .....Standard Industrial Classification
<b>GHG</b> .....Greenhouse Gas	<b>SIP</b> .....State Implementation Plan
<b>gpm</b> .....gallons per minute	<b>SMAL</b> .....Screening Model Action Levels
<b>gr</b> .....grains	<b>SO<sub>x</sub></b> .....sulfur oxides
<b>GWP</b> .....Global Warming Potential	<b>SO<sub>2</sub></b> .....sulfur dioxide
<b>HAP</b> .....Hazardous Air Pollutant	<b>SSM</b> .....Startup, Shutdown & Malfunction
<b>hr</b> .....hour	<b>tph</b> .....tons per hour
<b>hp</b> .....horsepower	<b>tpy</b> .....tons per year
<b>lb</b> .....pound	<b>VMT</b> .....vehicle miles traveled
<b>lbs/hr</b> .....pounds per hour	<b>VOC</b> .....Volatile Organic Compound
<b>MACT</b> .....Maximum Achievable Control Technology	
<b>µg/m<sup>3</sup></b> .....micrograms per cubic meter	
<b>m/s</b> .....meters per second	

Emission Unit	Description	Installation's Designation	MHDR (MMBtu/hr Input)	Combined MHDR (MMBtu/hr Input)	MHDR (MMct/hr)	Pollutant	CAS	HAP?	Emission Factor (lb / mmcf)	Emission Factor Source (SCC)	Available Pollutant (lb/hr)	Control Device	PTE (lb/hr)	PTE (tpy)	
		EP-04	0.8	2.85	0.003	PM filterable			1.9		0.0053	none	0.0053	0.02	
		EP-03	0.8			PM10				7.8		0.0212	none	0.0212	0.09
		EP-02	1.3			PM2.5				7.8		0.0212	none	0.0212	0.09
						SOx			0.8		0.0017	none	0.0017	0.01	
						NOx			100		0.2784	none	0.2784	1.22	
						VOC			5.5		0.0154	none	0.0154	0.07	
						CO			84		0.2347	none	0.2347	1.03	
						Combined HAPs			1.888		0.0053	none	0.0053	0.023105	
						POM aggregate group			6.98E-04		1.95E-08	none	1.95E-08	0.00	
						2-Methylnaphthalene	91-57-8	y	2.40E-05		6.70E-08	none	6.71E-08	0.00	
						3-Methylchloranthrene	56-49-5	y	1.80E-06		5.02E-09	none	5.03E-09	0.00	
						7,12-Dimethylbenzanthracene	57-97-8	y	1.80E-05		4.471E-08	none	4.47E-08	0.00	
						Acenaphthene	83-32-9	y	1.80E-06		5.02E-09	none	5.03E-09	0.00	
						Acenaphthylene	203-98-8	y	1.80E-06		5.02E-09	none	5.03E-09	0.00	
						Anthracene	120-12-7	y	2.40E-06		6.70E-09	none	6.71E-09	0.00	
						Benzanthracene	56-55-3	y	1.80E-06		5.02E-09	none	5.03E-09	0.00	
						Benzene	71-43-2	y	2.10E-03		5.868E-08	none	5.87E-08	0.00	
						Benzo(e)pyrene	50-32-8	y	1.20E-06		3.353E-09	none	3.35E-09	0.00	
						Benzo(b)fluoranthene	205-99-2	y	1.80E-06		5.02E-09	none	5.03E-09	0.00	
						Benzo(g,h,i)perylene	191-24-2	y	1.20E-06		3.353E-09	none	3.35E-09	0.00	
						Benzo(k)fluoranthene	205-82-3	y	1.80E-06		5.02E-09	none	5.03E-09	0.00	
						Butane	108-97-8		2.10E+00		5.868E-03	none	5.87E-03	0.03	
						Chrysene	218-01-9	y	1.80E-06		5.02E-09	none	5.03E-09	0.00	
						Dibenzo(a,h)anthracene	53-70-3	y	1.20E-06		3.353E-09	none	3.35E-09	0.00	
						Dichlorobenzene	25321-22-8	y	1.20E-03		3.353E-08	none	3.35E-08	0.00	
						Ethane	74-84-0		3.10E+00		8.682E-03	none	8.68E-03	0.04	
						Fluoranthene	208-44-0	y	3.00E-06		8.382E-09	none	8.38E-09	0.00	
						Fluorene	88-73-7	y	2.80E-06		7.824E-09	none	7.82E-09	0.00	
						Formaldehyde	50-00-0	y	7.50E-02		2.098E-04	none	2.10E-04	0.00	
						Hexane	110-54-3	y	1.80E+00		5.02E-03	none	0.0050	0.02203	
						Indeno(1,2,3-cd)pyrene	193-39-5	y	1.80E-06		5.02E-09	none	5.03E-09	2.20E-08	
						Naphthalene	91-20-3	y	8.10E-04		1.704E-08	none	1.70E-08	0.00	
						Pentane	109-68-0		2.60E+00		7.265E-03	none	7.26E-03	0.03	
						Phenanthrene	85-01-9	y	1.70E-05		4.750E-08	none	4.75E-08	0.00	
						Propane	74-98-9		1.60E+00		4.471E-03	none	4.47E-03	0.02	
						Pyrene	129-00-0	y	5.00E-06		1.397E-08	none	1.40E-08	0.00	
						Toluene	108-88-3	y	3.40E-03		9.500E-08	none	9.50E-08	0.00	
						Arsenic	7440-38-2	y	2.00E-04		5.598E-07	none	5.59E-07	0.00	
						Barium	7440-39-3		4.40E-03		1.229E-05	none	1.23E-05	0.00	
						Beryllium	7440-41-7	y	1.20E-05		3.353E-08	none	3.35E-08	0.00	
						Cadmium	7440-43-9	y	1.10E-03		3.074E-06	none	3.07E-06	0.00	
						Chromium	7440-47-3	y	1.40E-03		3.912E-08	none	3.91E-08	0.00	
						Cobalt	7440-48-4	y	8.40E-05		2.347E-07	none	2.35E-07	0.00	
						Copper	7440-50-8		8.50E-04		2.375E-06	none	2.38E-06	0.00	
						Manganese	7439-96-5	y	3.80E-04		1.062E-06	none	1.06E-06	0.00	
						Mercury	7439-97-8	y	2.60E-04		7.265E-07	none	7.26E-07	0.00	
						Molybdenum	7439-98-7		1.10E-03		3.074E-08	none	3.07E-08	0.00	
						Nickel	7440-02-0	y	2.10E-03		5.868E-08	none	5.87E-08	0.00	
						Selenium	7782-49-2	y	2.40E-05		6.708E-08	none	6.71E-08	0.00	
						Vanadium	7440-62-2		2.30E-03		8.428E-08	none	8.43E-08	0.00	
						Zinc	7440-68-6		2.90E-02		8.103E-05	none	8.10E-05	3.55E-04	
						CO2			120.000		335.2941	none	335.284	1488.59	
						Methane			2.3		0.0064	none	0.0064	0.03	
						N2O			2.2		0.0061	none	0.0061	0.03	
						GHG (mass)								1,488.843	
						GHG (CO2e)								1,477.32	

Natural Gas HHV (Btu/cf)	1,020
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24476470.59	cf/year
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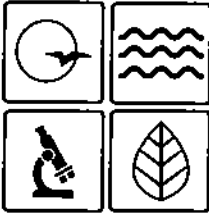
  

100yr GWP 40 CFR 98 Table A-1, Jan 1 2014	
CO2	1
CH4	25
N2O	268

Natural gas HHV of 1,020 Btu/cf cited from AP-42 Section 1.4, July 1998.

Dichlorobenzene group CAS 25321-22-8 conservatively assumed as 100% 1,4-dichlorobenzene CAS 106-46-7.

HAPs updated per "Air Pollution Control Program Table of Hazardous Air Pollutants, Screening Model Action Levels, and Risk Assessment Levels" Revision 10, 5/3/2012



Missouri Department of dnr.mo.gov

# NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

**JAN 17 2018**

Mr. David Allison  
Environmental Manager  
Architectural Systems, Inc.  
707 West Highway 60  
Monett, MO 65708

RE: New Source Review Permit - Project Number: 2017-10-016

Dear Mr. Allison:

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 amended 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.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.btm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty 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 administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).

Mr. David Allison  
Page Two

If you have any questions regarding this permit, please do not hesitate to contact Hans Robinson 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:hrj

Enclosures

c: Southwest Regional Office  
PAMS File: 2017-10-016

Permit Number: **012018-003**