

**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: **052017-001** Project Number: 2017-01-044  
Installation Number: 125-0025

Parent Company: Quaker Window Products Company

Parent Company Address: 36967 Highway 63 South, Vienna, MO 65582

Installation Name: Quaker Window Products - Vienna

Installation Address: 36967 Highway 63 South, Vienna, MO 65582

Location Information: Maries County, S21, T41N, R9W

Application for Authority to Construct was made for:  
Installing a wood window production line at the Quaker Window Products Vienna, MO facility. 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.

Hans Robinson

Prepared by  
Hans Robinson  
New Source Review Unit

Kyra L Moore

Director or Designee  
Department of Natural Resources

**MAY 02 2017**

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 startup 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 startup 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."*

Quaker Window Products  
Maries County, S21, T41N, R9W

1. VOC and Toluene Emission Limitations
  - A. Quaker Window Products shall emit less than 40.0 tons of VOCs in any consecutive 12-month period from the entire installation. This includes the following emission points:
    - 1) Three (3) paint booths (EP-W3)
    - 2) General Sealant Usage (EP-W5)
    - 3) Solvent Usage (EP-W6)
    - 4) Fuel Combustion Units (EP-W7)
  - B. Quaker Window Products shall emit less than 10.0 tons of Toluene in any consecutive 12-month period from the entire installation. This includes the following emission points:
    - 1) Three (3) paint booths (EP-W3)
    - 2) General Sealant Usage (EP-W5)
    - 3) Solvent Usage (EP-W6)
  - C. Total VOC and Toluene emissions from the facility shall include those generated during startup, shutdown and malfunction as reported to the Air Pollution Control Program Compliance and Enforcement section.
  - D. Attachments A and C or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1.A, 1.B, and 1.C.
2. Capture Device Requirement – Spray Booths (EP-W3)
  - A. Quaker Window Products shall capture emissions from the spray applied surface coating operation with a booth and exhaust fan(s).
  - B. Negative pressure shall be demonstrated and recorded at all booth openings at least once every 24-hours using visual indication such as streamers, powder puff, smoke, or other method preapproved by the Air Pollution Control Program. 24-hour periods when spray applied surface coating is non-operational shall be recorded.

**SPECIAL CONDITIONS:**

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

- C. Quaker Window Products shall operate the surface coating booth's exhaust fan(s) at all times surface coating is spray applied.
  - D. Quaker Window Products shall maintain an operating and maintenance log for the filter which shall include the following:
    - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
    - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
3. Control Device Requirement – Dust collectors and Fabric Filters
- A. Quaker Window Products shall control emissions from the spray applied surface coating operation using fabric filters for EP-W3 (CD-02).
  - B. Quaker Window Products shall control emissions from wood cutting using dust collectors for EP-W2 (CD-01). The dust collectors shall be switched on while wood is being cut. Wood cutting shall occur no more than 3 feet from the dust collector air intake.
  - C. Negative pressure from the wood cutting dust collector EP-W2 (CD-01) shall demonstrated by visual inspection at least once every 24-hours using a visual indication such as observing that sawdust is being pulled into the dust collector bag filters. 24-hour periods when the dust collector is non-operational shall be recorded.
  - D. The dust collectors and fabric filters shall be operated and maintained in accordance with the manufacturer's specifications.
  - E. Replacement filters for the dust collectors and fabric filters shall be kept on hand at all times. The replacement filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
  - F. The spray booth fabric filters (CD-02) shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the Department of Natural Resources' employees may easily observe them. The pressure drop shall be measured and recorded at least once every 24 hours. 24-hour periods when spray applied surface coating or wood cutting equipment is non-

**SPECIAL CONDITIONS:**

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

operational shall be recorded. The pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

- G. Quaker Window Products shall maintain a copy of the dust collector and fabric filter manufacturer's performance warranty on site. Quaker Window Products shall maintain an operating and maintenance log for the dust collectors and fabric filters which shall include the following:
    - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
    - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
4. Use of Alternative Materials
- A. Before using an alternative paint, solvent, or sealant that differs from a material listed in the Application for Authority to Construct, Quaker Window Products shall calculate the potential emissions of all HAPs and VOC from using the alternative material.
  - B. Quaker Window Products shall seek approval from the Air Pollution Control Program New Source Review Unit before use of the alternative material if the potential individual HAP emissions for the alternative material are greater than the SMAL for any HAP listed in Appendix B.
  - C. Attachment B or equivalent forms, such as electronic forms, preapproved by the Air Pollution Control Program shall be used to show compliance with Special Conditions 4.A and 4.B.
5. Best Management Practices (BMPs) Requirement
- A. Quaker Window Products shall control fugitive emissions from all of the haul roads and vehicular activity areas at this site by performing Best Management Practices as defined in Appendix A.
6. Operational Requirement - Solvent/Paint Cloths
- A. Quaker Window Products shall keep paints, solvents, and cleaning solutions in sealed containers whenever the materials are not in use. Quaker Window Products shall provide and maintain suitable, easily read, permanent markings on all inks, solvent and cleaning solution containers used with this equipment.

**SPECIAL CONDITIONS:**

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

7. Record Keeping and Reporting Requirements
  - A. Quaker Window Products 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. Quaker Window Products shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, 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: 2017-01-044

Installation ID Number: 125-0025

Permit Number: 05 2017 - 001

Installation Address:

Quaker Window Products  
36967 Highway 63 South  
Vienna, MO 65582

Parent Company:

Quaker Window Products  
36967 Highway 63 South  
Vienna, MO 65582

Maries County, S21, T41N, R9W

REVIEW SUMMARY

- Quaker Window Products Company has applied for authority to construct a wood window production line at their Vienna, MO location.
- The application was deemed complete on 1/26/2017.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are Xylene, Toluene, Ethylbenzene, and Methyl Isobutyl Ketone.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- Wood cutting dust collectors and paint booths equipped with panel filters are being used to control the PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below de minimis levels. Potential emissions of VOC and Toluene are conditioned below de minimis levels.
- This installation is located in Maries 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.
- Emissions testing is not required for the equipment as a part of this permit.

- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

Quaker Window Products Company (Quaker) currently has operations in two locations, Freeburg and Vienna, MO. The Freeburg facility (ID 151-0040) currently produces aluminum and wood windows. Quaker would like to move their wood window production to their Vienna location (ID 125-0025).

No permits have been issued to Quaker Window Products - Vienna from the Air Pollution Control Program. An applicability determination for Glass Manufacturing at the location was completed on 5/2/2005. No permit was required because the glass insulating process currently uses chemicals that contain no VOCs or HAPs. Pollutant emissions from the facility will almost entirely result from the wood window production processes associated with this permit. With the issuance of this permit the facility will be designated as a de minimis source since VOC and Toluene emissions are conditioned below de minimis.

### PROJECT DESCRIPTION

Quaker Window Products - Vienna will be installing all the necessary equipment to manufacture windows primarily constructed from wood. The emission points associated with this facility addition will include Haul Road #1 (EP-W1); Wood Cutting (EP-W2); Three (3) paint booths (EP-W3); Haul Road #2 (EP-W4); General Sealant Usage (EP-W5); Solvent Usage (EP-W6); Fuel Combustion Units (EP-W7); and Aluminum Cutting (EP-W8).

Raw materials will be transported to the facility using Haul Road #1 (EP-W1) and finished windows will leave using Haul Road #2 (EP-W4). Haul Road #1 and Haul Road #2 will be 697 feet and 1433 feet, respectively. Both haul roads will be paved and therefore will comply with Best Management Practices (BMPs). The trucks that deliver raw materials and haul products would have an unloaded weight of 12.5 tons and a loaded weight of 40.0 tons.

Wood and aluminum cutting particulate emissions and MHDR (EP-W2 and EP-W8) were based on calculations from Construction Permit 102012-014 for EP-17 and EP-06 issued for the Quaker - Freeburg facility (ID 151-0040). MHDR is projected to be 0.0045 tons/hr (7 lbs/hr) of wood and 0.0622 tons/hr (10.4 lbs/hr) of aluminum can be cut. Wood cutting will be controlled with dust collector that uses negative air pressure to capture particulate within a bag filter.

Sealant Usage (EP-W5) will involve using 1199 Silicone Glazing sealant and Jowacoll 110.6 wood glue. It is estimated that 1199 Silicone Glazing sealant will be used at a rate of 5.69 gallons/hour. Jowacoll 110.60 Wood glue will be used at 14.17 gallons per hour. (EP-W6) will primarily be used for material cleaning purposes. Currently two solvents are being used at the facility; a xylene based solvent and a methyl ethyl ketone (MEK) based solvent. There will be three (3) paint booths (EP-W3) that will apply various primers and glosses to wood window frames. The paint booths will be equipped with a fan system for generating negative pressure. Particulate emissions from spraying will be captured by an attached panel filter at the exhaust system input duct for each booth (two filters in total). For a full list of chemical compositions, CAS numbers, HAP designations currently used at the facility see Appendix A. Special Condition 4 will allow the facility to switch out paints, solvents, and sealants with various VOC and HAP concentrations as long as the individual HAP emissions do not exceed their respective SMALs.

Fuel Combustion units (EP-W7) include an air makeup unit for the paint room and building radiant heaters. The equipment will be supplied by an 18,000 gallon propane tank located at the facility. The makeup air unit is rated at 4 MMBtu/hr. The building heating system will consist of 29 separate heating units each rated at 125,000 BTU/hr for a total of 3.63 MMBtu/hr. Thus propane can be consumed at a combined total of 7.63 MMBtu/hr.

#### EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.5 *LPG Combustion* for propane combustion and Section 13.2.1 *Paved Roads* for haul road emissions.

VOC and HAP emissions from solvent usage (EP-W6), sealant usage (EP-W5), and paint usage (EP-W3) are based on individual material densities for VOC, HAP, and solids weight percentage. Paint filters were assumed to have 95% particulate capture efficiency and paint booths were given 100% particulate capture efficiency. Overall control efficiency was thus given an overall 95% control efficiency (95% multiplied by 100%). Solid transfer was assumed to be 75%. In other words, 25% of the solid paint content will become airborne particulate. CEIDARS data was used for estimated PM<sub>2.5</sub> and PM<sub>10</sub> distributions. Thus for solvent based paint PM emissions, 92.5% by weight will be PM<sub>10</sub> emissions and 96.0% will be PM<sub>2.5</sub> emissions.

Dow Corning® 1199 Silicone Glazing Sealant is used as a caulk for window construction. The caulk has a density of 8.67 lbs/gallon and has a VOC content of 0.58 lb/gallon. Jowacoll 110.60 Wood glue has an SDS established 0.15 lb/gallon VOC emission rate, with 1% concentration Toluene, and a density of 8.76 lb/gal.

Four separate types of coatings will be applied within the EP-W3 paint booths (three booths total): Sher-Wood Kem Aqua Plus Surfacer paint primer (11.21 lb/gallon density), Sher-Wood Kem Aqua Plus (white, 9.67 lb/gallon), Sher-Wood F3 Hi-Bild Precat Lacquer (white, high gloss, 8.75 lb/gallon), and Sher-Wood Vinyl Primer Surfacer (white, 9.36 lb/gallon). These materials will have VOC emission rates of 0.13 lbs/gallon, 0.81 lbs/gallon, 4.27 lbs/gallon, and 5.16 lbs/gallon, respectively. Emission rates are based upon total VOC content within the coatings. Only the Sher-Wood Vinyl Primer will emit HAPs. HAPs of concern are Toluene (CAS 108-88-3, 4.00% total weight), Ethylbenzene (CAS 100-41-4, 0.40% total weight), Xylene (CAS 1330-20-7, 2.00% total weight), and Methyl Isobutyl Ketone (CAS 108-10-1, 3.00% total weight).

Quaker plans to use two separate cleaning solvents; a Xylene (mixed isomer) solvent provided by Total Petrochemicals & Refining USA, Inc. and ExxonMobil™MEK provided by ExxonMobil Chemical Company. The xylene based solvent has a density of 7.26 lb/gallon and will contain Xylene Isomers (CAS 1330-20-7, 80% weight), Ethylbenzene (CAS 100-41-4, 20% weight), and Toluene (CAS 108-88-3, <1% by weight). All components are VOC and HAPs and it was assumed 100% would be emitted. ExxonMobil™MEK contains only Methyl Ethyl Ketone (CAS 78-93-3) which is not a HAP but will be 100% emitted as VOC. *All solvent, sealant, and paint MHDR usage is based upon actual maximum usage rates observed during plant operation in Freeburg, MO.*

Wood cutting MHDR was observed to be 0.0045 tons/hr (9 lbs/hr) according to Permit No. 102012-014 previously issued for the Freeburg facility. In the previous permit, wood cutting was labeled under EP-17 Phoenix Wood Cutting in Building 3. Important to note is that MHDR was not developed on how much the windows weigh, but rather how much wood waste was collected (weight of scrap wood pieces). Aluminum cutting MHDR (0.0622 tons/hr) is instead based upon the total amount of aluminum processed and not the remaining aluminum scraps. Wood cutting (EP-W2) is required by Special Condition No. 2.B of this permit to capture particulate using a dust collector system. Currently, Quaker plans to capture wood particulate with a Grizzly Industrial, Inc. Model G0672 5 HP Industrial Dust Collector. Essentially the dust collector operates a strong suction force to pull wood particulate into a bag filter enclosure. Emission factors for wood cutting were previously developed within Construction Permit No. 102012-004 issued for the Quaker – Freeburg facility. Wood cutting emissions were based upon captured particulate within a dust collector and therefore the controlled emission factor of 33.04 lbs PM<sub>10</sub> per ton of wood waste was derived from mass balance. The EP-W8 Aluminum cutting emission factor was obtained from the same construction permit. Although the exact source of the aluminum emission factor is unknown (since it dates back to a much older permit), aluminum is cut with a table saw and therefore will not emit very much particulate (mostly just visible aluminum waste scraps will remain from the machining process). Thus, the 0.1 lb PM<sub>10</sub> per ton aluminum processed emission factor was incorporated from Construction Permit No. 102012-014 and used for potential to emit calculations.

The following table provides an emissions summary for this project. The Quaker - Vienna facility has never been issued a construction or operating permit and therefore no EIQ or past emissions have been recorded. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year).

Table 1: Potential to Emit of the Application (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels <sup>1</sup>	Existing Potential Emissions	Existing Actual Emissions	Unconditioned Potential Emissions of the Project	New Installation Conditioned Potential <sup>2</sup>
PM	25.0	N/A	N/A	6.36	6.36
PM10	15.0	N/A	N/A	4.17	4.17
PM2.5	10.0	N/A	N/A	3.74	3.74
SOx	40.0	N/A	N/A	0.00	0.00
NOx	40.0	N/A	N/A	4.62	4.62
VOC	40.0	N/A	N/A	165.40	< 40.0
CO	40.0	N/A	N/A	2.66	2.66
HAPs	10.0/25.0	N/A	N/A	19.17	19.17
Toluene	10.0	N/A	N/A	10.16	< 10.0
Ethylbenzene	10.0	N/A	N/A	1.00	1.00
MIBK <sup>3</sup>	10.0	N/A	N/A	3.54	3.54
Xylene	10.0	N/A	N/A	4.48	4.48

N/A = Not Applicable

<sup>1</sup>The limit of 10.0 tpy listed for Toluene, Ethylbenzene, and Xylene is the SMAL for each HAP. Although all the HAPs coincidentally have the same SMAL, process changes using different paints/solvents/sealants may result in HAPs not listed here which may have SMAL less than 10.0 tpy. Please refer to Appendix B and Special Condition 3 before utilizing new paints/solvents/sealants.

<sup>2</sup>Since VOC and Toluene emissions are the only pollutants being limited, all other unconditioned potential emissions are assumed to be the same as the conditioned potential emissions.

<sup>3</sup>Methyl Isobutyl Ketone is abbreviated MIBK.

### 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 all pollutants are below de minimis levels. Potential emissions of VOC and Toluene are conditioned below de minimis levels.

### APPLICABLE REQUIREMENTS

Quaker Window Products 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.

#### GENERAL REQUIREMENTS

- *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

#### 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 1/20/2017, received 1/23/2017, designating Quaker Window Products as the owner and operator of the installation.



## Attachment B – Alternative Coating Worksheet

Quaker Window Products  
 Maries County, S21, T41N, R9W  
 Project Number: 2017-01-044  
 Installation ID Number: 125-0025  
 Permit Number: **052017-001**

Coating Name: \_\_\_\_\_ Date: \_\_\_\_\_ Copy this sheet as needed.

A	B	C	D	E	F	G
Individual HAP Name and CAS No.	HAP is also PM (yes / no)	Individual HAP Content (max weight %)	Maximum Application Rate (lbs coating per hour)	Overall PM emissions as percent of application rate (%)	Individual HAP PTE (tons per year)	Individual HAP SMAL (tons per year)
<i>(example) Benzene 71-43-2</i>	<i>no</i>	<i>2.0%</i>	<i>1.587</i>	<i>N/A</i>	<i>0.14</i>	<i>2</i>
<i>(example) Cobalt 2-Ethylhexanoate 136-52-7</i>	<i>yes</i>	<i>0.5%</i>		<i>1.25%</i>	<i>0.0869</i>	<i>0.1</i>

- A. Record the all individual HAPs from this single coating MSDS.
- B. Compare the HAP to Appendix B for verification as particulate matter.
- C. Record the maximum weight percent of each HAP from the MSDS.
- D. Record the maximum rate at which paints can be applied in column D (lbs per hour)
- E. In Column E record the weight percentage of PM emissions from overspray that will migrate through the fabric filters. The overall PM transfer efficiency (75%), booth capture efficiency (100%), and exhaust filter control efficiency (95%):  $[1-75\%] - [(1 - 75\%) \times 100\% \times 95\%] = 1.25\%$  of total application rate will become PM.
- F. Calculate the particulate matter HAP potential to emit:  $F = C \times D \times E \times 8,760 / 2,000$ . Otherwise calculate the volatile HAP potential to emit:  $F = C \times D \times 8,760 / 2,000$ .
- G. Record the individual HAP SMAL from the most recent Appendix B, also available at <http://www.dnr.mo.gov/env/apcp/permits/constpmtguide.htm> as Table of Hazardous Air Pollutants, Screening Model Action Levels and Risk Assessment Levels. If the individual HAP potential to emit is greater than the SMAL seek approval from the Air Pollution Control Program New Source Review Unit before using this coating.



## Appendix A: Best Management Practices

Haul roads and vehicular activity areas shall be maintained in accordance with at least one of the following options when the plant is operating.

### I. Pavement

- A. The operator shall pave the area with materials such as asphalt, concrete or other materials approved by the Air Pollution Control Program. The pavement will be applied in accordance with industry standards to achieve control of fugitive emissions<sup>1</sup> while the plant is operating.
- B. Maintenance and repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
- C. The operator shall periodically wash or otherwise clean all of the paved portions of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

### II. Application of Chemical Dust Suppressants

- A. The operator shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to unpaved areas.
- B. The quantities of the chemical dust suppressant shall be applied and maintained in accordance with the manufacturer's recommendation (if available) and in sufficient quantities to achieve control of fugitive emissions from these areas while the plant is operating.
- C. The operator shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator shall keep these records with the plant for not less than five (5) years and make these records available to Department of Natural Resources' personnel upon request.

### III. Application of Water-Documented Daily

- A. The operator shall apply water to unpaved areas. Water shall be applied at a rate of 100 gallons per day per 1,000 square feet of unpaved or untreated surface area while the plant is operating.
- B. Precipitation may be substituted for watering if the precipitation is greater than one quarter of one inch and is sufficient to control fugitive emissions.
- C. Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
- D. The operator shall record the date, volume of water application and total surface area of active haul roads or the amount of precipitation that day. The operators shall also record the rationale for not watering (e.g. freezing conditions or not operating).
- E. The operator shall keep these records with the plant for not less than five (5) years, and the operator shall make these records available to Department of Natural Resources' personnel upon request.

<sup>1</sup> For purposes of this document, Control of Fugitive Emissions means to control particulate matter that is not collected by a capture system and visible emissions to the extent necessary to prevent violations of the air pollution law or regulation. (Note: control of visible emission is not the only factor to consider in protection of ambient air quality.)

Product	Use	Chemical Constituent	CAS #	Percent of Chemical	VOC	VOC Content Lb/Gal	HAP	Weight per Gallon	Specific Gravity	Solids (lbs/gal)
<b>1199 Silicone Glazing Sealant</b> 2001	Caulk					70 gm/liter	0.58	8.67	1.040	
		Methyltri(ethylmethylketoxime)silane	22984-54-9	4.00			no			
		Di(ethylmethylketoxime) methoxymethyl silane	83817-72-5	1.00			no			
<b>Sher-Wood Kem Aqua Plus Surfacer</b>	Paint Booth							11.21		6.30
		Quartz	14808-60-7	0.10			no			
		Kaolin	1332-58-7	4.00			no			
		Talc	14807-96-6	12.00			no			
		Titanium Dioxide	13463-67-7	9.00			no			
<b>Sher-Wood Kem Aqua Plus White</b>	Paint Booth							9.67	1.160	4.06
		2-Methoxymethylethoxypropanol	34590-94-8	4.00			no			
		1-(2-Butoxymethylethoxy)-propanol	29911-28-2	4.00			no			
		Titanium Dioxide	13463-67-7	15.00			no			
<b>Sher-Wood F3 Hi-Build Precat Lacquer White, High Gloss</b> 9/11/2016	Paint Booth							8.75	1.050	3.50
		Ethanol	64-17-5	13.00			no			
		2-Propanol	67-63-0	3.00			no			
		1-Butanol	71-36-3	3.00			no			
		2-Methyl-1-propanol	78-83-1	2.00			no			
		Methyl Acetate	79-20-9	12.00			no			
		n-Butyl Acetate	123-86-4	18.00			no			
		1-Methoxy-2-Propanol Acetate	108-65-6	8.00			no			
		Titanium Dioxide	13463-67-7	13.00			no			
<b>Sher-Wood Vinyl Primer Surfacer White</b> 9/11/2016	Paint Booth							9.36	1.130	4.20
		Lt. Aliphatic Hydrocarbon Solvent	64742-89-8	8.00			no			
		Toluene	108-88-3	4.00			yes			
		Ethylbenzene	100-41-4	0.40			yes			
		Xylene	1330-20-7	2.00			yes			
		2-Propanol	67-63-0	6.00			no			
		Methyl Ethyl Ketone	78-93-3	3.00			no			
		Methyl Isobutyl Ketone	108-10-1	3.00			yes			
		n-Butyl Acetate	123-86-4	5.00			no			
		Isobutyl Acetate	110-19-0	22.00			no			
		Talc	14807-96-6	15.00			no			
		Titanium Dioxide	13463-67-7	10.00			no			
<b>Xylene</b> 1/1/2013	Cleaning					100.00	7.26	7.26	0.870	
		Xylene Isomers	1330-20-7	80.00			yes			
		Ethylbenzene	100-41-4	20.00			yes			
		Toluene	108-88-3	0.50			yes			
<b>MEK</b> 3/4/2013	Cleaning					100.00	6.72	6.72	0.807	
		Methyl ethyl ketone	78-93-3	100.00			no			



Haul Road/Haul Truck/Material Hauled Information								
Haul Road ID No.:	1	2	3	4	5	6	7	8
W (tons)	26.25	26.25	0.00	0.00	0.00	0.00	0.00	0.00
sL (g/m <sup>2</sup> ):	8.2	8.2						
P:	105	105	105	105	105	105	105	105
N:	365	365	365	365	365	365	365	365
Haul Roads - Max Hourly VMT Rate and Emission Factor Calculations								
E(PM <sub>2.5</sub> )(lbs/VMT):	0.1027	0.1027						
E(PM <sub>10</sub> )(lbs/VMT):	0.4183	0.4183						
E(PM <sub>25</sub> )(lbs/VMT):	2.0916	2.0916						
Eext(PM <sub>2.5</sub> )(lbs/VMT):	0.0953	0.0953						
Eext(PM <sub>10</sub> )(lbs/VMT):	0.3882	0.3882						
Eext(PM <sub>25</sub> )(lbs/VMT):	1.9412	1.9412						

$E = k(sL)^{0.91} \cdot (W)^{1.02}$  where:  
 E = particulate emission factor (having units matching the units of k)  
 k = particle size multiplier for particle size range and units of interest  
 sL = road surface silt loading (grams per square meter) (g/m<sup>2</sup>)  
 W = average weight (tons) of the vehicles traveling the road

Table 13.2.1-1 PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Size range	k (lb/VMT)
PM2.5	0.00054
PM10	0.0022
PM15	0.0027
PM30	0.011

$E_{ext} = [k(sL)^{0.91} \cdot (W)^{1.02}](1-P/(4N))$  where:  
 k, sL, W and S are as defined above and  
 Eext = annual average emission factor in the same units as k  
 P = number of "wet" days with at least 0.01 inch of precipitation during the averaging period  
 N = number of days in the averaging period (365 for annual)

The equations retain the quality rating of A (D for PM2.5), if applied within the range of source conditions that were Silt loading:

- 0.03-400 g/m<sup>2</sup>
- 0.04-570 grains/square foot (ft<sup>2</sup>)

Mean vehicle weight:

- 1.8-38 megagrams (Mg)
- 2.0-42 tons

Mean vehicle speed:

- 1-88 kilometers per hour (kph)
- 1-55 miles per hour (mph)

The upper 95% confidence levels of equation 1 for PM10 is best described with equations using an exponent of 1.14

$E_{95\%} = k(sL)^{1.14} \cdot (W)^{1.19}$

E95%(PM <sub>2.5</sub> )(lbs/VMT):	0.2903	0.2903
E95%(PM <sub>10</sub> )(lbs/VMT):	1.1829	1.1829

Activity	MHDR		Truck Types				We*	Wf*
	(tons/hr)	(trips/hr)	truck	truck	type	type		
Raw Material Haul Road	10.0	0.364	100%	0%			12.5	40
Product Haul Road	10.0	0.364	0%	100%			12.5	40
title	0.000						0	0
title	0.000						0	0
title	0.000						0	0
title	0.000						0	0
title	0.000						0	0
title	0.000						0	0
title	0.000						0	0

Truck Type	We (tons)	Wf (tons)
truck	12.5	40
truck	12.5	40
type		
type		

truck type row must sum to 100% per each activity

1=empty  
2=full  
3=both

Activities	Road Segment ID							
	1	2	3	4	5	6	7	8
D one way (feet)	697	1433						
D one way (miles)	0.132	0.271						
Raw Material Haul Road	3							
Product Haul Road		3						
title								
title								
title								
title								
title								
title								

W	Surface							
	Paved	Paved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved
Raw Material Haul Road	26.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Product Haul Road	0.000	26.250	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	26.25	26.25	0.00	0.00	0.00	0.00	0.00	0.00

E(PM2.5) (lbs/VMT):	0.10268	0.10268						
E(PM10) (lbs/VMT):	0.41832	0.41832						
E(PM30) (lbs/VMT):	2.09158	2.09158						
Eext(PM2.5) (lbs/VMT):	0.09529	0.09529						
Eext(PM10) (lbs/VMT):	0.38823	0.38823						
Eext(PM30) (lbs/VMT):	1.94116	1.94116						
Raw Material Haul Road	0.096006	0	0	0	0	0	0	0
Product Haul Road	0	0.197383	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
MHDR	0.096006	0.197383	0	0	0	0	0	0

PTE PM2.5 (lb/hr)	0.009858	0.020267						
PTE PM10 (lb/hr)	0.040161	0.082569						
PTE PM30 (lb/hr)	0.200804	0.412843						
PTE PM2.5 (lb/hr) w/ rain	0.009149	0.018809						
PTE PM10 (lb/hr) w/ rain	0.037272	0.07663						
PTE PM30 (lb/hr) w/ rain	0.186362	0.383152						
PTE PM2.5 (tons/yr)	0.043176	0.088769						
PTE PM10 (tons/yr)	0.175904	0.36165						
PTE PM30 (tons/yr)	0.879519	1.808252						
PTE PM2.5 (tons/yr) w/ rain	0.040071	0.082385						
PTE PM10 (tons/yr) w/ rain	0.163253	0.335641						
PTE PM30 (tons/yr) w/ rain	0.816266	1.678206						

Potential		Conditioned
0.12	PM2.5	
0.50	PM10	
2.49	PM	

# Quaker Windows Products Company

Wood Window Plant

Vienna, MO Facility

## Fuel Combustion Units - EP-W7

	Rating	
Make Up Air Unit for Paint Room	4	MMBTU/hr
Building Heating System (29 @ 125,000 BTU each)	3.63	MMBTU/hr
Total	7.63	MMBTU/hr

Heating Content of LPG

	94000 BTU/gal	
Total	0.0811	Mgal/hr
	710.59	Mgal/yr

Emission factors are from AP-42 Section 1.5, LPG Combustion

Emission Factors	lbs/Mgal
PM2.5	0.7
PM10	0.7
PM	0.7
SOx	0.013
NOx	13
VOC	0.8
CO	7.5

Emissions	tons/yr
PM2.5	0.25
PM10	0.25
PM	0.25
SOx	0.00
NOx	4.62
VOC	0.28
CO	2.66

(technical spray capacity of a single spray booth without operating limitations)	Maximum hourly Design Rate (gal/hour)	Maximum Annual Usage or Throughput (gal/yr)	Density (lb/gal)	VOC Content (lb/gal)	Max HAP Content (%)	Solids content (lb/gal)	PM10 Emission Factor	VOC Emissions (tpy)	HAP Emissions (tpy)	PM (Solid) Emissions (tpy) Controlled	PM10 Emissions (tpy) Controlled	PM2.5 Emissions (tpy) Controlled	Toluene	Ethylbenzene	Xylene	Methyl Isobutyl Ketone
Aqua Plus White	1.04	9125	9.67	0.81	0	4.06		3.70	0.00	0.23	0.23	0.23				
Aqua Plus Surfacer	0.96	8395	11.21	0.13	0	6.3		0.55	0.00	0.33	0.33	0.33				
High Gloss Lacquer	1.04	9125	8.75	4.27	0	3.5		19.48	0.00	0.20	0.20	0.20				
Primer Surfacer	0.96	8395	9.36	5.16	9.4	4.2		21.66	3.69	0.22	0.22	0.22	1.57	0.16	0.79	1.18

(technical spray capacity of 3 spray booths)	Maximum hourly Design Rate (gal/hour)	Maximum Annual Usage or Throughput (gal/yr)	Density (lb/gal)	VOC Content (lb/gal)	Max HAP Content (%)	Solids content (lb/gal)	PM10 Emission Factor	VOC Emissions (tpy)	HAP Emissions (tpy)	PM (Solid) Emissions (tpy) Controlled	PM10 Emissions (tpy) Controlled	PM2.5 Emissions (tpy) Controlled	Toluene	Ethylbenzene	Xylene	Methyl Isobutyl Ketone
Aqua Plus White	3.13	27375	9.67	0.81	0	4.06		11.09	0.00	0.69	0.69	0.69				
Aqua Plus Surfacer	2.88	25185	11.21	0.13	0	6.3		1.64	0.00	0.99	0.99	0.99				
High Gloss Lacquer	3.13	27375	8.75	4.27	0	3.5		58.45	0.00	0.60	0.60	0.60				
Primer Surfacer	2.88	25185	9.36	5.16	9.4	4.2		64.98	11.08	0.66	0.66	0.66	4.71	0.47	2.37	3.54

Original Facility	VOC Emissions (tpy)	HAP Emissions (tpy)	PM (Solid) Emissions (tpy) Controlled	PM10 Emissions (tpy) Controlled	PM2.5 Emissions (tpy) Controlled	Toluene	Ethylbenzene	Xylene	Methyl Isobutyl Ketone
PTE	74.64	11.78	1.91	1.71	1.66	7.02	0.69	2.9	1.18
PTE Facility Without Booth	29.26	8.09	0.93	0.73	0.68	5.45	0.53	2.11	0.00
PTE of three (3) booths	136.15	11.08	2.95	2.95	2.95	4.71	0.47	2.37	3.54
New Facility	165.40	19.17	3.87	3.67	3.62	10.16	1.00	4.48	3.54

<250

<25

<25

<15

<10

>10

<10

<10

<10

15.63 tpy Actual HAPs (Methyl Isobutyl Ketone was de listed as a HAP so no longer included in HAP total)

Quaker Windows Products Company  
 Wood Window Plant  
 Vienna, MO Facility

PM, PM10, PM2.5, VOC and HAP Potential to Emit Calculations - Controlled

	Maximum Hourly Design Rate	Maximum Annual Usage or Throughput	Density (lb/gal)	VOC Content (lb/gal)	Max HAP content (%)	Solids content (lb/gal)	PM10 Emission Factor	VOC Emissions (tpy)	HAP Emissions (tpy)	PM (Solid) Emissions(tpy) - Controlled	PM10 Emissions(tpy) - Controlled	PM2.5 Emissions(tpy) - Controlled	HAP CAS #108-88-3 Toluene	HAP CAS #100-41-4 Ethylbenzene	HAP CAS #1330-20-7 Xylene	HAP CAS #108-10-1 Methyl Isobutyl Ketone
<b>Chemical Usage Emission Points</b>	<b>gallons/hr</b>	<b>gallons/yr</b>														
<b>EP-W3, Wood Paint Booths (2)*</b>																
<b>Water Based Paints</b>																
Sher-Wood Kern Aqua Plus White	1.04	9125.00	9.67	0.81	0.00	4.06		3.70	0.00	0.23	0.16	0.14				
Sher-Wood Kern Aqua Plus Surfacer	0.96	8395.00	11.21	0.13	0.00	6.30		0.55	0.00	0.33	0.22	0.20				
<b>Solvent Based Paints</b>																
Sher-Wood F3 Hi-Bld Precat Lacquer White, High Gloss	1.04	9125.00	8.75	4.27	0.00	3.50		19.48	0.00	0.20	0.19	0.18				
Sher-Wood Vinyl Primer Surfacer, White	0.96	8395.00	9.36	5.16	9.40	4.20		21.66	3.69	0.22	0.21	0.20	1.57	0.16	0.79	1.18
<b>Subtotals</b>	<b>4.00</b>	<b>35040.00</b>														
<b>EP-W5, Sealant Usage</b>																
1199 Silicone Glazing Sealant	5.69	49864.32	8.67	0.58	0.00	NA		14.57	0.00							
Jowacoll 110.60	14.17	124100.00	8.76	0.15	1.00	NA		9.31	5.44				5.44			
<b>Subtotals</b>	<b>19.86</b>	<b>173964.32</b>														
<b>EP-W6, Solvent Usage</b>																
Xylene	0.08	730.00	7.26	7.26	100.00	NA		2.65	2.65				0.01	0.53	2.12	
MEK	0.08	730.00	6.72	6.72	0.00	NA		2.45	0.00							
<b>Subtotals</b>	<b>0.17</b>	<b>1460.00</b>														
<b>Subtotal</b>								<b>74.36</b>	<b>11.78</b>	<b>0.98</b>	<b>0.79</b>	<b>0.74</b>	<b>7.02</b>	<b>0.69</b>	<b>2.90</b>	<b>1.18</b>
<b>Particulate Only Emission Points</b>	<b>tons/hr</b>	<b>tons/yr</b>														
EP-W2, Wood Cutting**	0.0045	39.42					33.04			0.65	0.65	0.65				
EP-W8, Aluminum Cutting**	0.0622	545.14					0.1			0.03	0.03	0.03				
<b>Subtotal</b>								<b>0.00</b>	<b>0.00</b>	<b>0.68</b>	<b>0.68</b>	<b>0.68</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Combustion Source Emission Points</b>		See Attached						<b>0.28</b>		<b>0.26</b>	<b>0.25</b>	<b>0.25</b>				
<b>Totals</b>								<b>74.64</b>	<b>11.78</b>	<b>1.91</b>	<b>1.71</b>	<b>1.66</b>	<b>7.02</b>	<b>0.89</b>	<b>2.90</b>	<b>1.18</b>

NOTES:

\*EP-W3

Panel Filters

Control Efficiency of PM 95 %

Solids Transfer Efficiency 75 %

\*\*EP-W2 and EP-W8

Emission factors were obtained from APCP calculations for Air Construction Permit 102012-004.

## APPENDIX C

### Abbreviations and Acronyms

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

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

Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		Y	N	NITROSODIMETHYLAMINE, [N-]	62-75-9	0.001		Y	N	TRIMETHYLPENTANE, [2,2,4-]	540-84-1	5		Y	N
HEXACHLOROETHANE	87-72-1	5		Y	N	NITROSOMORPHOLINE, [N-]	59-89-2	1		Y	N	URETHANE [ETHYL CARBAMATE]	51-79-6	0.8		Y	N
HEXAMETHYLENE,-1,6-DIISOCYANATE	822-06-0	0.02		Y	N	NITroso-N-METHYLUREA, [N-]	684-93-5	0.0002		Y	N	VINYL ACETATE	108-05-4	1		Y	N
HEXAMETHYLPHOSPHORAMIDE	880-31-9	0.01		Y	N	OCTACHLORONAPHTHALENE	2234-13-1	0.01	V	Y	N	VINYL BROMIDE	593-60-2	0.6		Y	N
HEXANE, [N-]	110-54-3	10		Y	N	PARATHION	58-38-2	0.1		Y	Y	VINYL CHLORIDE	75-01-4	0.2		Y	N
HYDRAZINE	302-01-2	0.004		N	N	PCB [POLYCHLORINATED BIPHENYLS]	1336-36-3	0.009	X	Y	Y	XYLENE, [META-]	108-38-3	10	G	Y	N
HYDROGEN CHLORIDE	7647-01-0	10		N	N	PENTACHLORONITROBENZENE	82-68-8	0.3		Y	N	XYLENE, [ORTHO-]	95-47-6	10	G	Y	N
HYDROGEN FLUORIDE	7664-39-3	0.1		N	N	PENTACHLOROPHENOL	87-88-5	0.7		Y	N	XYLENE, [PARA-]	106-42-3	10	G	Y	N
HYDROQUINONE	123-31-9	1		Y	N	PHENOL	108-95-2	0.1		Y	N	XYLENES (MIXED ISOMERS)	1330-20-7	10	G	Y	N
INDENO(1,2,3C,D)PYRENE	193-39-5	0.01	V	Y	N	PHENYLENEDIAMINE, [PARA-]	106-50-3	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		N	N						
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	58-89-9	0.01	F	Y	N	PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1		N	N						
MALEIC ANHYDRIDE	108-31-8	1		Y	N	PHTHALIC ANHYDRIDE	85-44-9	5		Y	N						
MANGANESE COMPOUNDS		0.8	R	N	Y	POLYCYLIC ORGANIC MATTER		0.01	V	Y	N						
MERCURY COMPOUNDS		0.01	S	N	N	PROPANE SULTONE, [1,3-]	1120-71-4	0.03		Y	Y						
METHANOL	67-58-1	10		Y	N	PROPIOLACTONE, [BETA-]	57-57-8	0.1		Y	N						
METHOXYCHLOR	72-43-5	10	V	Y	Y	PROPIONALDEHYDE	123-38-6	5		Y	N						
METHOXYETHANOL, [2-]	109-88-4	10	P	Y	N	PROPOXUR [BAYGON]	114-26-1	10		Y	Y						
METHYL CHLORIDE	74-87-3	10		Y	N	PROPYLENE OXIDE	75-59-9	5		Y	N						
METHYL ETHYL KETONE (Delisted)	78-93-3					PROPYLENEIMINE, [1,2-]	75-55-8	0.003		Y	N						
METHYL HYDRAZINE	80-34-4	0.06		Y	N	QUINOLINE	91-22-5	0.006		Y	N						
METHYL IODIDE	74-88-4	1		Y	N	QUINONE	106-51-4	5		Y	N						
METHYL ISOBUTYL KETONE	106-10-1	10		Y	N	RADIONUCLIDES		Note 1	Y	N	Y						
METHYL ISOCYANATE	624-83-9	0.1		Y	N	SELENIUM COMPOUNDS		0.1	W	N	Y						
METHYL METHACRYLATE	80-62-6	10		Y	N	STYRENE	100-42-5	1		Y	N						
METHYL TERT-BUTYL ETHER	1834-04-4	10		Y	N	STYRENE OXIDE	96-09-3	1		Y	N						
METHYLCYCLOPENTADIENYL MANGANESE	12108-13-3	0.1	R	N	Y	TETRACHLORODIBENZO-P-DIOXIN, [2,3,7,8]	1746-01-6	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						
METHYLENEDIANILINE, [4,4-]	101-77-9	1	V	Y	N	TETRACHLOROETHYLENE	127-18-4	10		N	N						
METHYLNAPHTHALENE, [2-]	91-57-8	0.01	V	Y	N	TITANIUM TETRACHLORIDE	7550-45-0	0.1		N	N						
MINERAL FIBERS		0	T	N	Y	TOLUENE	108-88-3	10		Y	N						
NAPHTHALENE	91-20-3	10	V	Y	N	TOLUENE DIISOCYANATE, [2,4-]	584-84-9	0.1		Y	N						
NAPHTHYLAMINE, [ALPHA-]	134-32-7	0.01	V	Y	N	TOLUIDINE, [ORTHO-]	95-53-4	4		Y	N						
NAPHTHYLAMINE, [BETA-]	91-59-8	0.01	V	Y	N	TOXAPHENE	8001-35-2	0.01		Y	N						
NICKEL CARBONYL	13463-39-3	0.1	U	N	Y	TRICHLOROETHANE, [1,1,1-]	71-55-6	10		N	N						
NICKEL COMPOUNDS		1	U	N	Y	TRICHLOROETHANE, [1,1,2-]	79-00-5	1		Y	N						
NICKEL REFINERY DUST		0.08	U	N	Y	TRICHLOROETHYLENE	79-01-8	10		Y	N						
NICKEL SUBSULFIDE	12035-72-2	0.04	U	N	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-]	92-93-3	1	V	Y	N	TRITHYLAMINE	121-44-8	10		Y	N						
NITROPHENOL, [4-]	100-02-7	5		Y	N	TRIFLURALIN	1582-09-8	9		Y	Y						
NITROPROPANE, [2-]	79-46-8	1		Y	N												

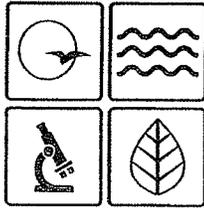
Legend	
Group ID	Aggregate Group Name
A	Asbestos
B	Cresols/Cresylic Acid (isomers and mixtures)
C	2,4 - D, Salts and Esters
D	Dibenzofurans, Dibenzodioxins
E	4, 6 Dinitro-o-cresol, and Salts
F	Lindane (all isomers)
G	Xylenes (all isomers and mixtures)
H	Antimony Compounds
I	Arsenic Compounds
J	Beryllium 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

Notes

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

Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM
ACETALDEHYDE	75-07-0	9		Y	N	CARBARYL	63-25-2	10	V	Y	Y	DICHLOROPROPANE, [1,2-]	78-87-5	1		Y	N
ACETAMIDE	60-35-5	1		Y	N	CARBON DISULFIDE	75-15-0	1		Y	N	DICHLOROPROPENE, [1,3-]	542-75-6	1		Y	N
ACETONTRILE	75-05-8	4		Y	N	CARBON TETRACHLORIDE	56-23-5	1		Y	N	DICHLORVOS	62-73-7	0.2		Y	N
ACETOPHENONE	98-86-2	1		Y	N	CARBONYL SULFIDE	463-58-1	5		Y	N	DIETHANOLAMINE	111-42-2	5		Y	N
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005	V	Y	Y	CATECHOL	120-80-9	5		Y	N	DIETHYL SULFATE	64-67-5	1		Y	N
ACROLEIN	107-02-8	0.04		Y	N	CHLORAMBEN	133-90-4	1		Y	Y	DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	5	P	Y	N
ACRYLAMIDE	79-06-1	0.02		Y	N	CHLORDANE	57-74-9	0.01		Y	Y	DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1	V	Y	Y
ACRYLIC ACID	79-10-7	0.6		Y	N	CHLORINE	7782-50-5	0.1		N	N	DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008	V	Y	Y
ACRYLONITRILE	107-13-1	0.3		Y	N	CHLOROACETIC ACID	79-11-8	0.1		Y	N	DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02		Y	N
ALLYL CHLORIDE	107-05-1	1		Y	N	CHLOROACETOPHENONE, [2-]	532-27-4	0.06		Y	N	DIMETHYL FORMAMIDE	66-12-2	1		Y	N
AMINOBIIPHENYL, [4-]	92-87-1	1	V	Y	N	CHLOROBENZENE	108-90-7	10		Y	N	DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008		Y	N
ANILINE	62-53-3	1		Y	N	CHLOROBENZILATE	510-15-6	0.4	V	Y	Y	DIMETHYL PHTHALATE	131-11-3	10		Y	N
ANISIDINE, [ORTHO-]	90-04-0	1		Y	N	CHLOROFORM	67-66-3	0.9		Y	N	DIMETHYL 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	DIMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1		Y	N
ANTIMONY COMPOUNDS		5	H	N	Y	CHLOROPRENE	126-99-8	1		Y	N	DIMETHYLANILINE, [N-N-]	121-69-7	1		Y	N
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y	CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y	DINITRO-O-CRESOL, [4,6-] (Note 6)	534-52-1	0.1	E	Y	Y
ANTIMONY POTASSIUM TARTRATE	28300-74-5	1	H	N	Y	CHROMIUM COMPOUNDS		5	L	N	Y	DINITROPHENOL, [2,4-]	51-28-5	1		Y	N
ANTIMONY TRIOXIDE	1309-04-4	1	H	N	Y	CHRYSENE	218-01-9	0.01	V	Y	N	DINITROTOLUENE, [2,4-]	121-14-2	0.02		Y	N
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y	COBALT COMPOUNDS		0.1	M	N	Y	DIOXANE, [1,4-]	123-91-1	6		Y	N
ARSENIC COMPOUNDS		0.005	I	N	Y	COKE OVEN EMISSIONS	8007-45-2	0.03	N	Y	N	DIPHENYLHYDRAZINE, [1,2-]	122-88-7	0.09	V	Y	Y
ASBESTOS	1332-21-4	0	A	N	Y	CRESOL, [META-]	108-39-4	1	B	Y	N	DIPHENYL METHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	V	Y	N
BENZ(A)ANTHRACENE	56-55-3	0.01	V	Y	N	CRESOL, [ORTHO-]	95-48-7	1	B	Y	N	EPICHLOROHRIDRIN	106-89-8	2		Y	N
BENZENE	71-43-2	2		Y	N	CRESOL, [PARA-]	106-44-5	1	B	Y	N	ETHOXYETHANOL, [2-]	110-80-5	10	P	Y	N
BENZIDINE	92-87-5	0.0003	V	Y	N	CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	N	ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P	Y	N
BENZO(A)PYRENE	50-32-8	0.01	V	Y	N	CUMENE	98-82-8	10		Y	N	ETHYL ACRYLATE	140-88-5	1		Y	N
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	N	CYANIDE COMPOUNDS		0.1	O	Y	N	ETHYL BENZENE	100-41-4	10		Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	N	DDE	72-55-9	0.01	V	Y	Y	ETHYL CHLORIDE	75-00-3	10		Y	N
BENZOTRICHLORIDE	98-07-7	0.006		Y	N	DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N	ETHYLENE GLYCOL	107-21-1	10		Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	N	DIAMINOTOLUENE, [2,4-]	95-80-7	0.02		Y	N	ETHYLENE GLYCOL MONOBUTYL ETHER (Delisted)	111-76-2				
BERYLLIUM COMPOUNDS		0.008	J	N	Y	DIAZOMETHANE	334-88-3	1		Y	N	ETHYLENE GLYCOL MONOHEXYL ETHER	112-25-4	5	P	Y	N
BERYLLIUM SALTS		2E-05	J	N	Y	DIBENZ(A,H)ANTHRACENE	53-70-3	0.01	V	Y	N	ETHYLENE IMINE (AZRIDINE)	151-59-4	0.003		Y	N
BIPHENYL, [1,1-]	92-52-4	10	V	Y	N	DIOXINS/FURANS		6E-07	D,V	Y	N	ETHYLENE OXIDE	75-21-8	0.1		Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	N	DIBENZOFURAN	132-84-9	5	V	Y	N	ETHYLENE THIOUREA	96-45-7	0.6		Y	Y
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003		Y	N	DIBROMO-3-CHLOROPROPANE, [1,2-]	98-12-8	0.01		Y	N	FORMALDEHYDE	50-00-0	2		Y	N
BROMOFORM	75-25-2	10		Y	N	DIBROMOETHANE, [1,2-]	106-93-4	0.1		Y	N	GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P	Y	N
BROMOMETHANE	74-83-9	10		Y	N	DIBUTYL PHTHALATE	84-74-2	10		Y	Y	GLYCOL ETHER (DIETHYLENE GLYCOL ETHERS)		5	P	Y	N
BUTADIENE, [1,3-]	106-99-0	0.07		Y	N	DICHLOROBENZENE, [1,4-]	106-46-7	3		Y	N	HEPTACHLOR	78-44-8	0.02		Y	N
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	N	DICHLOROBENZIDENE, [3,3-]	91-94-1	0.2	V	Y	Y	HEXACHLOROBENZENE	118-74-1	0.01		Y	N
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	N	DICHLOROETHANE, [1,1-]	75-34-3	1		Y	N	HEXACHLOROBUTADIENE	87-68-3	0.9		Y	N
CADMIUM COMPOUNDS		0.01	K	N	Y	DICHLOROETHANE, [1,2-]	107-06-2	0.8		Y	N	HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F	Y	N
CALCIUM CYANAMIDE	156-62-7	10		Y	Y	DICHLOROETHYLENE, [1,1-]	75-35-4	0.4		Y	N	HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F	Y	N
CAPROLACTAM (Delisted)	105-60-2					DICHLOROMETHANE	75-09-2	10		N	N	HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F	Y	N
CAPTAN	133-06-2	10		Y	Y	DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y	HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F	Y	N



Missouri Department of dnr.mo.gov

# NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

MAY 02 2017

Mr. Tom Stegeman  
Manager - Support Operations  
Quaker Window Products  
36967 Highway 63 South  
Vienna, MO 65582

RE: New Source Review Permit - Project Number: 2017-01-044

Dear Mr. Stegeman:

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.

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.htm>.

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).



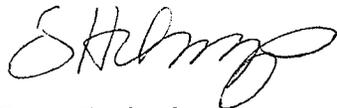
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Mr. Tom Stegeman  
Page Two

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: Southeast Regional Office  
PAMS File: 2017-01-044

Permit Number: 05 2017 - 001