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: 06 2019 - 012  Project Number: 2017-07-043
Installation Number: 007-0003


Parent Company Address: 1305 Cherrington Parkway, Suite 100,
Moon Township, PA 15108

Installation Name: HarbisonWalker International Inc.-Vandalia
Installation Address: 1000 Booker Street, Vandalia, MO 63382
Location Information: Audrain County, S8, T52N, R5

Application for Authority to Construct was made for:

Re-permitting a plastics batching and mixing production line that was last operated in 2006. 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.

Date: JUN 27 2019

Director or Designee
Department of Natural Resources

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 (3)(E). “Conditions required by permitting authority.”

HarbisonWalker International, Inc.
Audrain County, S8, T52N, R5

1. Control Device Requirement – Dust Collectors
   A. HarbisonWalker International, Inc. shall control the emission units as described below using dust collectors (DC-9 and DC-21) and bin vent filters (DC-22, DC-23, and DC-24).
      1) The DC-9 dust collector shall control:
         a) A-1 through A-6 Vibrating Conveyors, and
         b) Belt Conveyor A.
      2) The DC-21 dust collector shall control:
         a) A-7 through A-10 Vibrating Conveyors,
         b) Weigh Hopper A
         c) B-1 through B-5 Vibrating Conveyors,
         d) Weigh Hopper B
         e) C-1 through C-3 Vibrating Conveyors
         f) C-4 Screw Conveyor
         g) Weigh Hopper C
         h) Belt Conveyor C
         i) D-1 Vibrating Conveyor
         j) D-2 through D-3 Screw Conveyors
         k) Weigh Hopper D
         l) Vibrating Conveyor (from Weigh Hoppers A and B)
         m) Skip Hoist
         n) Retractable Chute Conveyor
         o) Clearfield Wet Pan
      3) The bin vent filters (DC-22, DC-23, and DC-24) shall be used to control emissions from the Kyanite Day Bin, A-2 Day Bin and the Ball Clay Day Bin, respectively
   B. The dust collectors and bin vent filters shall be operated and maintained in accordance with the manufacturer's specifications. Each dust collector 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 Department of Natural Resources' employees may easily observe them.
SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

C. Replacement filters for each dust collector and bin vent filters shall be kept on hand at all times. The bags and filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.

D. HarbisonWalker International, Inc. shall monitor and record the operating pressure drop across each dust collector at least once every 24 hours.

E. HarbisonWalker International, Inc. shall monitor and record the visible emissions from each bin vent filter.
   1) Frequency: Visible emissions from the exhaust shall be monitored on a monthly basis when the silos are being filled.
   2) Duration: The duration of the observation shall be for a two minute time period.
   3) Threshold: The condition of no visible emission is considered normal for this emission unit. When visible emissions are noted from the emission unit, it shall be documented and corrective actions shall be implemented with a reasonable period.
   4) Records: HarbisonWalker International, Inc. will keep a log of the monthly observations.

F. HarbisonWalker International, Inc. shall maintain an operating and maintenance log for each baghouse and bin vent 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.

2. Record Keeping and Reporting Requirements
A. HarbisonWalker International, 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.

B. HarbisonWalker International, 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, no later than ten 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: 2017-07-043
Installation ID Number: 007-0003
Permit Number: 062019-012

Installation Address:
HarbisonWalker International, Inc.
1000 Booker Street
Vandalia, MO 63382

Parent Company:
HarbisonWalker International, Inc.
1305 Cherrington Parkway, Suite 100
Moon Township, PA 15108

AuDrain County, S8, T52N, R5

REVIEW SUMMARY

• HarbisonWalker International, Inc. has applied for authority to re-permit a plastics batching and mixing production line that was last operated in 2006. It has been idle for over five years and therefore is required to be re-permitted.

• The application was deemed complete on August 30, 2017.

• HAP emissions are expected from the proposed equipment. HAPs of concern from this process are chromium (III).

• 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.

• Dust collectors (DC-9 and DC-21) are being used to control the PM, PM_{10}, and PM_{2.5} emissions from vibrating conveyors, screw conveyors, weigh hoppers, belt conveyors, a skip hoist and a Clearfield wet pan mixer associated with the plastic batching and mixing production system. Bin vents filters (DC22, 23, and 24) are being used to control emissions from the day bins.

• 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 and the SMAL for chromium compounds.

• This installation is located in Audrain County, an attainment/unclassifiable 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 below de minimis levels.

• 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.

• An amendment to your Part 70 Operating Permit shall occur on your next operating permit renewal.

• Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

The HarbisonWalker International, Inc. – Vandalia MO plant (HarbisonWalker) manufactures predominantly high percentage alumina and minor quantities of silica refractory shapes and specialty products such as refractory plastics, mortars and taphole ramming mixes. A wide variety of conveying, drying, milling, mixing, shaping equipment and firing kilns are used in the process. The facility received a Part 70 operating permit renewal in 2017 (OP2017-015). For operating permit purposes, the installation is major for VOC, PM10, and PM2.5.

The following New Source Review permits have been issued to HarbisonWalker's Vandalia plant from the Air Pollution Control Program.

<table>
<thead>
<tr>
<th>Permit Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0581-014A</td>
<td>Shuttle kiln</td>
</tr>
<tr>
<td>1296-009</td>
<td>Specialties ball mill line</td>
</tr>
<tr>
<td>0199-015</td>
<td>Installation of additional grinding, screening, and mixing systems</td>
</tr>
<tr>
<td>0699-029</td>
<td>Installation of a new kiln</td>
</tr>
<tr>
<td>082000-008</td>
<td>Installation of a blending-station, transfer-station, mixer, hopper, conveyors, and bulk bag filling station</td>
</tr>
<tr>
<td>032014-007</td>
<td>Temporary permit: The purpose of the trial was to test the consistency of the mixed material for final production.</td>
</tr>
<tr>
<td>102014-004</td>
<td>Temporary permit: The purpose of the trial was to test the consistency of the mixed material for final production using a different configuration.</td>
</tr>
<tr>
<td>052015-013</td>
<td>Restart mixer</td>
</tr>
<tr>
<td>062017-007</td>
<td>Mixer/pump for production of chrome dobies</td>
</tr>
</tbody>
</table>

PROJECT DESCRIPTION

HarbisonWalker is seeking authority to restart the existing plastic batching and mixing production system at its Vandalia facility. This system was last operated in 2006. However, it is still active in the current operating permit and EIQ systems. The production system produces refractory plastics for use in industrial thermal applications. This system consists of vibrating conveyors, screw conveyors, weigh hoppers, belt conveyors, a skip hoist and a Clearfield wet pan mixer. The MHD of the system is eight tons per hours (70,080 tpy).
There are four separate lines (A, B, C, and D) that feed into the Clearfield Wet Pan. Each of the lines prior to the wet pan share a similar, but not identical process steps. (See Appendix B for the process flow diagram of the process.) The raw materials are fed from bins into vibrating conveyors, then transferred and weighed out to produce a batched material that is fed into the wet mixer. The mixer mixes the raw materials into a wet plastic material for feed to the extruder that produces the final plastic product. The material from the mixer has the consistency of play dough and is not expected to produce emissions in the units following the mixer. The extruder, which is the bottleneck of the system, is downstream of this wet pan. All emission units are controlled by DC-9 and DC-21 Dust Collectors, except for the day bins which are controlled by bin vent filters (DC-22, 23, and 24).

Please note that DC-21 also controls emissions from the chrome dobies production processes. This is a separate and independent process to the plastics process being permitted here.

EMISSIONS/CONTROLS EVALUATION

Potential particulate emissions were estimated using emission factors that were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 11.13 Glass Fiber Manufacturing (September 1985). According to the reference used to develop the emission factors, the emission factors are overall average emission factors for raw handling and preparation and were not meant to be used on an individual emission unit basis. The document divided the system emissions into three process steps (handling, storage bins, and mixing/weighing). As such, potential emissions were calculated on a "system" basis for each process step. Since it has been a relatively long time since these emission factors were first developed, potential emissions were also evaluated based on more recently developed emission units. The use of other emission factors such as the drop-point equation from AP-42, Section 13.2.4 Aggregate Handling and Storage Piles, November 2006 calculated on an individual emission unit basis resulted in even lower emissions. Due to the historical use of the Section 11.13 emission factors at this facility and the matter that these emission factors do not appear to underrepresent potential emissions, alternate emission factors were not evaluated further. A particle size distribution using Category 3 from Table B.2.2 from AP-42 was used to determine PM$_{10}$ and PM$_{2.5}$ emissions.

The vibrating conveyors through the mixer are totally enclosed. All emission units have pick-up points that are routed to a dust collector. Therefore, the capture efficiency of the system is expected to be 100%. These transfers are controlled by dust collectors and bins vents are equipped with bin vent filters. A control efficiency of 98% was given for use of the control devices.

The plastic batching monoliths and mortars are made of 35% chrome oxide. Potential chromium (III) emissions are based on the molecular weight ratio of chromium to

---

chronic acid multiplied by the total emissions of particulate. There is no emission factor for PM$_{2.5}$; therefore, all PM$_{10}$ is assumed to equal PM$_{2.5}$.

The following table provides an emissions summary for this project. Existing potential emissions were taken from permit number 062017-007. Existing actual emissions were taken from the installation's 2016 EIQ. Conditioned potential emissions of the project represent the potential of the new equipment with the use of dust collectors and bin vents. The potential emissions of HAPs consist only of chromium compounds and include the whole weight of the compound. Chromium (III) potential emissions are the weight of the chromium portion only.

Table 2: Emissions Summary (tpy)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Regulatory De Minimis Levels</th>
<th>Existing Potential Emissions</th>
<th>Existing Actual Emissions (2016 EIQ)</th>
<th>Potential Emissions of the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>25.0</td>
<td>N/D</td>
<td>N/D</td>
<td>2.10</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>15.0</td>
<td>&gt;100.0</td>
<td>14.08</td>
<td>1.07</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>10.0</td>
<td>&gt;100.0</td>
<td>9.79</td>
<td>0.32</td>
</tr>
<tr>
<td>SOx</td>
<td>40.0</td>
<td>Minor</td>
<td>14.49</td>
<td>N/A</td>
</tr>
<tr>
<td>NOx</td>
<td>40.0</td>
<td>Minor</td>
<td>8.57</td>
<td>N/A</td>
</tr>
<tr>
<td>VOC</td>
<td>40.0</td>
<td>&gt;100.0</td>
<td>0.62</td>
<td>N/A</td>
</tr>
<tr>
<td>CO</td>
<td>100.0</td>
<td>Minor</td>
<td>22.29</td>
<td>N/A</td>
</tr>
<tr>
<td>GHG (CO$_{2}$e)</td>
<td>N/A</td>
<td>N/D</td>
<td>N/D</td>
<td>N/A</td>
</tr>
<tr>
<td>GHG (mass)</td>
<td>N/A</td>
<td>N/D</td>
<td>N/D</td>
<td>N/A</td>
</tr>
<tr>
<td>HAPs</td>
<td>10.0/25.0</td>
<td>De Minimis</td>
<td>1.26</td>
<td>0.64</td>
</tr>
<tr>
<td>Cr(III)</td>
<td>5.0</td>
<td>N/D</td>
<td>N/D</td>
<td>0.44</td>
</tr>
</tbody>
</table>

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

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. Potential emissions of all pollutants are below de minimis levels and chromium compounds are below its SMAL. A permit is needed since unconditioned potential emissions are above the insignificant threshold found in 10 CSR 10-6.061(3)(A).

APPLICABLE REQUIREMENTS

HarbisonWalker International, 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
  - This project qualifies as an off permit change to your Part 70 Operating Permit (P70). Potential Combined HAPs from the installation after this project with the limits in the current P70 will be below 25 tons. Therefore, the P70 will need to be amended in your next P70 Operating permit renewal (2022).

- **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

- **Restriction of Emission of Particulate Matter From Industrial Processes**, 10 CSR 10-6.400

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 July 13, 2017, received July 17, 2017, designating HarbisonWalker International, Inc. as the owner and operator of the installation.
APPENDIX A

Abbreviations and Acronyms

% .............. percent
°F .............. degrees Fahrenheit
acfm ........... actual cubic feet per minute
BACT .......... Best Available Control Technology
BMPs .......... Best Management Practices
Btu .......... British thermal unit
CAM .......... Compliance Assurance Monitoring
CAS .......... Chemical Abstracts Service
CEMS .......... Continuous Emission Monitor System
CFR .......... Code of Federal Regulations
CO .......... carbon monoxide
CO2 .......... carbon dioxide
cO2e .......... carbon dioxide equivalent
COMS .......... Continuous Opacity Monitoring System
CSR .......... Code of State Regulations
dscf .......... dry standard cubic feet
EIQ .......... Emission Inventory Questionnaire
EP .......... Emission Point
EPA .......... Environmental Protection Agency
EU .......... Emission Unit
fps .......... feet per second
ft .......... feet
GACT .......... Generally Available Control Technology
GHG .......... Greenhouse Gas
gpm .......... gallons per minute
gr .......... grains
GWP .......... Global Warming Potential
HAP .......... Hazardous Air Pollutant
hr .......... hour
hp .......... horsepower
lb .......... pound
lbs/hr ......... pounds per hour
MACT .......... Maximum Achievable Control Technology
µg/m³ .......... micrograms per cubic meter
ms .......... meters per second
Mgal .......... 1,000 gallons
MW .......... megawatt
MHDR .......... maximum hourly design rate
MMBtu .... Million British thermal units
MMCF .... million cubic feet
MSDS ......... Material Safety Data Sheet
NAAQS ...... National Ambient Air Quality Standards
NESHAPs .... National Emissions Standards for Hazardous Air Pollutants
NOx .......... nitrogen oxides
NSPS .......... New Source Performance Standards
NSR .......... New Source Review
PM .......... particulate matter
PM2.5 .......... particulate matter less than 2.5 microns in aerodynamic diameter
PM10 .......... particulate matter less than 10 microns in aerodynamic diameter
ppm .......... parts per million
PSD .......... Prevention of Significant Deterioration
PTE .......... potential to emit
RACT .......... Reasonable Available Control Technology
RAL .......... Risk Assessment Level
SCC .......... Source Classification Code
scfm .......... standard cubic feet per minute
SDS .......... Safety Data Sheet
SIC .......... Standard Industrial Classification
SIP .......... State Implementation Plan
SMAL .......... Screening Model Action Levels
SOx .......... sulfur oxides
SO2 .......... sulfur dioxide
SSM .......... Startup, Shutdown & Malfunction
tph .......... tons per hour
tpy .......... tons per year
VMT .......... vehicle miles traveled
VOC .......... Volatile Organic Compound
Appendix B: Process Flow Diagram
## HWI Vandalia

**HAP Emission**

**Equipment**: Plastics Line

**Pollutant**: Chromium

<table>
<thead>
<tr>
<th>Source ID</th>
<th>Source Description</th>
<th>Rate (tons/hr)</th>
<th>Production Potential (tons/yr)</th>
<th>Est. Avg. Percent Chronic Oxide Content</th>
<th>Chronic Oxide Processed (tons/yr)</th>
<th>HAP</th>
<th>SCC/EIQ Factor (lbs/ton)</th>
<th>Removal Percent</th>
<th>Chromium Compound Only Emitted (tons/yr)</th>
<th>Chromium Only Emitted (tons/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max potential</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC-21</td>
<td>#3 Plastics Batching &amp; Mixing</td>
<td>8.00</td>
<td>70,080</td>
<td>35</td>
<td>24,528</td>
<td>Cr</td>
<td>3.800</td>
<td>98</td>
<td>0.64</td>
<td>0.44</td>
</tr>
</tbody>
</table>

### Anticipated Production

| DC-21     | #3 Plastics Batching & Mixing      | 8.00          | 10,000                          | 35                                     | 3,500                           | Cr  | 3.800                    | 98             | 0.09                                    | 0.06                     |

*Note: The 3.8 lb/ton EF is a combined EF of handling, storage, and mixing from PM tab.*

*MW of Cr = 51.996, MW of Cr2O3 = 151.99*
### Source ID: Source Description | Max. Potential Capacity | Anticipated Capacity | Process Step | Source ID | Design Tonne/hr | Emission Factor | Emissions Control Device | PM Emission Factor | PM Emission | PM Emission |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-21</td>
<td>DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C.</td>
<td>8.000</td>
<td>70000</td>
<td>Handling</td>
<td>DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C.</td>
<td>3.000</td>
<td>120.00</td>
<td>8.000</td>
<td>0.480</td>
<td>2.58</td>
</tr>
<tr>
<td>DC-21</td>
<td>DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C.</td>
<td>8.000</td>
<td>70000</td>
<td>Storage bins</td>
<td>DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C.</td>
<td>0.000</td>
<td>0.00</td>
<td>8.000</td>
<td>0.056</td>
<td>0.62</td>
</tr>
</tbody>
</table>

**Notes:**
1. Number of transfer points: A, B, C, and D lines operate in parallel and feed into the same line that leads to the extruder. The extruder is the bottleneck. Line A is fed by Line B and D.
2. Line C has 9 transfer points and 1 set of bins. However, if all product were put through this line it would not be the worst case.
3. Upon further investigation of the background document from AP-42, Section 11.2, the emission factors were an overall average emission factor for raw material handling and preparation.
4. Therefore, my assumption is that the emission factors are not meant to be for individual emission units. If the drop point equation were to be used and the number of transfer points, emissions would be smaller than represented above.
5. The emission factor has historically been used. I have decided not to change it.
6. Particle size distribution - Used Category 3 from Table 12.2.1 from AP-42
7. PM10 for PM10, 15% for PM2.5

<table>
<thead>
<tr>
<th>Source ID</th>
<th>Source Description</th>
<th>Max. Potential Capacity</th>
<th>Anticipated Capacity</th>
<th>Process Step</th>
<th>Source ID</th>
<th>Design Tonne/hr</th>
<th>Emission Factor</th>
<th>Emissions Control Device</th>
<th>PM Emission Factor</th>
<th>PM Emission</th>
<th>PM Emission</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-21</td>
<td>DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C.</td>
<td>8.000</td>
<td>70000</td>
<td>Mixing/Weighing</td>
<td>DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C.</td>
<td>0.000</td>
<td>0.00</td>
<td>8.000</td>
<td>0.049</td>
<td>3.00</td>
<td>0.021</td>
</tr>
</tbody>
</table>

| Source ID | Source Description | Max. Potential Capacity | Anticipated Capacity | Process Step | Source ID | Design Tonne/hr | Emission Factor | Emissions Control Device | PM Emission Factor | PM Emission | PM Emission |
|---|---|---|---|---|---|---|---|---|---|---|
| DC-21 | DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C. | 8.000 | 10000 | Mixing/Weighing | DC-21 #3 PLASTICS BATCHING and CLEARFIELD WET PAN S.T. M.D.C. | 0.000 | 0.00 | 8.000 | 0.056 | 0.06 | 0.000 |

**Notes:**
1. Number of transfer points: A, B, C, and D lines operate in parallel and feed into the same line that leads to the extruder. The extruder is the bottleneck.
2. Line A is fed by Line B and D.
3. Line C has 9 transfer points and 1 set of bins. However, if all product were put through this line it would not be the worst case.
4. Upon further investigation of the background document from AP-42, Section 11.2, the emission factors were an overall average emission factor for raw material handling and preparation.
5. Therefore, my assumption is that the emission factors are not meant to be for individual emission units. If the drop point equation were to be used and the number of transfer points, emissions would be smaller than represented above.
6. The emission factor has historically been used. I have decided not to change it.
7. Particle size distribution - Used Category 3 from Table 12.2.1 from AP-42
8. PM10 for PM10, 15% for PM2.5
JUN 27 2019

Mr. Bruce Morgan
Senior Environmental Engineer
HarbisonWalker International, Inc.
1305 Cherrington Parkway, Suite 100
Moon Township, PA 15108

RE: New Source Review Permit - Project Number: 2017-07-043

Dear Mr. Morgan:

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

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

Enclosures

C: Northeast Regional Office
PAMS File: 2017-07-043

Permit Number: 06 2019-012