



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604**

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
HarbisonWalker International, Inc., Windham, Ohio

FROM: Emma Leeds, Environmental Engineer
AECAB (IL/IN)

THRU: Nathan Frank, Section Supervisor
AECAB (IL/IN)

TO: File

BASIC INFORMATION

Facility Name: HarbisonWalker International, Inc. (HarbisonWalker)

Facility Location: 9686 East Center St / Route 3030, Windham, OH 44288

Date of Inspection: 12/8/22

EPA Inspector(s):

1. Emma Leeds, Environmental Engineer
2. Linda Rosen, Environmental Engineer

Other Attendees:

1. Damen Custer, Plant EHS Administrator
2. Bill Kashin, Manufacturing Engineer
3. Jason Dingledine, Senior Operations Manager
4. John Winland, Firing Process Coordinator (tour)

Contact Email Address: dcuster@thinkHWI.com

Purpose of Inspection: To investigate compliance with the Clean Air Act and applicable permits

Facility Type: Refractory brick manufacturer

Regulations Central to Inspection: 2022 Ohio Environmental Protection Agency Permit to Install and Operate No. P0132455 (2022 OEPA PTIO).

Arrival Time: 9:20 AM

Departure Time: 1:05 PM

Inspection Type:

- ☒ Unannounced Inspection
- ☐ Announced Inspection

OPENING CONFERENCE

- ☒ Presented Credentials
- ☒ Stated authority and purpose of inspection
- ☐ Provided Small Business Resource Information Sheet
- ☒ Small Business Resource Information Sheet not provided. Reason: not a small business
- ☒ Provided CBI warning to facility

The following information was obtained verbally from HarbisonWalker personnel unless otherwise noted.

Process Description:

HarbisonWalker manufactures two industrial brick products: white (“pH”) brick for the concrete and glass industries, and black (“NGU”) brick that can withstand high heat for the steel and chemical incineration industries. Raw material is received at the facility and stored in bays and sacks. Some of the bays are enclosed to control moisture levels in the materials. Approximately 80% of the raw materials are batch aggregate, including gravel and bauxite mineral, and the rest are additive powders, including aluminum metal powders and organic phenol-formaldehyde-based binding resin for the black bricks.

To begin the manufacturing process, several crushers are used to bring aggregate material to certain sizes, which is then conveyed into the facility into one of nine bucket elevators. Materials are sorted by size using vibratory screens as they move down the elevators. Crushed aggregate and powder are then combined in mixing containers and mixed for up to 10 minutes to activate the binders, and then pressed into brick shape.

Following pressing, black bricks are stacked by robot into oven-cars (2 – 4 pallets per car) and fed into the curing oven (emission unit P023 in the 2022 OEPA PTIO). At any point during operating hours, 26 black brick oven-cars are in a line in the curing oven, and every hour, one oven-car enters the curing oven and one is pushed out. The entrance and exit doors of the oven open for about a minute when oven-cars are pushed in and out. After exiting the oven, black bricks sit in the facility for about a day to cool before they’re packaged for shipping.

For white bricks, after pressing, the bricks are stacked into tunnel kiln-cars that are fed through a dryer and then the tunnel kiln (emission unit P014 in the 2022 OEPA PTIO). Anywhere from 3 to 21 tunnel kiln-cars are pushed through the tunnel kiln in a day.

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Staff Interview: The facility operates with 100 employees for 24 hours 5 days a week (Sunday night to Friday at 11 pm).

Approximately 7 dust collectors total, including baghouses and cartridges, are used to control emissions from the crushers, elevators, mixers, and conveyors that move materials from the crushers to elevators. HarbisonWalker inspects the dust collector magnehelic gauges weekly, which are each marked with a certain target pressure drop range on the gauge. Facility personnel were not sure how the ranges were established.

The temperature in the curing oven ramps up to 315 ° F over the first 22 oven-car positions and then stays at that level in the final 4 oven-car positions where curing occurs. Emissions from the curing oven are picked up from above car position 6 and routed to a thermal oxidizer (TO). The facility aims to run the curing oven with a differential pressure of 0 – 0.1 inches of water column (“ of w.c.), although facility personnel were not sure of how this range was established. In follow-up correspondence with HarbisonWalker on January 4, 2023, Damen Custer stated that they aim to operate the oven under 0.01” of w.c. The TO requires a minimum combustion temperature of 1200 ° F to operate, but HarbisonWalker aims for 1300 ° F. HarbisonWalker was not sure how this value was established or when the TO was last tested. At the time of the inspection, the facility was working with OEPA to schedule a new stack test on the TO, as required by the 2022 OEPA permit.

The first third of the tunnel kiln is considered the “hot zone,” which operates between 2750 – 2880 ° F. The rest of the tunnel kiln operates at lower temperatures to allow bricks to cool. The tunnel kiln emits directly to the atmosphere. If emissions from the tunnel kiln stack turn grey or black, the facility restricts the flow coming out of the stack by closing a damper to increase emission residence time in the kiln.

Emissions from the dust collectors, thermal oxidizer, and kiln are routed to the atmosphere through five stacks total. Damen Custer checks for visible emissions at the five stacks when he comes in and notifies his supervisor if he sees any emissions. No log is kept. A month before the inspection, a puff of smoke was seen from the 8th floor dust collector, which was clogged due to a moisture buildup.

In August 2021, a contractor performing hot work on the curing oven caused a fire in the ductwork to the TO, damaging the TO itself. The facility was shut down for two weeks as a result.

OEPA received an odor complaint for the facility in November 2022 and inspected the facility later that month to investigate.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

EPA started the tour at the beginning of the process, observing where raw materials are stored in contained and uncontained bays and sacs outdoors. EPA observed the rotary dryer (emission unit P017 in the 2022 OEPA Permit) which hasn't been in operation for over seven years but is still on the 2022 OEPA Permit. EPA then moved inside and observed the "fines dust collector," for which the bag is replaced quarterly, and the bottom cleaned annually. EPA observed the dust collectors for Mixers 1 and 2 with pressure drop measurements of 5" of w.c. and 4" of w.c. respectively, and then moved into the kiln and curing oven control room. The curing oven had a pressure reading of about -0.014" of w.c., and the TO combustion temperature was 1307 ° F. The kiln temperature in the "hot zone" was 2871° F. At the end of the tour, EPA observed an oven-car of black bricks leave the curing oven to be left out to cool. Facility personnel explained that the bricks are 315° F when they leave the oven. Visible emissions, light grey in color, were coming off the top of the bricks.

EPA observed four of the five stacks from outside the main entrance of the facility and noticed no visible emissions.

EPA inspectors noticed a strong chemical smell by the curing oven when they first entered the facility which persisted throughout the duration of the inspection.

Photos and/or Videos: were taken during the inspection.
See Appendix A

Field Measurements: were not taken during this inspection.

RECORDS REVIEW

HarbisonWalker provided EPA with their raw materials inventory list which EPA retained after the inspection.

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:

- Technical data sheet for the "Arclin" phenol resin
- Dust collector inspection logs from January 1 2021 – Dec 12, 2022, with an explanation of what baghouses are used to control dust from which units/processes
- Any logs of any visible emission checks of 5 stacks from January 1 2021 – Dec 12, 2022
- Differential pressure logs for the black brick curing oven from January 1, 2022 – Dec 12, 2022
- Continuous temperature readings for the thermal oxidizer from January 1, 2022 – Dec 12, 2022

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- Monthly production values for black brick curing oven from January 1, 2022 – Dec 12, 2022
- Previous Permit-to-Install and Operate before the current (effective 9/22/22)
- Quarterly emission calculations starting January 2022

DIGITAL SIGNATURES

Report Author: **EMMA
LEEDS**  Digitally signed by EMMA
LEEDS
Date: 2023.02.02
16:02:00 -06'00'

Section Supervisor: **Frank,
Nathan**  Digitally signed by Frank,
Nathan
Date: 2023.02.03
13:21:02 -06'00'

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APPENDICES AND ATTACHMENTS

1. Appendix A – Digital Image Log

APPENDIX A: DIGITAL IMAGE LOG

1. Inspector Name: Emma Leeds	2. Archival Record Location: USEPA Region 5 Electronic Records Center: “Enf HarbisonWalker OH 22” folder
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Image Number	File Name	Date and Time (EST)	Description of Image
1	IMG_0636.JPG	2022:12:08 11:24:07	Storage for non-contained aggregate
2	IMG_0637.JPG	2022:12:08 11:25:19	Material conveyor entering building, dust collector for jaw crusher
3	IMG_0638.JPG	2022:12:08 11:26:16	Apron feeder
4	IMG_0639.JPG	2022:12:08 11:36:40	Two stacks for dust collectors on the east side of the building (beginning of process)
5	IMG_0640.JPG	2022:12:08 11:45:28	Fines dust collector (main baghouse)
6	IMG_0644.JPG	2022:12:08 11:52:13	Gauge for decommissioned dust collector
7	IMG_0648.JPG	2022:12:08 11:54:49	Cut gauge lines for decommissioned dust collector
8	IMG_0649.JPG	2022:12:08 11:55:40	Cut gauge lines for decommissioned dust collector (duplicate photo)
9	IMG_0652.JPG	2022:12:08 12:14:03	Black brick oven entrance
10	IMG_0655.JPG	2022:12:08 12:23:27	Fan from black brick oven leading to incinerator
11	IMG_0656.JPG	2022:12:08 12:38:31	Damper for tunnel kiln that pulls out to increase residence time
12	IMG_0657.JPG	2022:12:08 12:41:02	Inspection brick for hottest part of tunnel kiln
13	IMG_0658.JPG	2022:12:08 12:41:33	Inspection brick for hottest part of tunnel kiln