Illinois Environmental Protection Agency
2520 West Iles Avenue • P.O. Box 19276 • Springfield, Illinois • 62794-9276 • 217-782-3397

JB Pritzker, Governor **James Jennings**, Director

217/785-1705

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT

PERMITTEE

Radiac Abrasives
Attn: Dawn Grafton – Corporate EHS Manager
1015 South College Avenue
Salem, Illinois 62881

I.D. No.: 121045AAF
Application No.: 95090063
Subject: Grinding Wheel Manufacturing Facility
Date Received: September 2, 2026
Date Issued: TBD
Expiration Date: TBD
Location: 1015 South College Avenue, Salem, Marion County, 62881

OPERATIONAL AUTHORITY

Pursuant to the above-referenced application this permit is hereby granted to the above-designated Permittee to OPERATE emission unit(s) and/or air pollution control equipment consisting of:

One (1) 0.4 mmBtu/hr Natural Gas Fired Oven (#4 (CO12-455));
Ten (10) 0.5 mmBtu/hr Natural Gas Fired Ovens (#1 (CO10-452), 2 (CO11-453), 5 (CO15-468), 6 (CO14-467), and 10-15 (DO01-461, DO02-462, DO03-463, DO04-464, DO05-465, and D006-466));
Four (5) 0.8 mmBtu/hr Natural Gas Fired Ovens (#17-19 (CO03-443/CO04-444, CO05-445/CO06-446 and CO07-447/CO08-448), 23 (CO01-439/CO02-440), and 26 (DO07-470/DO08-471));
Two (2) 1.0 mmBtu/hr Natural Gas Fired Ovens (#3 (CO09-451) and 9 (CO13-456));
One (1) 1.5 mmBtu/hr Natural Gas Fired Oven (#29 (520));
One (1) 1.6 mmBtu/hr Natural Gas Fired Ovens (#28 (DO09-472/DO10-473/DO11-474/DO12-475));
Nine (9) 3.0 mmBtu/hr Natural Gas Fired Kilns (#1 (FV01-401) and 11-18 (FV02-411, FV03-412, FV04-414, FV05-415, FV06-416, FV07-417, FV08-418, and FV09-419));
Three (3) 4.0 mmBtu/hr Natural Gas Fired Kilns (#23 (FV11-424), 24 (FV12-425) and 26 (FV13-427));
One (1) 6.0 mmBtu/hr Natural Gas Fired Kiln (#22 (FV10-423));
One (1) 12.0 mmBtu/hr Natural Gas Fired Kiln (#27 (FV14-428));
One (1) 19.0 mmBtu/hr Natural Gas Fired Kiln (#19 (FV15-420)); and
One (1) Thermal Oxidizer (TO-1);

This Permit is subject to standard conditions attached hereto and the following special condition(s):

1a. This federally enforceable state operating permit is here issued to limit the emissions of air pollutants from the source to less than major source thresholds (i.e., 10 tons/year for any single Hazardous Air Pollutant (HAP) and 25 tons/year for any combination of such HAPs). As a result, the source is excluded from the requirements to obtain a Clean Air Act Permit Program (CAAPP) permit. The maximum emissions of this source, as limited by the conditions of this permit are described in Attachment A.

b. Prior to issuance, a draft of this permit has undergone a public notice and comment period.

c. This permit supersedes all operating permit(s) for this location.

APPLICABLE EMISSION LIMITS/REGULATIONS

State Rules:

2a. The ovens, kilns and thermal oxidizer are subject to 35 Ill. Adm. Code Part 212 Subpart B (Visible Emissions). Pursuant to 35 Ill. Adm. Code 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 Ill. Adm. Code 212.122.

b. Pursuant to 35 Ill. Adm. Code 212.123(b), the emission of smoke or other particulate matter from any such emission unit may have an opacity greater than 30 percent but not greater than 60 percent for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only one such emission unit located within a 305 m (1000 ft) radius from the center point of any other such emission unit owned or operated by such person, and provided further that such opaque emissions permitted from each such emission unit shall be limited to 3 times in any 24 hour period.

c. This source is subject to 35 Ill. Adm. Code Part 212 Subpart K (Fugitive Particulate Matter). Pursuant to 35 Ill. Adm. Code 212.301, no person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source.

d. The ovens, kilns and thermal oxidizer are subject to 35 Ill. Adm. Code Part 212 Subpart L (Particulate Matter Emissions from Process Emission Units). Pursuant to 35 Ill. Adm. Code 212.321(a), except as further provided in 35 Ill. Adm. Code Part 212, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 Ill. Adm. Code 212.321(c).

e. Pursuant to 35 Ill. Adm. Code 212.321(b), interpolated and extrapolated values of the data in 35 Ill. Adm. Code 212.321(c) shall be determined by using the equation:

$$E = A(P)^B$$

where:

P = Process weight rate; and
E = Allowable emission rate; and,

i. Up to process weight rates of 408 Mg/hr (450 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	1.214	2.54
B	0.534	0.534

ii. For process weight rate greater than or equal to 408 Mg/hr (450 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	11.42	24.8
B	0.16	0.16

f. Pursuant to 35 Ill. Adm. Code 212.321(c), Limits for Process Emission Units for Which Construction or Modification Commenced on or After April 14, 1972:

Metric		English	
P	E	P	E
Mg/hr	kg/hr	T/hr	lbs/hr
0.05	0.25	0.05	0.55
0.1	0.29	0.10	0.77
0.2	0.42	0.20	1.10
0.3	0.64	0.30	1.35
0.4	0.74	0.40	1.58
0.5	0.84	0.50	1.75
0.7	1.00	0.75	2.40
0.9	1.15	1.00	2.60
1.8	1.66	2.00	3.70
2.7	2.1	3.00	4.60
3.6	2.4	4.00	5.35
4.5	2.7	5.00	6.00
9.	3.9	10.00	8.70
13.	4.8	15.00	10.80
18.	5.7	20.00	12.50
23.	6.5	25.00	14.00
27.	7.1	30.00	15.60
32.	7.7	35.00	17.00
36.	8.2	40.00	18.20
41.	8.8	45.00	19.20
45.	9.3	50.00	20.50
90.	13.4	100.00	29.50
140.	17.0	150.00	37.00
180.	19.4	200.00	43.00
230.	22.	250.00	48.50
270.	24.	300.00	53.00
320.	26.	350.00	58.00
360.	28.	400.00	62.00
408.	30.1	450.00	66.00
454.	30.4	500.00	67.00

where:

P = Process weight rate in metric or T/hr, and
E = Allowable emission rate in kg/hr or lbs/hr.

3. The ovens, kilns and thermal oxidizer are subject to 35 Ill. Adm. Code Part 214 Subpart K (Process Emission Sources). Pursuant to 35 Ill. Adm. Code 214.301, except as further provided by 35 Ill. Adm. Code Part 214, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm.

4. The resin curing process and emissions associated with the ovens and kilns are subject to 35 Ill. Adm. Code Part 215 Subpart K (Use of Organic Material). Pursuant to 35 Ill. Adm. Code 215.301, no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 Ill. Adm. Code 215.302, 215.303, 215.304 and the following exception: If no odor nuisance exists the limitation of 35 Ill. Adm. Code Part 215 Subpart K (Use of Organic Material) shall apply only to photochemically reactive material.

NON-APPLICABILITY

New Source Performance Standards (NSPS):

5a. This permit is issued based on the ovens and kilns not being subject to the New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR Part 60 Subpart Dc, because they are by definition not steam generating units pursuant to 40 CFR 60.41c.

b. This permit is issued based on the ovens and kilns not being subject to the New Source Performance Standards (NSPS) for Calciners and Dryers in Mineral Industries, 40 CFR Part 60 Subpart UUU, because they are not by definition calciners, pursuant to 40 CFR 60.731.

National Emission Standards for Hazardous Air Pollutants (NESHAP):

6a. This permit is issued based on the ovens and kilns at this source not being subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63 Subpart DDDDD because the ovens and kilns are not located at, nor is part of, a major source of HAP as defined in 40 CFR 63.2.

b. This permit is issued based on this source not being subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Friction Materials Manufacturing Facilities, 40 CFR 63 Subpart QQQQQ because the source does not manufacture friction materials using a solvent-based process.

State Non-Applicability:

7. Pursuant to 35 Ill. Adm. Code 212.314, 35 Ill. Adm. Code 212.301 shall not apply and spraying pursuant to 35 Ill. Adm. Code 212.304 through 212.310 and 35 Ill. Adm. Code 212.312 shall not be required when the wind speed is greater than 40.2 km/hr (25 mph). Determination of wind speed for the purposes of 35 Ill. Adm. Code 212.314 shall be by a one-hour average or hourly recorded value at the nearest official station of the U.S. Weather Bureau or by wind speed instruments operated on the site. In cases where the duration of operations subject to 35 Ill. Adm. Code Part 212 Subpart K is less than one hour, wind speed may be averaged over the duration of the operations on the basis of on-site wind speed instrument measurements.

WORK PRACTICES/CONTROL PRACTICES

8a. In the event that the operation of this source results in an odor nuisance, the Permittee shall take appropriate and necessary actions to minimize odors, including but not limited to, changes in raw material or installation of controls, in order to eliminate the odor nuisance.

b. The ovens, kilns and thermal oxidizer shall only be operated with natural gas as the fuel. The use of any other fuel in any of the ovens, kilns and thermal oxidizer may require that the Permittee first obtain a construction permit from the Illinois EPA and perform stack testing to verify compliance with all applicable requirements.

c. Walnut shells and inert inorganic materials shall only be used as the pore forming material. The use of any other pore forming material may require that the Permittee first obtain a construction permit from the Illinois EPA and perform stack testing to verify compliance with all applicable requirements.

EMISSION LIMITS

9a. Emissions from and operation of the grinding wheel molding and curing operations shall not exceed the following limits:

i. Phenolic Resin Usage: 44.46 tons/month, 444.58 tons/year

ii. Emissions of VOM and HAPs:

Pollutant	Emissions (Tons/Month)	Emissions (Tons/Year)
VOM	0.90	8.99
Single HAP*	0.90	8.99
Combined HAPs	0.90	8.99

*Phenol

These emissions are based on formaldehyde being a limiting reactant in the liquid resin phenol curing, no free formaldehyde in the powdered phenolic resin, 75% of the free phenol being incorporated into the cured resin matrix with the remaining 25% being emitted for powdered phenolic resin and resin-bond pre-blend, and the two equations below. VOM and Combined HAP emissions shall be calculated as the sum of the phenol and formaldehyde emissions.

Phenol emissions shall be calculated using the following equation:

$$E = \sum(L_i \times MF_i \times RF_i) + \sum(P_i \times PW_i \times 0.25) + \sum(B_i \times BW_i \times 0.25)$$

Where:

E = Phenol emissions (tons);

L_i = Liquid phenolic resin usage (tons);

MF_i = Free-phenol mass fraction of the liquid resin (%);

RF_i = Phenol release fraction of the liquid resin (%);

P_i = Powdered phenolic resin usage (tons);

PW_i = Free phenol content of the powdered phenolic resin (% by weight);

B_i = Resin-bond pre-blend usage (tons); and

BW_i = Free phenol content of the resin-bond pre-blend (% by weight);

Formaldehyde emissions shall be calculated using the following equation:

$$E = \sum(B_i \times BW_i \times 0.25)$$

Where:

B_i = Resin-bond pre-blend usage (tons); and

BW_i = Free formaldehyde content of the resin-bond pre-blend (% by weight);

b. Emissions from and operation of the natural gas-fired ovens and kilns shall not exceed the following limits:

i. Natural Gas Usage: 81.17 mmscf/month, 811.67 mmscf/year

ii. Emissions from the combustion of natural gas:

Pollutant	Emission Factors (lbs/mmscf)	Emissions (Tons/Month)	Emissions (Tons/Year)
Carbon Monoxide (CO)	84.0	3.41	34.09
Nitrogen Oxides (NO_x)	100.0	4.09	40.58
Particulate Matter (PM)	7.6	0.31	3.08
Sulfur Dioxide (SO_2)	0.6	0.02	0.24
Volatile Organic Materials (VOM)	5.5	0.22	2.23

These limits are based on the maximum fuel usage and standard emission factors (Tables 1.4-1 and 1.4-2, AP-42, Fifth Edition, Volume I, Supplement D, July 1998).

c. This permit is issued based on negligible emissions of particulate matter from the combustion of the pore forming materials. For this purpose, emissions shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.

d. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

RECORD KEEPING

10a. The Permittee shall maintain records of the following items so as to demonstrate compliance with the conditions of this permit:

i. Liquid phenolic resin usage (tons/month and tons/year);

ii. Powdered phenolic resin usage (tons/month and tons/year);

iii. Resin-bond pre-blend usage (tons/month and tons/year);

iv. Free-phenol mass fraction and phenol release faction of the liquid resin (%);

v. VOM and HAP content of the phenolic resin (weight %);

vi. The name and amount of pore-forming materials combusted (tons/month and tons/year);

vii. Natural gas consumption (mmscf/month, and mmscf/year).; and

viii. Monthly and annual emissions of CO, NO_x, PM, SO_2, VOM, and HAPs from the source, with supporting calculations (tons/month and tons/year).

b. All records and logs required by Condition 10(a) of this permit shall be retained at a readily accessible location at the source for at least five (5) years from the date of entry and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request. Any records retained in an electronic format (e.g., computer storage device) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA or USEPA request for records during the course of a source inspection.

REPORTING

11a. If there is an exceedance of or a deviation from the requirements of this permit as determined by the records required by this permit or otherwise, the Permittee shall submit a report to the Illinois EPA's Bureau of Air Compliance Section in Springfield, Illinois within thirty (30) days after the exceedance or deviation. The report shall identify the duration and the emissions impact of the exceedance or deviation, a copy of the relevant records and information to resolve the exceedance or deviation, and a description of the efforts to reduce emissions from, and the duration of exceedance or deviation, and to prevent future occurrences of any such exceedance or deviation.

b. One (1) copy of required reports and notifications shall be sent to:

i. Via mail or overnight delivery:

Via USPS
Illinois EPA, Bureau of Air
Compliance Section (MC 40)
2520 West Iles Avenue
P.O. Box 19276
Springfield, IL 62794-9276

Via Other Means
Illinois EPA, Bureau of Air
Compliance Section (MC 40)
2520 West Iles Avenue
Springfield, IL 62704

ii. In addition, a copy of notifications and reports required by this permit that concern emission testing and monitoring shall also be sent electronically to the Illinois EPA Request File Upload (http://epa-smu-file-request.illinois.gov/). If you are unable to use the Request File Upload, you may email the electronic version to EPA.BOA.SMU@Illinois.gov. The Permittee shall include the facility's ID Number on all correspondence.

If you have any questions on this permit, please contact Muhammad Huq at 217/785-1705.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:MMH:tan

Attachment A - Emissions Summary

This attachment provides a summary of the maximum emissions from the facility operating in compliance with the requirements of this federally enforceable permit. In preparing this summary, the Illinois EPA used the annual operating scenario which results in maximum emissions from such a facility. The resulting maximum emissions are below the levels (i.e., 10 tons for an individual HAP and 25 tons for combined HAPs) at which this source would be considered a major source for purposes of the Clean Air Act Permit Program. Actual emissions from this source will be less than predicted in this summary to the extent that less material is handled and control measures are more effective than required in this permit.

Emission Unit	CO (Tons/Year)	NO_x (Tons/Year)	PM (Tons/Year)	SO_2 (Tons/Year)	VOM (Tons/Year)	Single HAP* (Tons/Year)	Combined HAPs (Tons/Year)
Resin Curing	--	--	--	--	8.99	8.99	8.99
Pore forming material combustion	--	--	0.44	--	--	--	--
Natural gas combustion	34.09	40.58	3.08	0.24	2.23	--	--
Totals:	34.09	40.58	3.52	0.24	11.22	8.99	8.99

*Phenol

MMH:tan

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STANDARD CONDITIONS
FOR
OPERATING PERMITS

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. The issuance of this permit does not release the Permittee from compliance with state and federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statutes and regulations of the Unites States or the State of Illinois or with applicable local laws, ordinances and regulations.

2. The Illinois EPA has issued this permit based upon the information submitted by the Permittee in the permit application. Any misinformation, false statement or misrepresentation in the application shall be grounds for revocation under 35 Ill. Adm. Code 201.166.

3. a. The Permittee shall not authorize, cause, direct or allow any modification, as defined in 35 Ill. Adm. Code 201.102, of equipment, operations or practices which are reflected in the permit application as submitted unless a new application or request for revision of the existing permit is filed with the Illinois EPA and unless a new permit or revision of the existing permit(s) is issued for such modification.

   b. This permit only covers emission sources and control equipment while physically present at the indicated plant location(s). Unless the permit specifically provides for equipment relocation, this permit is void for an item of equipment on the day it is removed from the permitted location(s) or if all equipment is removed, notwithstanding the expiration date specified on the permit.

4. The Permittee shall allow any duly authorized agent of the Illinois EPA, upon the presentation of credentials, at reasonable times:

   a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. To have access to and to copy any records required to be kept under the terms and conditions of this permit;

   c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. To obtain and remove samples of any discharge or emission of pollutants; and

   e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring or recording any activity, discharge or emission authorized by this permit.

5. The issuance of this permit:

   a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are located;

b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the facilities;

c. Does not take into consideration or attest to the structural stability of any unit or part of the project; and

d. In no manner implies or suggests that the Illinois EPA (or its officers, agents, or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. The facilities covered by this permit shall be operated in such a manner that the disposal of air contaminants collected by the equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

7. The Permittee shall maintain all equipment covered under this permit in such a manner that the performance of such equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

8. The Permittee shall maintain a maintenance record on the premises for each item of air pollution control equipment. These records shall be made available to any agent of the Environmental Protection Agency at any time during normal working hours and/or operating hours. At a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9. No person shall cause or allow continued operation during malfunction, breakdown or startup of any emission source or related air pollution control equipment if such operation would cause a violation of an applicable emission standard or permit limitation. Should a malfunction, breakdown or startup occur, which results in emissions in excess of any applicable standard or permit limitation, the Permittee shall:

   a. Immediately report the incident to the Illinois EPA's Regional Field Operations Section Office by telephone, telegraph or other method as constitutes the fastest available alternative, and shall comply with all reasonable directives of the Illinois EPA with respect to the incident;

   b. Maintain the following records for a period of no less than two (2) years:

      i. Date and duration of malfunction, breakdown, or startup,

      ii. Full and detailed explanation of the cause,

      iii. Contaminants emitted and an estimate of quantity of emissions,

      iv. Measures taken to minimize the amount of emissions during the malfunction, breakdown or startup, and

      v. Measures taken to reduce future occurrences and frequency of incidents.

10. If the permit application contains a compliance program and project completion schedule, the Permittee shall submit a project completion status report within thirty (30) days of any date specified in the compliance program and project completion schedule or at six month intervals, whichever is more frequent.

11. The Permittee shall submit an Annual Emission Report as required by 35 Ill. Adm. Code 201.302 and 35 Ill. Adm. Code Part 254.