

Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

DEC 26 2018

Mr. David Medley
Facility Supervisor
Regal Beloit America Inc. Lebanon Plant
401 West Fremont Road
Lebanon, MO 65536

RE: New Source Review Permit - Project Number: 2018-09-007

Dear Mr. Medley:

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, if any, 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 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 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,



Recycled paper

Mr. David Medley
Page Two

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.aa.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Chia-Wei Young, 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



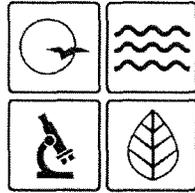
Susan Heckenkamp
New Source Review Unit Chief

SH:cj

Enclosures

c: Southwest Regional Office
PAMS File: 2018-09-007

Permit Number: 122018 - 012



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: 122018 - 012 Project Number: 2018-09-007
Installation Number: 105-0033

Parent Company: Regal Beloit America Inc.

Parent Company Address: 200 State Street, Beloit, WI 53511

Installation Name: Regal Beloit America Inc. Lebanon Plant

Installation Address: 401 West Fremont Road, Lebanon, MO 65536

Location Information: Laclede County, S23, T34N, R16W

Application for Authority to Construct was made for:

Installation of a new vacuum pressure impregnation system for varnish coating of stators.

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.

Kendall B. Hale

Director or Designee
Department of Natural Resources

DEC 26 2018

Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

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

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:

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

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

SPECIAL CONDITIONS:

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

The special conditions listed in this permit were included based on the authority granted to 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."

Regal Beloit America Inc. Lebanon Plant
Laclede County, S23, T34N, R16W

1. **Superseding Condition**
The conditions of this permit supersede Special Condition No. 2 found in the previously issued construction permit No. 032008-001 issued by the Air Pollution Control Program.
2. **VOC and HAPs Emission Limitations**
 - A. Regal Beloit America Inc. Lebanon Plant shall emit less than 100.0 tons of volatile organic compounds (VOC) from the installation in any consecutive 12-month period. The equipment at the installation that emit VOCs are listed in Table 1.

Table 1: Installation Equipment List

Emission Points	Description	Permit Number
EP1.1	Varnish Oven	Grandfathered
EP2.1	Two (2) Paint Booths and Two (2) Die Casting Machines	0199-028
EP3.1	Dry Arrestor Type Devilbliss Paint Booth	1192-007
EP6.1	Three (3) Dock Space Heaters	No Permit Required
EP10.1	Hot Drop Furnace	No Permit Required
EP12.1	Steel Weld Booth	Grandfathered
EP13.1	Welding Booth	Replacement for Grandfathered Equipment
EP14.1	Welders	Grandfathered
EP17.1	Bayco Heat Cleaning Oven	1095-019
EP18.1	Propane Aluminum Furnace	032008-001
EP19.1	Electric Mold Repair Oven	No Permit Required
EP21.1	Winding Connect Torches	No Permit Required
EP23.1	Scheafer Aluminum Furnace	No Permit Required
EP24.1	Scheafer Aluminum Furnace	No Permit Required
EP25.1	Paint Booth (Lincoln Line)	112001-017
EP26.1	Three (3) Aluminum Furnaces	122001-002
EP28.1	Aluminum Melt Furnace	092002-001
EP29.1	Paint Booth	No Permit Required
EP30.1	Paint Drying Oven	No Permit Required
EP31.1	Aluminum Melt Furnace	062004-018
EP32.1	Two (2) Small Paint Spray Booth	032008-001
EP33.1	Paint Booth	032008-001
EP34.1	Paint Booth	032008-001
EP36.1	VPI System	Current Permit

SPECIAL CONDITIONS:

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

- B. Regal-Beloit America Inc. Lebanon Plant shall emit less than ten (10) tons individually or twenty-five (25) tons combined of Hazardous Air Pollutants (HAPs) from the installation in any consecutive 12-month period. The equipment at the installation that emit HAPs are listed in Table 1.
- C. Regal-Beloit America Inc. Lebanon Plant shall develop and use forms to demonstrate compliance with Special Condition 2.A. and 2.B. The forms shall, at a minimum, contain the following information.
- 1) Installation name and ID number
 - 2) Permit number
 - 3) Current month
 - 4) Pollutants being tracked
 - 5) Emission units being tracked
 - 6) Emission unit's respective current monthly throughput
 - 7) Emission factors (in the units of the monthly throughput), source of the emission factors, and an example of the method used to calculate emissions. Emissions shall be calculated using the methods as outlined in Special Condition 2.D.
 - 8) Any information from the SDS used in the calculations, including VOC and HAPs contents.
 - 9) Total pollutant emissions for the month
 - 10) 12-month rolling total pollutant emissions
 - 11) Compliance limit for that pollutant
 - 12) Indication of compliance status with Special Condition 2.A. and 2.B.
- D. Regal-Beloit America Inc. Lebanon Plant shall use the following method to calculate emissions in the forms required in Special Condition 2.C.
- 1) For combustion emissions, the installation shall use emission factors in USEPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition. (Stack testing may be used if available)
 - 2) For coating booths, the installation shall use mass balances assuming that all VOC and volatile HAPs in the material are emitted. The VOC and HAPs content shall be taken from the SDS. If a range is given in the SDS, the installation shall use the higher value. No particulate HAP emissions are expected since this is not a spray coating operation.
 - 3) For the new vacuum pressure impregnation system, the following method shall be used.
 - a) For the vacuum pump operation, the installation shall use an emission factor of 0.027 pounds of vinyl toluene per hour of vacuum pump venting.
 - b) For pressure venting, the installation shall use 0.0235 pounds of vinyl toluene per venting.

SPECIAL CONDITIONS:

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

- c) For the venturi exhaust, the installation shall use 0.0214 pounds of vinyl toluene per cycle.
 - d) Regal Beloit America Inc. Lebanon Plant may request to change the emission factors in Special Conditions 2.D.1).a), 2.D.1).b), and 2.D.1).c) by submitting a new emissions analysis to the New Source Review Unit of the Missouri Air Pollution Control Program. The installation may use the new emission factors upon approval by the Missouri Air Pollution Control Program.
3. Record Keeping and Reporting Requirements
- A. Regal Beloit America Inc. Lebanon Plant 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. Regal Beloit America Inc. Lebanon Plant 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 e-mail at AirComplianceReporting@dnr.mo.gov, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

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

Project Number: 2018-09-007
Installation ID Number: 105-0033
Permit Number:

Installation Address:

Regal Beloit America Inc. Lebanon Plant
401 West Fremont Road
Lebanon, MO 65536

Parent Company:

Regal Beloit America Inc.
200 State Street
Beloit, WI 63511

Laclede County, S23, T34N, R16W

REVIEW SUMMARY

- Regal Beloit America Inc. Lebanon Plant has applied for authority to install a new vacuum pressure impregnation (VPI) system.
- The application was deemed complete on September 6, 2018
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are from the combustion of natural gas of the curing oven.
- 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. However, Subpart XXXXXX, *National Emission Standards for Hazardous Air Pollutants for Area Source Standards for Nine Metal Fabrication and Finishing Source Categories*, of the MACT applies to other equipment at the installation.
- No air pollution control equipment is being used in association with the new equipment.
- 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.
- This installation is located in Laclede 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.
- A modification to the facility's intermediate operating permit is required for this installation within 90 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Regal-Beloit America Inc. operates an electric motors manufacturing installation in Lebanon. The installation's raw material includes aluminum ingots and steel. The electric motor cover plates are made by melting the aluminum in propane-fired furnaces and pouring the molten aluminum into molds. The molten aluminum is then cooled and removed from the molds. The parts are shot-blasted and coated as needed. The paint booths are equipped with fabric filters. The motor bodies are cast iron, which are received from offsite. The rotors are wound with wire, dipped in varnish, dried, and assembled.

The installation is a minor source for construction permits and an intermediate operating permit renewal was issued in 2014 (OP2015-018).

The following New Source Review permits have been issued to Regal Beloit America Inc. Lebanon Plant from the Air Pollution Control Program.

Table 2: Permit History

Permit Number	Description
1192-007	Installation of a paint booth
1095-019	Heat cleaning oven
0497-005	Die cast machine
1098-009	Installation of an incinerator
0199-028	Installation of two paint booths and two die casting machines
112001-017	Addition of a paint booth
122001-002	Installation of three aluminum die casting machines, seven aluminum melting furnaces, and a coatings operation
092002-001	Addition of a die caster and aluminum melt furnace
062004-018	Installation of a Schaefer propane-fired aluminum furnace.
032008-001	Installation of four paint booths and a shot blaster

PROJECT DESCRIPTION

The installation proposed to install a vacuum pressure impregnation (VPI) system for the varnish coating of stators. The VPI is a process by which the stator will be completely submerged in a

resin and through a combination of vacuum and pressure cycles, the resin is coated through the stators.

The VPI chamber is 15.9 cubic feet. During the operation, the stators are inserted into the VPI chamber. The pressure chamber is filled half full with resin. At this point, the vacuum pump turns on and starts drawing vacuum to the proper set point (29.5 mmHg). It typically reaches the set point in about 7 minutes but continues to run for approximately 25 minutes. Initially, the vacuum pump is moving 20 cfm of air but decreases as vacuum is generated.

Eventually, the vacuum is released and the chamber is allowed to pressurize to 85-90 psi. The pressure is vented from 85-90 psi to 10 psi and the remaining pressure is used to push the resin in the tank back to the holding reservoir. After all of the resins are back, the remaining pressure is released out of the vent line.

Whenever the lid of the chamber is opened, fumes would be released. There is a compressed-air powered venturi-style exhaust line that pulls the fumes away from the top of the pressure chamber when the lid is opened. The fumes will be diverted to the outside of the building via PVC piping.

The chamber can process up to three (3) stators per cycle and a maximum of eight (8) cycles can be conducted per eight (8) hour shift. Each stator will go through two cycles. Therefore, a maximum of 13,140 stators can be coated assuming 8,760 hours of operation per year. The installation weighed the stators before and after they were coated and approximately 2-3 pounds of varnish will be coated onto each stator after both cycles. Therefore, a maximum of 39,420 pounds of varnish will be coated onto stators each year. However, some of the VOC may have been lost during the weighing. As a conservative estimate, it was assumed that the 39,420 pounds of varnish is the complete dry weight. Assuming a 44% VOC content, as given in the SDS, the total varnish that is on the stators as it comes out of the impregnation chamber would be 70,393 pounds per year.

EMISSIONS/CONTROLS EVALUATION

The varnish coating contains vinyl toluene, which is a VOC. Vinyl toluene will be emitted from the drying of the coatings that are deposited onto the stators. Furthermore, there will be vinyl toluene emissions from the vacuum pump exhaust during pump operations, the vent line for bleeding pressure off the pressure vessel, and the venturi exhaust that pulls fumes away from the top of the pressure chamber when the lid is opened. During the review process, the installation realized that the venturi exhaust alone cannot vent the fumes properly. Therefore, an extra exhaust fan was added.

VOC emissions from drying of the coatings that are deposited onto the stators were calculated using mass balances assuming that 100% of the vinyl toluene is emitted. The vinyl toluene content is taken from the SDS of the material supplied by the installation. For the VOC emissions from the exhausts and the vents, emissions were calculated using equations found in the EIIIP document, "Methods for Estimating Air Emissions from Chemical Manufacturing Facilities," August 2007.

There will be PM_{2.5}, PM₁₀, PM, VOC, NO_x, SO_x, CO, and HAPs emissions from the curing oven, which uses natural gas. Emissions were calculated using EPA document AP-42, "Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources," Chapter 1.4, *Natural Gas Combustion*, 7/98.

A previous permit issued to the installation (No. 032008-001) limited the installation-wide VOC, individual HAP, and combined HAPs to 100.0 tpy, 10.0 tpy, and 25.0 tpy in any consecutive 12 month periods, respectively. The installation has asked to continue these limits in the current permit.

The following table provides an emissions summary for this project. Existing potential emissions were taken from Permit No. 032008-001. Existing actual emissions were taken from the 2017 EIQ. Potential emissions of the project reflects operation of the vacuum pressure impregnation chamber and the curing oven.

Table 3: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2017 EIQ)	Potential Emissions of the Project	New Installation Conditioned Potential
PM	25.0	N/D	N/D	0.01	N/A
PM ₁₀	15.0	37.48	0.90	0.01	N/A
PM _{2.5}	10.0	N/D	N/D	0.01	N/A
SO _x	40.0	2.61	0.00	0.001	N/A
NO _x	40.0	29.52	0.00	0.06	N/A
VOC	40.0	<100.0	7.17	15.8	<100.0
CO	100.0	11.29	0.00	0.10	N/A
GHG (CO _{2e})	N/A	N/D	N/D	154.7	N/A
GHG (mass)	N/A	N/D	N/D	154.6	N/A
HAPs	10.0/25.0	<10.0/25.0	0.00	0.002	<10.0/25.0

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.

APPLICABLE REQUIREMENTS

Regal Beloit America Inc. Lebanon Plant shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards,

based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

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

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 September 5, 2018, received September 6, 2018 designating Regal Beloit America Inc. Lebanon Plant as the owner and operator of the installation.

APPENDIX A

Abbreviations and Acronyms

%	percent	Mgal	1,000 gallons
°F	degrees Fahrenheit	MW	megawatt
acfm	actual cubic feet per minute	MHDR	maximum hourly design rate
BACT	Best Available Control Technology	MMBtu	Million British thermal units
BMPs	Best Management Practices	MMCF	million cubic feet
Btu	British thermal unit	MSDS	Material Safety Data Sheet
CAM	Compliance Assurance Monitoring	NAAQS	National Ambient Air Quality Standards
CAS	Chemical Abstracts Service	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CEMS	Continuous Emission Monitor System	NO_x	nitrogen oxides
CFR	Code of Federal Regulations	NSPS	New Source Performance Standards
CO	carbon monoxide	NSR	New Source Review
CO₂	carbon dioxide	PM	particulate matter
CO_{2e}	carbon dioxide equivalent	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
COMS	Continuous Opacity Monitoring System	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
CSR	Code of State Regulations	ppm	parts per million
dscf	dry standard cubic feet	PSD	Prevention of Significant Deterioration
EQ	Emission Inventory Questionnaire	PTE	potential to emit
EP	Emission Point	RACT	Reasonable Available Control Technology
EPA	Environmental Protection Agency	RAL	Risk Assessment Level
EU	Emission Unit	SCC	Source Classification Code
fps	feet per second	scfm	standard cubic feet per minute
ft	feet	SDS	Safety Data Sheet
GACT	Generally Available Control Technology	SIC	Standard Industrial Classification
GHG	Greenhouse Gas	SIP	State Implementation Plan
gpm	gallons per minute	SMAL	Screening Model Action Levels
gr	grains	SO_x	sulfur oxides
GWP	Global Warming Potential	SO₂	sulfur dioxide
HAP	Hazardous Air Pollutant	SSM	Startup, Shutdown & Malfunction
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		
m/s	meters per second		

2018-09-007 Regal Beloit
Curing and Combustion Emissions

Dried Varnish =	39,420	lb/year
VOC % =	44%	
Varnish Used =	70393	lb/yr
VOC E =	3.535714286	lb/hr
VOC E =	15.48642857	tpy

Curing Oven	0.3	MMBtu/hr
	0.000294118	MMscf/hr

Pollutants	EF	Units	EF (lb/hr)	EF (tpy)
PM2.5	7.6	lbs/mmscf	0.002235294	0.009791
PM10	7.6	lbs/mmscf	0.002235294	0.009791
PM	7.6	lbs/mmscf	0.002235294	0.009791
SOx	0.6	lbs/mmscf	0.000176471	0.000773
NOx	50	lbs/mmscf	0.014705882	0.064412
VOC	5.5	lbs/mmscf	0.001617647	0.007085
CO	84	lbs/mmscf	0.024705882	0.108212
HAPs	1.89E+00	lbs/mmscf	0.000555101	0.002431
CH4	2.3	lbs/mmscf	0.000676471	0.002963
CO2	120,000	lbs/mmscf	35.29411765	154.5882
CO2e	120057.5	lbs/mmscf	35.31102941	154.6623
2-Methylnaphthalene	2.40E-05	lbs/mmscf	7.05882E-09	3.09E-08
3-Methylchloroanthrene	1.80E-06	lbs/mmscf	5.29412E-10	2.32E-09
7,12-Dimethylbenz(a)anthracene	1.60E-05	lbs/mmscf	4.70588E-09	2.06E-08
Acenaphthene	1.80E-06	lbs/mmscf	5.29412E-10	2.32E-09
Anthracene	2.40E-06	lbs/mmscf	7.05882E-10	3.09E-09
Benz(a)anthracene	1.80E-06	lbs/mmscf	5.29412E-10	2.32E-09
Benzene	2.10E-03	lbs/mmscf	6.17647E-07	2.71E-06
Benzo(a)pyrene	1.20E-06	lbs/mmscf	3.52941E-10	1.55E-09
Benzo(b)fluoranthene	1.80E-06	lbs/mmscf	5.29412E-10	2.32E-09
Benzo(g,h,i)perylene	1.20E-06	lbs/mmscf	3.52941E-10	1.55E-09
Chrysene	1.80E-06	lbs/mmscf	5.29412E-10	2.32E-09
Dibenzo(a,h)anthracene	1.20E-06	lbs/mmscf	3.52941E-10	1.55E-09
Dichlorobenzene	1.20E-03	lbs/mmscf	3.52941E-07	1.55E-06
Fluoranthene	3.00E-06	lbs/mmscf	8.82353E-10	3.86E-09
Fluorene	2.80E-06	lbs/mmscf	8.23529E-10	3.61E-09
Formaldehyde	7.50E-02	lbs/mmscf	2.20588E-05	9.66E-05
Hexane	1.8	lbs/mmscf	0.000529412	0.002319
Indeno(1,2,3-ed)pyrene	1.80E-06	lbs/mmscf	5.29412E-10	2.32E-09
Phenanathrene	1.70E-05	lbs/mmscf	0.000000005	2.19E-08
Pyrene	5.00E-06	lbs/mmscf	1.47059E-09	6.44E-09
Toluene	3.40E-03	lbs/mmscf	0.000001	4.38E-06
Arsenic	2.00E-04	lbs/mmscf	5.88235E-08	2.58E-07
Beryllium	1.20E-05	lbs/mmscf	3.52941E-09	1.55E-08
Cadmium	1.10E-03	lbs/mmscf	3.23529E-07	1.42E-06

2018-09-007 Regal Beloit
Curing and Combustion Emissions

Chromium	1.40E-03	lbs/mmscf	4.11765E-07	1.8E-06
Cobalt	8.40E-05	lbs/mmscf	2.47059E-08	1.08E-07
Manganese	3.80E-04	lbs/mmscf	1.11765E-07	4.9E-07
Mercury	2.60E-04	lbs/mmscf	7.64706E-08	3.35E-07
Nickel	2.10E-03	lbs/mmscf	6.17647E-07	2.71E-06
Selenium	2.40E-05	lbs/mmscf	7.05882E-09	3.09E-08

Vacuum Pump Exhaust Operation							
Air Leak	20	cfm					
Volume =	61.056	gallons					
Volume =	7.95	CF					
MW vt =	118.18	lb/lbmole					
Operating Pressure =	750	mmHg					
Vapor Pressure of Vinyl Cl =	0.24	mmHg at 68 F					
	3.5	mmHG at 100F	Used sat vapor pressure, which is higher than vapor pressure				
Operating Temperature =	65 - 95	F					
E Air Flow =	0.048731	lbmole/min					
	2.923872	lbmole/hr					
Pnc =	746.5	mm Hg					
E vcl =	0.000228	lbmole/hr					
E vcl =	0.027001	lb/hr					
	0.118266	tpy					

Pressure Venting		
T =	308.15	K
P1 =	90	Psi
P1 =	4654.35	ft3
P2 =	10	Psi
P2 =	517.15	lbmole
V =	7.95	Ft3
Psat =	3.5	mm Hg at 100 F
Pn,c 1 =	4650.85	mmHg
Pn, c2 =	513.65	mmHg
E vt =	0.000199	lbmole/purge
Purges/day =	24	
Purges/year =	8760	
E vt =	1.744703	lbmole/year
E vt =	206.189	lb/yr
E vt =	0.103094	tpy

Based on 8 cycles per 8 hr shift

Venturi Exhaust		
P (Sat) =	3.5	mmHg
V =	15.9	cf
R =	998.9	mmHgft3/lbmoleK
T =	308.15	K
F =	200	acfm
t =	10	min
n =	125.7862	
Emissions =	0.000181	lbmole
M. Wt. =	118.18	lb/lbmole
Emissions =	0.021366	lb/cycle
No. Cycles/year =	8760	
Annual Emissions =	0.093583	

Total Emissions =	0.314944	tpy
-------------------	----------	-----