

Missouri Department of dnr.mo.gov

# NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

NOV 04 2019

Mr. David Mayberry  
Owner/Manager  
Stokes-Mayberry Gin Co., Inc.  
P.O. Box 483  
Malden, MO 63863

RE: New Source Review Permit - Project Number: 2019-09-038

Dear Mr. Mayberry:

Enclosed with this letter is your permit to construct. Please study it carefully and 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 and your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).



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Mr. David Mayberry  
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If you have any questions regarding this permit, please do not hesitate to contact Sitzes, Liberty, 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



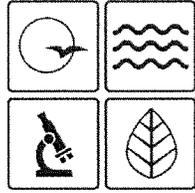
Susan Heckenkamp  
New Source Review Unit Chief

SH:sla

Enclosures

c: Southeast Regional Office  
PAMS File: 2019-09-038

Permit Number: 112019-001



**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:

112019-001

Project Number: 2019-09-038

Installation Number: 069-0032

Parent Company: Stokes-Mayberry Gin Co., Inc.

Parent Company Address: P.O. Box 483, Malden, MO 63863

Installation Name: Stokes-Mayberry Gin Co., Inc.

Installation Address: 400 W. Laclede, Malden, MO 63863

Location Information: Dunklin County, S10, T22N, R15E

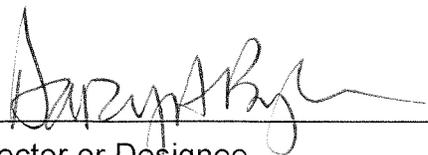
Application for Authority to Construct was made for:

Installation of more powerful electric motors on the ginstands resulting in debottlenecking of the overall cotton ginning operation and an increase in the maximum hourly production rate. The modifications to the ginstands were completed prior to receipt of a New Source Review permit from the Missouri Department of Natural Resources. Obtaining a permit is part of a remedial action required by the Air Pollution Control Program. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

  
\_\_\_\_\_  
Director or Designee  
Department of Natural Resources

NOV 04 2019

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Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years/18 months 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/18 months 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 (3)(E). "Conditions required by permitting authority."*

Stokes-Mayberry Gin Co., Inc.  
Dunklin County, S10, T22N, R15E

**1. Superseding Condition**

The conditions of this permit supersede all special conditions found in previously issued Construction Permit No(s). 1096-002 and 072002-005 issued by the Air Pollution Control Program.

**2. PM<sub>10</sub> Emission Limitation**

A. Stokes-Mayberry Gin Co., Inc. shall emit less than 30.0 tons of particulate matter having an effective aerodynamic diameter of ten (10) microns or less (PM<sub>10</sub>) in any consecutive 12-month period from the entire installation (see emission points listed below). The SSM emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section in accordance with the requirements of 10 CSR 10-6.050 *Start-Up, Shutdown, and Malfunction Conditions* shall be included in the limit.

- 1) Unloading
- 2) First Stage Seed Cotton Dryer (natural gas burner)
- 3) First Stage Seed Cotton Cleaner
- 4) Second Stage Seed Cotton Dryer (natural gas burner)
- 5) Second Stage Seed Cotton Cleaner
- 6) Overflow
- 7) Master Trash Fan
- 8) Combined Lint Cleaners
- 9) Mote Trash Fan
- 10) Battery Condenser
- 11) Seed House (seed handling and loadout)
- 12) Seed Cotton Receiving Haul Road
- 13) Lint Bale and Mote Bale Shipping Haul Road
- 14) Seed Shipping Haul Road
- 15) Trash Shipping Haul Road

B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 2.A.

**SPECIAL CONDITIONS:**

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

3. Haul Road Watering
  - A. Stokes-Mayberry Gin Co., Inc. shall water unpaved haul roads whenever conditions exist which would cause visible fugitive emissions to enter the ambient air beyond the property boundary.
  - B. Watering may be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
4. Control Device Requirement-High Efficiency Cyclones
  - A. Stokes-Mayberry Gin Co., Inc. shall control emissions from the following ginning process emission points using high efficiency cyclones:
    - 1) Unloading
    - 2) First Stage Seed Cotton Dryer (natural gas burner)
    - 3) First Stage Seed Cotton Cleaner
    - 4) Second Stage Seed Cotton Dryer (natural gas burner)
    - 5) Second Stage Seed Cotton Cleaner
    - 6) Overflow
    - 7) Master Trash Fan
    - 8) Combined Lint Cleaners
    - 9) Mote Trash Fan
    - 10) Battery Condenser
  - B. The high efficiency cyclones shall be operated and maintained in accordance with the manufacturer's specifications.
  - C. Stokes-Mayberry Gin, Co., Inc. shall maintain a copy of the high efficiency cyclones manufacturer's performance warranty on site.
  - D. Stokes-Mayberry Gin, Co., Inc. shall maintain an operating and maintenance log for the high efficiency cyclones 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.

**SPECIAL CONDITIONS:**

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

5. Operational Requirement – Best Management Practices
  - A. Stokes-Mayberry Gin Co., Inc. shall control fugitive emissions from the seed house and trash pile by performing Best Management Practices. Best Management Practices include the following:
    - 1) Closure of all doors to the seed house when loadout of materials is not occurring,
    - 2) Use of vinyl strip curtains on all natural draft openings to the seed house not equipped with doors,
    - 3) Documented watering of the trash pile or water injection into trash auger, and
    - 4) Minimization of the trash pile footprint by frequent spreading or shipping.
  
6. Record Keeping and Reporting Requirements
  - A. Stokes-Mayberry Gin Co., 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. Stokes-Mayberry Gin Co., 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](mailto: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: 2019-09-038

Installation ID Number: 069-0032

Permit Number:

Installation Address:

Stokes-Mayberry Gin Co., Inc.  
400 W. Laclede  
Malden, MO 63863

Parent Company:

Stokes-Mayberry Gin Co., Inc.  
P.O. Box 483  
Malden, MO 63863

Dunklin County, S10, T22N, R15E

REVIEW SUMMARY

- Stokes-Mayberry Gin Co., Inc. has requested authority to install more powerful electric motors on the ginstands resulting in debottlenecking of the overall cotton ginning operation and an increase in the maximum hourly production rate.
- The request was received on September 23, 2019.
- HAP emissions are not expected from the proposed equipment.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- High efficiency cyclones are being used to control particulate matter (PM), particulate matter having an effective aerodynamic diameter of two and one-half (2.5) microns or less (PM<sub>2.5</sub>), and PM<sub>10</sub> emissions from the ginning process equipment exhausts. Undocumented watering is being used to control fugitive particulate emissions from the haul roads. Best Management Practices are being used to control fugitive particulate emissions from the seed house and trash pile.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM<sub>10</sub> are conditioned below de minimis levels.
- This installation is located in Dunklin 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.
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

Stokes-Mayberry Gin Co., Inc. operates a cotton ginning facility located in Malden, MO which is an existing emissions source. Primary pollutants include particulate matter (PM), particulate matter having an effective aerodynamic diameter less than or equal to ten (10) microns, particulate matter having an effective aerodynamic diameter less than or equal to two and one-half (2.5) microns, and a small amount of combustion products. The facility is a natural minor source for construction permitting. No operating permit is required from the Air Pollution Control Program. The installation receives seed cotton in loose or modular form and produces cotton lint bales, mote bales, cotton seed, and trash.

The following New Source Review permits have been issued to Stokes-Mayberry Gin Co., Inc. from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
1096-002	Installation of a mote recovery system including one (1) mote bale press, one (1) mote incline cleaner, and one (1) mote trash fan cyclone system
072002-005	Addition of a suck system to the existing module unloading system, replacement of all seed cotton cleaners with one (1) new first stage seed cotton cleaner and one (1) new second stage seed cotton cleaner, and installation of new natural gas burners for seed cotton drying

### PROJECT DESCRIPTION

Stokes-Mayberry Gin Co., Inc. installed more powerful electric motors on their ginstands in year 2016 which resulted in debottlenecking of the overall cotton ginning operation and an increase in the maximum hourly production rate from 22.5 bales per hour to 40 bales per hour. The unconditioned hourly project PM<sub>10</sub> emissions, all from the increase in capacity of existing equipment, is above deminimis levels. A construction permit is required from the Air Pollution Control Program.

## EMISSIONS/CONTROLS EVALUATION

Controlled emission factors for ginning process equipment used in this analysis were obtained from an evaluation of stack sampling data collected as part of a study to better characterize and quantify emissions from cyclones controlling ginning process emissions. The study was conducted at seven cotton gins throughout the cotton belt by the U.S. Department of Agriculture Agricultural Research Service (USDA/ARS) and Oklahoma State University. Boykin, Buser, and Whitelock were the primary researchers for the project and published results in 68 peer reviewed journal articles in the Journal of Cotton Science from year 2013 to 2015.

The Air Pollution Control Program's Permit and Compliance/Enforcement Sections have concurred that the EPA Reference Method 17 results coupled with laser diffraction analysis allows for calculation of the most accurate PM<sub>10</sub> and PM<sub>2.5</sub> emission factors available as compared to: 1) EPA's AP-42 *Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition*; and 2) the second method determined by the advisory groups to be used for stack sampling at each gin, EPA Method 201A (M201A)). The reasoning behind the concurrence is based on, firstly, the low data quality ratings in AP-42 for emissions factors related to cotton ginning operations. Secondly, well-documented issues with Method 201A results occurred that rendered the data unsatisfactory for permitting and compliance purposes.

Uncontrolled emission factors for ginning process equipment used in this analysis were back-calculated from the controlled emission factors using a model from (Leith and Licht, 1972). An average control efficiency for PM<sub>10</sub> of 51% and an average control efficiency for PM<sub>2.5</sub> of 0.12% was estimated for the controls (high-efficiency cyclones) with the following inputs and assumptions: 1D3D cyclone proportions with 2D2D inlet, a 50 inch average barrel diameter (taken from background data for AP-42 Table 9.7-1), an inlet velocity of 53 feet per second, a gas temperature of 25 degrees Celsius, a particle density of 2,650 kilograms per cubic meter, a gas density of 1.2 kilograms per cubic meter, and a gas dynamic viscosity of 1.8(10<sup>-5</sup>) kilograms per meter-second.

The emission factors used in this analysis were obtained from AP-42 Section 1.4, *Natural Gas Combustion* (July 1998); Section 9.9.1, *Grain Elevators and Processes* (May 2003); and Section 13.2.2, *Unpaved Roads* (November 2006).

Table 2 provides an emissions summary for this project. Existing Potential-To-Emit (PTE) was calculated using a bottlenecked Maximum Hourly Design Rate (MHDR) for the ginning process, seed handling, seed loadout, and haul roads of 22.5 bales per hour; a MHDR for combustion of eight (8) million British Thermal Units (MMBtu) per hour; controlled emission factors (for high-efficiency cyclones) for the unloading, first stage seed cotton drying/cleaning, second stage seed cotton drying/cleaning, and the mote trash fan exhausts; uncontrolled emission factors for the overflow, master trash fan, combined lint cleaning, and battery condenser exhausts; uncontrolled emission factors for combustion, seed handling, seed loadout, and haul roads; a heating value for the natural gas of 1020 MMBtu per million cubic feet (MMcf); and 8,760 hours per year of continuous operation.

Table 2: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2018 EIQ)	Emissions Increase of the Project	New Installation Conditioned Potential
PM <sub>10</sub>	15.0	98.1	4.58	23.9	<30.0
PM <sub>2.5</sub>	10.0	5.61	0.134	2.97	N/D
SO <sub>x</sub>	40.0	0.0206	0.00	0.00	N/D
NO <sub>x</sub>	40.0	3.43	0.00	0.00	N/D
VOC	40.0	0.189	0.00	0.00	N/D
CO	100.0	2.89	0.00	0.00	N/D
Combined HAPs	25.0	0.0648	0.00	0.00	N/D

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

SO<sub>x</sub> = Oxides of Sulfur; NO<sub>x</sub> = Oxides of Nitrogen; VOCs = Volatile Organic Compounds; CO = Carbon Monoxide; HAPs = Hazardous Air Pollutants

The MHDR for the process, seed handling, seed loadout, and haul roads was taken from Construction Permit No(s). 1096-002 and 072002-005. The combustion MHDR was taken from Construction Permit 072002-005 assuming that the project combustion MHDR equaled the installation-wide combustion MHDR. Credit for control equipment was given based on what was made enforceable in Construction Permit No(s). 1096-002 and 072002-005. Trash handling is not included because the AP-42 drop point equation is not valid for the range of trash moisture content.

As it relates to the seed handling, seed loadout, and haul road emissions calculations for existing potential emission calculations, it was assumed that 35 percent by weight (% w/w) of seed cotton is lint, 55% w/w of seed cotton is seed, and 10% w/w is trash. In addition, it was assumed that one lint bale weighs 485 pounds (lb); a receiving load contains approximately 11 tons of seed cotton; and a shipping load contains approximately 22.5 tons of lint bales, mote bales, seed, and/or trash. As measured from Google Maps, the seed cotton receiving, lint bale/mote bale shipping, seed shipping, and trash shipping haul road distances (round trip) were estimated at 0.786, 0.0947, 0.0947, and 0.0758 miles, respectively. The silt content was estimated at 7.1% and the number of days per year with at least 0.01 inches of precipitation used was 100.

The emissions increase for the project, or the post-project PTE minus the pre-project PTE, was calculated using the same parameters except that the bottlenecked MHDR used for the ginning process, seed handling, seed loadout, and haul roads was 40 bales per hour; controlled emission factors were used for all ginning process exhausts; a 100% overall control efficiency was given for seed handling; and a 50% overall control efficiency was given for undocumented watering on all haul roads. The MHDR for the process, seed handling, seed loadout, and haul roads was given by David Mayberry (Owner/Manager) on September 4, 2019 via phone. The emissions increase was above the deminimis level for PM<sub>10</sub> and Stokes-Mayberry Gin Co., Inc. has agreed to condition the emissions increase to 15 tons per year of PM<sub>10</sub> to avoid an Ambient Air Quality Impact Analysis.

Existing actual emissions were taken from the installation's 2018 EIQ.

### 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 are conditioned below de minimis levels.

### APPLICABLE REQUIREMENTS

Stokes-Mayberry Gin Co., 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.

### 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)1, a full Emissions Inventory Questionnaire (EIQ) is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation. Per 10 CSR 10-6.110(4)(B)2.C(I) and (II), a full EIQ is required in subsequent years of operation if any change in installation-wide emissions subject to fees of plus or minus five (5) tons or more occurs since the last full EIQ was submitted, or if a construction permit action issued requires a full EIQ for the first full year the affected permitted equipment operates.
- *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:

- Leith, D. and Licht, W. (1972). The Collection Efficiency of Cyclone Type Collectors- A New Theoretical Approach. *AIChE Symposium Series*, 68, No. 126, 196-206.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

