

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: **11 2 0 1 6 - 0 0 2**

Project Number: 2016-09-014
Installation Number: 165-0043

Parent Company: Exide Technologies

Parent Company Address: 13000 Deerfield Parkway, Suite 200, Milton, GA 30004

Installation Name: Exide Technologies

Installation Address: 7601 NW 107th Terr., Kansas City, MO 64153

Location Information: Platte County, S25, T52N, R34W

Application for Authority to Construct was made for:
Installation of a new lead alloy battery grid and cable manufacturing facility. This review was conducted in accordance with Section (5) of 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.

Alana L. Hess

Prepared by
Alana Hess
New Source Review Unit

Ky a L. Moore

Director or Designee
Department of Natural Resources

NOV 0 2 2016

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 Kansas City Regional Office 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(12)(A)10. "Conditions required by permitting authority."

Exide Technologies
Platte County, S25, T52N, R34W

1. Emission Limitation
 - A. Exide Technologies shall limit emissions of lead compounds (CAS No. 20-11-1) from emission point S1 to less than or equal to 0.019 lb/hr.
 - B. Compliance shall be demonstrated by conducting performance testing in accordance with Special Condition 3.
2. Control Device Requirement – Baghouse with Secondary HEPA Filter
 - A. Exide Technologies shall control emissions from the equipment listed in Table 1 using baghouses with a secondary HEPA filter (BH1 and BH2) as specified in the permit application.

Table 1: Installation Emission Source List

Emission Source	Description	Control Device	Emission Point
CMP1	131 ton Lead Melting Pot 1 & (18) 0.335 MMBtu/hr Natural Gas Burners	BH1	S1
SCM1	LS1800 Strip Casting Machine 1		
DS1	Dross Station 1		
SVS1	Scrap Vacuum System 1		
LP1	3,000 lb Cable Making Lead Pot 1 & a 0.5 MMBtu/hr Natural Gas Burner		
SP1	Solder Pot 1		
LP2	3,000 lb Cable Making Lead Pot 2 & a 0.5 MMBtu/hr Natural Gas Burner		
SP2	Solder Pot 2		
GW1	Grid Washer 1		
GW2	Grid Washer 2		
CMP2	131 ton Lead Melting Pot 2 & (18) 0.335 MMBtu/hr Natural Gas Burners	BH2	
SCM2	Strip Casting Machine 2		
DS2	Dross Station 2		
SVS2	Scrap Vacuum System 2		
SVS3	Scrap Vacuum System 3		
CV1	Central Vacuum 1		
GW3	Grid Washer 3		

SPECIAL CONDITIONS:

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

- B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse 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.
 - C. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. Exide Technologies shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours of operation. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance specifications.
 - E. Exide Technologies shall maintain a copy of the baghouse manufacturer's performance specifications on site.
 - F. Exide Technologies shall maintain an operating and maintenance log for the baghouses 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.
3. Performance Testing
- A. Exide Technologies shall demonstrate compliance with the lead emission limitation in Special Condition 1 by conducting stack testing in accordance with the procedures in 10 CSR 10-6.030 *Sampling Methods for Air Pollution Sources* and the Proposed Test Plan Form (enclosed).
 - B. These tests shall be performed within 60 days after achieving the maximum production rate of the installation, but not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 3.A.
 - C. Testing shall be performed at the maximum lead processing rate of 40 tons per hour. If it is impractical to test at maximum capacity, the emission point may be tested at less than the maximum capacity; in this case, subsequent operation of the emission sources will be limited to 110 percent of the test rate until a new test is conducted. Once the emission points are so limited, operation at higher processing rates is allowed for no more than 15 total days for the purpose of additional compliance testing to regain the authority to operate at the maximum processing rate.

SPECIAL CONDITIONS:

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

- D. A completed Proposed Test Plan Form (enclosed) shall be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing. Performance testing shall be conducted in accordance with the protocol agreed to between the Air Pollution Control Program's Compliance/Enforcement Section and Exide Technologies.
- E. An electronic report of the performance test results shall be submitted to the Director within 60 days of completion of any required testing. The report shall include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.
- F. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations, specifically:
- 1) The lead processing rate (tons per hour) during each performance test run.
 - 2) The amount of lead (tons) in each lead melting pot and each cable making pot at the beginning of each performance test run.
 - 3) The amount of lead (tons) added to each lead melting pot and each cable making pot during each performance test run.
 - 4) The pressure drop (in H₂O) across each baghouse during each performance test run.
 - 5) The minimum efficiency reporting value (MERV) rating of each baghouse during each performance test run.
4. Exide Technologies shall notify the Air Pollution Control Program before initial startup of any modifications to the facility design that could impact the release parameters or lead emission rates as specified in the Memorandum from the Modeling Unit titled, "Ambient Air Quality Impact Analysis (AAQIA) for Exide Technologies – Lead Alloy Battery Grid and Cable Manufacturing Facility" (September 2016). In the event the Air Pollution Control Program determines that the changes are significant, the permittee shall submit an updated AAQIA to the Air Pollution Control Program that continues to demonstrate compliance with the lead RAL.
5. **Record Keeping and Reporting Requirements**
Exide Technologies 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.

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

Project Number: 2016-09-014

Installation ID Number: 165-0043

Permit Number: **11 2 0 1 6 - 0 0 2**

Installation Address:

Exide Technologies
7601 NW 107th Terr.
Kansas City, MO 64153

Parent Company:

Exide Technologies
13000 Deerfield Parkway, Suite 200
Milton, GA 30004

Platte County, S25, T52N, R34W

REVIEW SUMMARY

- Exide Technologies has applied for authority to construct a new lead alloy battery grid and cable manufacturing facility in Kansas City, MO.
- The application was deemed complete on September 8, 2016.
- HAP emissions are expected from the proposed equipment. Lead emissions are expected from each of the baghouses. HAPs will also be emitted from the combustion of natural gas.
- The installation is not a primary or secondary lead smelter; therefore, 40 CFR Part 60, Subparts L and R and 40 CFR Part 63, Subparts X and TTT do not apply.
- Although the installation includes grid casting, the installation is not subject to 40 CFR Part 60, Subpart KK or 40 CFR Part 63, Subpart PTTTTT. The installation does not produce storage batteries; therefore, the installation does not meet the definition of *lead-acid battery manufacturing plant* in §60.371(b).
- Baggouses with secondary HEPA filters are being used to control lead and particulate emissions from each emission source.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of each pollutant are below de minimis levels. A permit was required to institute practically enforceable control device requirements.
- This installation is located in Platte County, an attainment 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 performed to determine the ambient impact of the installation's lead emissions.
- Emissions testing is required for the equipment as a part of this permit. Testing may be required as part of other state, federal or applicable rules.
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION/PROJECT DESCRIPTION

Exide Technologies is proposing to install a new lead alloy battery grid manufacturing facility to support battery production operations elsewhere. Incoming 1,750 – 1,900 pound lead ingots will be fed into lead melting pots that will be equipped with circulating pumps. The melting pots will also be equipped with a dross system which will drag dross from across the top of the molten lead bath to one side for removal. Prepared liquid lead alloy will then be fed to strip casters. Casted strip will be fed to a rolling mill to reduce the thickness of the casted strip for punching. Lubricant will be applied prior to the strip being punched in the desired grid pattern and washed. Punched-out chips containing ~80% of the original strip will be returned/recycled to the lead melting pots for recasting. Finished punched grids will be coiled and shipped out. The installation will also include a separate cable making line involving smaller lead melting pots. The installation's maximum lead processing rate is 40 tons per hour. A complete list of emission sources is available in Table 1.

This is a new installation. No permits have been issued to Exide Technologies for this location by the Air Pollution Control Program.

EMISSIONS/CONTROLS EVALUATION

No emission factors are available which accurately represent the lead processing emissions from this installation. In the application, the installation proposed a controlled lead emission rate of 0.1 mg/dscm from emission point S1 and an air flow rate of 50,000 cfm which results in a lead emission rate of 0.019 lb/hr. The installation's proposed lead emission rate has been included in the permit as Special Condition 1.A. Stack testing will be conducted in accordance with Special Condition 3 to ensure that actual lead emissions are not higher than proposed. In the application, the installation proposed a controlled PM/PM₁₀/PM_{2.5} emission rate of 1 mg/dscm from emission point S1 and an air flow rate of 50,000 cfm which results in a PM/PM₁₀/PM_{2.5} emission rate of 0.19 lb/hr. It was determined that no testing was necessary to verify the PM/PM₁₀/PM_{2.5} emission rate. This determination is based on the following information:

- EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 12.15 "Storage Battery Production" (January 1995) emission factors indicate that particulate (PM/PM₁₀/PM_{2.5}) emissions are 2 – 5 times higher than lead emissions.
- AP-42 Section 12.17 "Miscellaneous Lead Products" (January 1995) emission factors indicate that particulate emissions are 1.2 times higher than lead emissions.

- The installation's proposed particulate emission rate is 10 times higher than their proposed lead emission rate.
- Figure 4-1 in "Lead Acid Battery Manufacture – Background Information for Proposed Standards" (EPA 450/3-79-028a) indicates that all particulate from grid casting facilities has a diameter of less than 2.5 microns.
- The particulate emission rate would need to be more than 120 times higher than the lead emission rate before the project would exceed the PM_{2.5} de minimis level.

Based on this information it was determined that compliance with the lead emission rate effectively demonstrates that project PM_{2.5} emissions are below the de minimis level.

The baghouses with secondary HEPA filters were given a particulate and lead control efficiency of 99.5%.

Emission factors for the combustion of natural gas used in this analysis were obtained from AP-42, Section 1.4 "Natural Gas Combustion" (July 1998).

The following table provides an emissions summary for this project. As this is a new installation, existing potential emissions and existing actual emissions are nonexistent. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year).

Table 2: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Potential Uncontrolled Emissions of the Installation/Project	Estimated Potential Controlled Emissions of the Installation/Project
PM	25.0	164.49	1.25
PM ₁₀	15.0	164.49	1.25
PM _{2.5}	10.0	164.49	1.25
SO _x	40.0	0.03	0.03
NO _x	40.0	5.61	5.61
VOC	40.0	0.31	0.31
CO	100.0	4.71	4.71
HAPs	25.0	16.51	0.11
Hexane (110-54-3)	10.0 ¹	0.10	0.10
Lead Compounds (20-11-1)	0.6 ²	16.41	0.08

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

¹ This value also represent the SMAL.

² The SMAL for lead is 0.01 tons per year.

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 each pollutant are below de minimis levels. A permit was required to institute practically enforceable control device requirements.

APPLICABLE REQUIREMENTS

Exide Technologies 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

- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
 - Exide Technologies shall submit a full EIQ for the first full year of operation of the installation.
- 10 CSR 10-6.165 *Restriction of Emission of Odors*
- 10 CSR 10-6.170 *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220 *Restriction of Emission of Visible Air Contaminants*

SPECIFIC REQUIREMENTS DETERMINATION

- 10 CSR 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes* is not applicable as Special Condition 2 requires emissions from each particulate emission source to be controlled by a baghouse. Baghouses achieve greater than 90% particulate control; therefore, the emission sources are exempt from this regulation per 10 CSR 10-6.400(1)(B)15.

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of lead compounds. Modeling was performed using the EPA modeling software AERMOD. Modeling was required as project potential lead emissions exceed the lead SMAL of 0.01 tons per year. The results of the modeling analysis are summarized in Table 3. The installation is limited to the lead emission rate that was input into the modeling by Special Condition 1. Table 4 contains the release parameters from the modeling analysis titled, "Ambient Air Quality Impact Analysis

(AAQIA) for Exide Technologies – Lead Alloy Battery Grid and Cable Manufacturing Facility” (September 2016).

Table 3: Ambient Air Quality Impact Analysis Summary

Pollutant	Modeled Impact ($\mu\text{g}/\text{m}^3$)	RAL ($\mu\text{g}/\text{m}^3$)	Time Period
Lead Compounds (20-11-1)	0.4417	2	8-hr
Lead Compounds (20-11-1)	0.2013	0.357	24-hr
Lead Compounds (20-11-1)	0.0161	0.7	Annual

Table 4: Modeling Analysis Release Parameters

Emission Point	Stack Height (ft)	Stack Inside Diameter (ft)	Stack Gas Exit Velocity (ft/s)	Stack Gas Exit Temp. (°F)
S1	35.01	5.58	33.14	86.00

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5) of 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 1, 2016, received September 8, 2016, designating Exide Technologies as the owner and operator of the installation.
- Ambient Air Quality Analysis (AAQIA) for Exide Technologies – Lead Alloy Battery Grid and Cable Manufacturing Facility (September 2016)

APPENDIX A

Abbreviations and Acronyms

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



Jeremiah W. (Jay) Nixon, Governor • Harry D. Bozoian, Director

DEPARTMENT OF NATURAL RESOURCES

dnr.mo.gov

NOV 02 2016

Mr. Chuck Giesige
Vice President of Operations, Exide Americas
Exide Technologies
3001 Fairfax Trafficway
Kansas City, MO 66115

RE: New Source Review Permit - Project Number: 2016-09-014

Dear Mr. Giesige:

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 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 §§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.



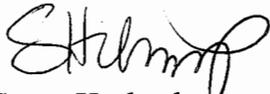
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Mr. Chuck Giesige
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If you have any questions regarding this permit, please do not hesitate to contact Alana Hess, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, 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:ahj

Enclosures

c: Kansas City Regional Office
PAMS File: 2016-09-014

Permit Number: 11 2016 - 002