

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE  
GOVERNOR



PAUL MERCER  
COMMISSIONER

**AVX Tantalum Corporation  
York County  
Biddeford, Maine  
A-664-71-H-R**

**Departmental  
Findings of Fact and Order  
Air Emission License  
Renewal**

**FINDINGS OF FACT**

After review of the air emission license renewal application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes Annotated (M.R.S.A.), §344 and §590, the Maine Department of Environmental Protection (Department) finds the following facts:

**I. REGISTRATION**

**A. Introduction**

AVX Tantalum Corporation (AVX) has applied to renew their Air Emission License permitting the operation of emission sources associated with their tantalum capacitor manufacturing facility. The capacitors are used in a variety of electronic devices such as pacemakers, hearing aids, medical implants and for military and aerospace applications.

The equipment addressed in this license is located at 401 Hill Street, Biddeford, Maine.

**B. Emission Equipment**

The following equipment is addressed in this air emission license:

**Boilers**

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type, % sulfur	Installation Date	Stack #
Boiler #1	2.5	18 gal/hr	Distillate Fuel, 0.5%	1992	38
		2451 scf/hr	Natural Gas, negligible		
Boiler #2	2.5	18 gal/hr	Distillate Fuel, 0.5%	1996	49
		2451 scf/hr	Natural Gas, negligible		
Boiler #3	7.0	50.7 gal/hr	Distillate Fuel, 0.5%	1984	37
		6863 scf/hr	Natural Gas, negligible		

AUGUSTA  
17 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0017  
(207) 287-7688 FAX: (207) 287-7826  
RAY BLDG., HOSPITAL ST.

BANGOR  
106 HOGAN ROAD, SUITE 6  
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312 CANCO ROAD  
PORTLAND, MAINE 04103  
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE  
1235 CENTRAL DRIVE, SKYWAY PARK  
PRESQUE ISLE, MAINE 04769  
(207) 764-0477 FAX: (207) 760-3143

Generator

Equipment	Maximum Design Heat Input Capacity (MMBtu/hr)	Maximum Output Capacity (kW)	Firing Rate (gal/hour)	Fuel Type	Manufacture & Installation Date
Generator #1	1.31	100	13.95	Propane	2009

Process Equipment

Equipment	Unit ID	Process Type	Control Device(s)	Stack #
Pyrolysis Oven	PO3	Batch Operation	-	51a
Pyrolysis Oven	PO4	Batch Operation	-	51b
Pyrolysis Oven	PO5	Batch Operation	-	51c
Deflash Machine	DM1	Batch Operation	Fabric Filters	43
Deflash Machine	DM2	Batch Operation	Fabric Filters	50
Isopropanol Use	-	General Use	-	-
Silver Dip Process	-	Batch Operation	-	-
Marking Operations	-	General Use	-	-
Vapor Degreaser	-	General Use	-	-

C. Definitions

*Distillate Fuel* means fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials in ASTM D396, diesel fuel oil numbers 1 or 2, as defined in ASTM D975, kerosene, as defined in ASTM D3699, biodiesel as defined in ASTM D6751, or biodiesel blends as defined in ASTM D7467.

D. Application Classification

The application for AVX does not include the licensing of increased emissions or the installation of new or modified equipment. Therefore, the license is considered to be a renewal of currently licensed emission units only and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 Code of Maine Rules (CMR) 115 (as amended). AVX is licensed below the major source thresholds for criteria pollutants and is considered a minor source. AVX is also licensed below the major source thresholds for hazardous air pollutants (HAP) and is considered an area source of HAP.

II. **BEST PRACTICAL TREATMENT (BPT)**

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in 06-096 CMR 100 (as amended). Separate control requirement categories exist

for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

### **Process Description**

AVX manufactures tantalum capacitors in multiple configurations; surface mount and wire-leaded. Each configuration uses tantalum metal powder, as the base material, which is pressed into pellets or wafers. Some will contain a chemical binder added to the powder to facilitate pressing. This binder is removed in the subsequent process step using liquid rinsing and hot air drying. Pellets and wafers are then heated to very high temperatures to fuse the powder into a cohesive, sintered structure. Sintering is performed in electric vacuum furnaces and atmospheric pressure furnaces in an inert atmosphere. Sintered parts are attached to stainless steel to facilitate handling and processing for a number of subsequent operations.

The parts mounted to stainless steel undergo electrolytic oxidation to form a tantalum pentoxide dielectric layer on the pellet/wafer using electrolytes including dilute nitric or phosphoric acids or a dilute sulfuric acid/ethylene glycol mixture. The dielectric layer provides the desired characteristics of the capacitor core.

The two surface mount configurations, tab-terminated (processed as pellets) and microchip (processed as wafers) are then immersed in a manganese nitrate, nitric acid, and water solution followed by steam pyrolysis to create manganese dioxide in the voids of the porous part. This step is repeated using varying solution concentrations until the porosity is filled. In between some of these steps, parts will go through a "healing" process in which they are dipped in dilute acetic acid or sulfuric acid/ethylene glycol solution followed by additional heating to repair any cracks that have formed during pyrolysis. Parts are then dipped in carbon solutions and heated to form a carbon layer then in a mixture of metallic silver and high flashpoint organic solvent to form a silver layer.

Tab-terminated surface mount parts are then processed in automated machinery to remove pellets from the stainless steel, weld a wire protruding from each pellet onto one side of a metal rail called a "lead frame" and glue the pellet to the other side of the lead frame using conductive silver epoxy. These are then heated to cure the epoxy. The parts on lead frames are then put through another automated machine which presses a thermo-set epoxy material around the parts, forming the body of the capacitor. Molded lead frames are subjected to an abrasive blasting process that removes excess epoxy from the parts. These are then marked with product information using an ink-transfer stamping process. The stamped parts on lead frame are processed on automated equipment to separate parts from the rail and fold metal tabs, which become the electrical terminations, under the body of the part. Parts may have their termination

finishes modified by electroplating or solder dipping based on customer requirements. Parts undergo a wide range of testing and are then packaged for shipment.

Following carbon and silver coating operations, microchip wafers are secured to a flat surface and partially cut into smaller sections using dicing saws. These partially cut wafers are placed in RF frequency sputtering machine which applies thin metallic coatings to one side of the wafer. A thin metallic sheet is secured to the other side using a conductive silver epoxy. After heating and curing the epoxy, this sandwich is placed in a rubber mold and an epoxy injected into the mold to form the body of the capacitor. The molded wafer is mounted to a disposable substrate material and cut on the dicing saws to separate the parts. The ends of the parts are coated with metallic silver in automated equipment to create the anode and cathode connections. These are then electroplated to add the termination finish required by the customer. Parts undergo a wide range of testing and are then packaged for shipment.

Following electrolytic oxidation, the wire-leaded pellets are soaked in an electrolyte and inserted into a tantalum can containing the same electrolyte. Plastic spacers are used to prevent the pellet from touching the can. A cover is laser welded to the top of the can to form a sealed unit. Wires are tack welded to each end of the can, and a part number stamped on the can. Parts undergo a wide range of testing and are then packaged for shipment.

B. Boilers #1, #2 and #3

AVX operates three boilers to provide process steam and heat to the facility. Boilers #1 and #2 are each rated at 2.5 MMBtu/hour and Boiler #3 is rated at 7.0 MMBtu/hour. The boilers were installed in 1992, 1996 and 1984, respectively, and each boiler exhausts through its own stack.

All three boilers are licensed to fire natural gas or distillate fuel with a maximum sulfur content not to exceed 0.5%, by weight

1. BPT Findings

The BPT emission limits for Boilers #1, #2 and #3 when firing natural gas were based on the following:

PM/PM <sub>10</sub>	0.05 lb/MMBtu based on 06-096 CMR 115, BPT
SO <sub>2</sub>	0.6 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
NO <sub>x</sub>	100 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
CO	84 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
VOC	5.5 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
Opacity	06-096 CMR 101

The BPT emission limits for Boilers #1, #2 and #3 when firing distillate fuel were based on the following:

PM/PM <sub>10</sub>	0.08 lb/MMBtu based on 06-096 CMR 115, BPT
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SO <sub>2</sub>	0.5 lb/MMBtu, firing 0.5%S distillate fuel
NO <sub>x</sub>	0.3 lb/MMBtu, previous license limit
CO	5.0 lb/1000 gallons, AP-42, Table 1.3-1, dated 5/10
VOC	0.34 lb/1000 gallons, AP-42, Table 1.3-3, dated 5/10
Opacity	06-096 CMR 101

The BPT emission limits for Boilers #1, #2 and #3 are the following:

Equipment	Firing	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	Natural Gas	0.13	0.13	0.01	0.25	0.21	0.01
	Distillate	0.20	0.20	1.26	0.76	0.09	0.01
Boiler #2	Natural Gas	0.13	0.13	0.01	0.25	0.21	0.01
	Distillate	0.20	0.20	1.26	0.76	0.09	0.01
Boiler #3	Natural Gas	0.35	0.35	0.01	0.69	0.58	0.04
	Distillate	0.57	0.57	3.55	2.13	0.25	0.02

AVX shall be limited to 56,000 MMBtu/year, on a twelve-month rolling-total basis. This BTU fuel heat content limit is equivalent to a limit of 400,000 gallons/year of distillate fuel or 54,901,961 scf/year of natural gas.

Boilers #1, #2 and #3 are each licensed to fire distillate fuel which, by definition, has a sulfur content of 0.5% or less by weight. Per 38 M.R.S.A. §603-A(2)(A)(3), as of July 1, 2018, no person shall import, distribute, or offer for sale any distillate fuel with a sulfur content greater than 0.0015% by weight (15 ppm). Therefore, beginning July 1, 2018, the distillate fuel purchased or otherwise obtained for use in Boilers #1, #2 and/or #3 shall not exceed 0.0015% by weight (15 ppm).

When firing distillate fuel, visible emissions from each boiler shall not exceed 20% opacity on a six-minute block average basis, except for no more than one six-minute block average in a three-hour period.

When firing natural gas, visible emissions from each boiler shall not exceed 10% opacity on a six-minute block average basis, except for no more than one six-minute block average in a three-hour period.

## 2. Periodic Monitoring

Periodic monitoring for Boilers #1, #2 and #3 shall include recordkeeping to document the MMBtu/year fuel use, both on a monthly and twelve-month rolling-total basis. Documentation shall include the type and amount of fuel used. Records shall be maintained to document compliance with the 56,000 MMBtu/year annual heat input limit.

3. 40 CFR Part 60, Subpart Dc

Due to their sizes, Boiler #1, Boiler #2 and Boiler #3 and are not subject to the New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, for units greater than 10 MMBtu/hr manufactured after June 9, 1989.

4. 40 CFR Part 63, Subpart JJJJJ

Boilers #1, #2 and #3 are not subject to the National Emission Standards for Hazardous Air *Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources* (40 CFR Part 63 Subpart JJJJJ) since the units are considered existing gas-fired boilers.

Gas-fired boilers are exempt from 40 CFR Part 63, Subpart JJJJJ. However, boilers which fire fuel oil are not. A "gas-fired boiler" is defined as any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of forty-eight hours during any calendar year. [40 CFR Part 63.11237]

If Boilers #1, #2 and/or #3 no longer meet the definition of a gas-fired boiler as defined above, AVX shall conduct a tune-up within 180 days of the effective date of the fuel switch. Notification of such changes must be submitted according to 40 CFR §63.11225(g). [40 CFR §63.11210(h)]

Boilers #1, #2 and #3 are considered to be existing boilers because they were in operation prior to June 4, 2010. If Boilers #1, #2 and/or #3 convert back to firing distillate fuel in the future, they would become subject to applicable requirements of 40 CFR Part 63 Subpart JJJJJ as an existing boiler at the time it converts back to oil.

C. Emergency Generator #1

AVX operates one emergency generator, designated Generator #1, which is rated at 1.31 MMBtu/hour (100 kW output) and fires propane at a maximum rate of 13.95 gallons/hour. The generator is a stationary unit which was manufactured and installed in 2009.

1. BPT Findings

The BPT emission limits for Generator #1 are based on the following:

PM/PM <sub>10</sub>	0.05 lb/MMBtu based on 06-096 CMR 115, BPT
SO <sub>2</sub>	0.017 lb/MMBtu, mass balance
NO <sub>x</sub>	0.29 lb/MMBtu, from manufacturer's potential emissions data

CO 0.39 lb/MMBtu, from manufacturer's potential emissions data  
VOC 0.007 lb/MMBtu, from manufacturer's potential emissions data  
Opacity 06-096 CMR 101

The BPT emission limits for Generator #1 are the following:

Equipment	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1	0.07	0.07	0.02	0.38	0.51	0.01

Visible emissions from Generator #1 shall not exceed 20% opacity on a six-minute block average basis, except for no more than two six-minute block averages in a three-hour period.

2. 40 CFR Part 60, Subpart JJJJ

The federal regulation 40 CFR Part 60, Subpart JJJJ, *Standards of Performance for Spark Ignition Internal Combustion Engines (SI ICE)* is applicable to Generator #1 since the unit was ordered after June 12, 2006 and manufactured after January 1, 2009. By meeting the requirements of Subpart JJJJ, Generator #1 also meets the requirements found in the *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 CFR Part 63, Subpart ZZZZ.

a. Emergency Engine Designation and Operating Criteria

Under Subpart JJJJ, a stationary reciprocating internal combustion engine (ICE) is considered an emergency stationary ICE (emergency engine) as long as the engine is operated in accordance with the following criteria. Operation of an engine outside of the criteria specified below may cause the engine to no longer be considered an emergency engine under Subpart JJJJ, resulting in the engine being subject to requirements applicable to non-emergency engines.

(1) Emergency Situation Operation (On-Site)

There is no operating time limit on the use of an emergency engine to provide electrical power or mechanical work during an emergency situation.

Examples of use of an emergency engine during emergency situations include the following:

- Use of an engine to produce power for critical networks or equipment (including power supplied to portions of a facility) because of failure or interruption of electric power from the local utility (or the normal power source, if the facility runs on its own power production);

- Use of an engine to mitigate an on-site disaster or equipment failure;
- Use of an engine to pump water in the case of fire, flood, natural disaster, or severe weather conditions; and
- Similar instances.

**(2) Non-Emergency Situation Operation**

An emergency engine may be operated up to a maximum of 100 hours per calendar year for Maintenance Checks, Readiness Testing, and other non-emergency situations as described below.

- (i) An emergency engine may be operated for a maximum of 100 hours per calendar year for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government; the manufacturer; the vendor; the regional transmission organization or equivalent balancing authority and transmission operator; or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE more than 100 hours per calendar year.
- (ii) An emergency engine may be operated for up to 50 hours per calendar year for other non-emergency situations. However, these operating hours are counted as part of the 100 hours per calendar year operating limit described in paragraph (2) and (2) (i) above.

The 50 hours per calendar year operating limit for other non-emergency situations cannot be used for peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity, unless:

- (a) The engine is dispatched by the local balancing authority or local transmission and distribution system operator.
- (b) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.
- (c) The dispatch follows reliability, emergency operation or similar protocols that follow specific North American Electric Reliability Corporation (NERC), regional, state, public utility commission, or local standards or guidelines.



- (d) The power is provided only to the facility itself or to support the local transmission and distribution system.
- (e) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission, or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

b. 40 CFR Part 60, Subpart JJJJ Requirements

(1) Manufacturer Certification Requirement

Generator #1 shall be certified by the manufacturer as meeting the emission standards for new nonroad spark ignition engines found in 40 CFR Part 60, Subpart JJJJ, Table 1. [40 CFR §60.4233]

(2) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on Generator #1. [40 CFR §60.4237]

(3) Operation and Maintenance Requirement

Generator #1 shall be operated and maintained according to the manufacturer's written instructions or procedures developed by AVX that are approved by the engine manufacturer. AVX may only change those settings that are permitted by the manufacturer. [40 CFR §60.4243]

(4) Annual Time Limit for Maintenance and Testing

As an emergency engine, Generator #1 shall be limited to 100 hours/year for maintenance and testing. Generator #1 may operate up to 50 hours per year in non-emergency situations, but those 50 hours are included in the 100 hours total allowed for maintenance and testing. The 50 hours for non-emergency use cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR §60.4243(d)]

(5) Recordkeeping

AVX shall keep records that include maintenance conducted on Generator #1 and the hours of operation recorded through the non-resettable hour meter. Documentation shall include the number of hours Generator #1 operated for emergency purposes, including what classified the operation as emergency,

and the number of hours Generator #1 operated for non-emergency purposes. If Generator #1 is operated during a period of demand response or deviation from standard voltage or frequency, or to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4243(d)(3)(i), AVX shall keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation for these purposes. [40 CFR §60.4245(b)]

(6) Annual Reporting Requirement for Demand Response Availability Over 15 Hours Per Year

If AVX operates or is contractually obligated to be available for more than 15 hours per calendar year in a demand response program, during a period of deviation from standard voltage or frequency, or for supplying power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4243(d)(3)(i), the facility shall submit an annual report containing the information in §60.4245(e)(1)(i) through (vii). The annual report for each calendar year must be submitted no later than March 31<sup>st</sup> of the following calendar year. The annual report must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). However, if the reporting form is not available in CEDRI at the time that the report is due, the written report must be submitted to the following address:

U.S. Environmental Protection Agency, Region I  
5 Post Office Square, Suite 100 (OES04-2)  
Boston, MA 02109-3912  
Attn: Air Compliance Clerk

[40 CFR §60.4245(e)]

D. Pyrolysis Ovens

AVX operates three electric pyrolysis ovens which are used in the process once the pellets (the cores of the capacitors) are formed. The pellets go through a nitric acid/manganese nitrate solution and then are dried in the pre-dryers. The pyrolysis ovens use steam from the boilers to heat and react with the nitric acid/manganese nitrate.

The pyrolysis ovens emit relatively small quantities of NO<sub>x</sub>, a byproduct of the reaction of the nitric acid, manganese nitrate and superheated steam. No additional add-on NO<sub>x</sub> controls are economically justified. NO<sub>x</sub> emissions shall be minimized by minimizing the chemical usage and maximizing operational efficiency.

The BPT requirements for the pyrolysis ovens include the following:

AVX shall operate the pyrolysis ovens in accordance with the facility's written procedures and work practices, based on manufacturer recommendations.

NO<sub>x</sub> is generated from the use of manganese nitrate and nitric acid. Emissions are based on mass balance considering the concentration of the chemicals and the portion of each chemical remaining unreacted in the waste water and waste shipped off site. NO<sub>x</sub> emissions are then calculated based on the stoichiometric equations for the reactants based on the use.

AVX shall not exceed an annual NO<sub>x</sub> emission limit of 11 tons/year from the pyrolysis ovens, based on a twelve-month rolling total. Compliance shall be demonstrated on a mass-balance basis by recordkeeping including monthly records of chemical use.

E. De-flash Machines

AVX operates de-flash machines which utilize a blasting process where abrasives remove the excess plastic material from each capacitor once it is removed from its mold. The de-flash machines emit small quantities of particulate matter and are equipped with dust collectors rated at greater than 95% efficiency.

The BPT requirements for the de-flash machines include the following:

Particulate emissions from the de-flash machines shall be vented through fabric filter dust collectors and the de-flash machines shall be maintained so as to prevent PM leaks. Particulate matter emissions from the operation of the de-flash machines shall be limited to a total of 2 tons/year, on a twelve-month rolling total basis. Records, including media usage and control equipment efficiency estimates, shall be maintained to document compliance with the particulate matter limit.

Opacity from each of the de-flash machine exhausts shall not exceed 20% on a six-minute block average basis, except for no more than one six-minute block average in a one-hour period.

F. VOC Processes

AVX uses small quantities of VOC containing material throughout the facility for various processes including, but not limited to, the following:

*Silver Dip Process*

The silver dip process consists of dipping the pellets into a slurry of metallic silver and high flash-point organic solvent as the final step of producing the capacity core. The Department has determined that the silver dip process does not

meet the definition of coating in *Surface Coating Facilities*, 06-096 CMR 129 (as amended) since the process is not used to apply a “protective, decorative, or functional film”. Instead, the silver deposition is one stage in the formation of the capacitor itself. Therefore, the silver dip process is not subject to the requirements of 06-096 CMR 129 (as amended). However, the VOC emissions from the process shall be included in the total facility VOC license limit.

#### *Marking Operation*

The marking operation consists of marking the capacitors prior to shipment. The marking operation includes an automated stamping system for ink transfer efficiency optimization. AVX uses approximately seven gallons of ink per year in the marking operations and is therefore exempt from 06-096 CMR 129 (as amended) per 06-960 CMR 129, Section (1)(E)(1), which exempts coating units, lines, or operations using less than 50 gallons of coating per year. VOC emissions from the marking operation shall be included in the total facility VOC license limit.

#### *Vapor Degreaser*

AVX operates a vapor degreaser using “Ensolv-A”, which is primarily composed of *1-bromopropane*. The vapor degreaser is subject to *Solvent Cleaners*, 06-096 CMR 130 (as amended). VOC emissions from the solvent usage in the vapor degreaser shall be included in the total facility VOC license limit.

The BPT requirements for the VOC emitting processes at the facility include the following:

AVX shall close all containers containing VOC material when not in immediate use.

AVX shall maintain records of ink and thinner use to document that actual coatings use as applied from the marking operations are below 50 gallons per year.

AVX shall maintain monthly records of the total solvent used in the vapor degreaser (added and removed). The vapor degreaser shall be operated in accordance with 06-096 CMR 130 (as amended).

AVX shall not exceed an annual VOC emission limit of 10 tons/year from facility process operations, based on a twelve-month rolling total. Monthly records of VOC use shall be included as part of the VOC limit compliance demonstration.

### G. Annual Emissions

#### 1. Total Annual Emissions

AVX shall be restricted to the following annual emissions, on a twelve-month rolling-total year. The tons per year limits were calculated based on AVX being limited to a heat input limit of 56,000 MMBtu/year (equivalent to 400,000 gallons/year of distillate fuel or 54,901,961 scf/year of natural gas) for the boilers and the operation of 100 hours/year for Generator #1:

**Total Licensed Annual Emissions for the Facility**  
**Tons/year**  
(used to calculate the annual license fee)

Equipment	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Boilers #1, #2 and #3	2.2	2.2	14.1	8.4	2.3	0.2
Generator #1	0.1	0.1	0.1	0.1	0.1	0.1
Pyrolysis Oven	-	-	-	11.0	-	-
De-Flash Emissions	2.0	2.0	-	-	-	-
Miscellaneous VOCs	-	-	-	-	-	10.0
<b>Total TPY</b>	<b>4.3</b>	<b>4.3</b>	<b>14.2</b>	<b>19.5</b>	<b>2.4</b>	<b>10.3</b>

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011, through ‘Tailoring’ revisions made to EPA’s *Approval and Promulgation of Implementation Plans*, 40 CFR Part 52, Subpart A, §52.21, *Prevention of Significant Deterioration of Air Quality* rule. Greenhouse gases, as defined in 06-096 CMR 100 (as amended), are the aggregate group of the following gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO<sub>2</sub>e).

The quantity of CO<sub>2</sub>e emissions from this facility is less than 100,000 tons per year, based on the following:

- the types of fuel being fired;
- the facility’s fuel use limit;
- worst case emission factors from the following sources: U.S. EPA’s AP-42, the Intergovernmental Panel on Climate Change (IPCC), and 40 CFR Part 98, *Mandatory Greenhouse Gas Reporting*; and
- global warming potentials contained in 40 CFR Part 98.

No additional licensing actions to address GHG emissions are required at this time.

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source shall be determined by the Department on a case-by case basis. In accordance with 06-096 CMR 115, an ambient air quality impact analysis is not required for a minor source if the total

licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM	25
PM <sub>10</sub>	25
SO <sub>2</sub>	50
NO <sub>x</sub>	100
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license.

### ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-664-71-H-R, subject to the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

### STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S.A. §347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115.  
[06-096 CMR 115]

- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 CMR 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 CMR 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353-A. [06-096 CMR 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 CMR 115]
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 CMR 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 CMR 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 CMR 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 CMR 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
  - A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:

1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
  2. pursuant to any other requirement of this license to perform stack testing.
- B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
- C. submit a written report to the Department within thirty (30) days from date of test completion.  
[06-096 CMR 115]
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and
  - B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
  - C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.  
[06-096 CMR 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 CMR 115]



- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 CMR 115]
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 CMR 115]

**SPECIFIC CONDITIONS**

(16) **Boilers #1, #2 and #3**

A. Fuel

1. Boilers #1, #2 and #3 are each licensed to fire natural gas and distillate fuel. [06-096 CMR 115, BPT]
2. Prior to July 1, 2018, any distillate fuel fired in Boilers #1, #2 and/or #3 shall have a maximum sulfur content not to exceed 0.5% by weight. [06-096 CMR 115, BPT]
3. Beginning July 1, 2018, AVX shall not purchase or otherwise obtain distillate fuel with a maximum sulfur content that exceeds 0.0015% by weight (15 ppm) for use in Boilers #1, #2 and/or #3. [06-096 CMR 115, BPT]
4. Total heat input into Boilers #1, #2 and #3 combined shall be limited to 56,000 MMBtu/year, on a twelve-month rolling-total basis. [06-096 CMR 115, BPT]
5. Compliance shall be demonstrated by fuel records from the supplier showing the type and the percent sulfur of the fuel delivered, if applicable. [06-096 CMR 115, BPT]

B. Emissions from Boilers #1, #2 and #3 shall not exceed the following [06-096 CMR 115, BPT]:

Equipment	Firing	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	Natural Gas	0.13	0.13	0.01	0.25	0.21	0.01

	Distillate	0.20	0.20	1.26	0.76	0.09	0.01
Boiler #2	Natural Gas	0.13	0.13	0.01	0.25	0.21	0.01
	Distillate	0.20	0.20	1.26	0.76	0.09	0.01
Boiler #3	Natural Gas	0.35	0.35	0.01	0.69	0.58	0.04
	Distillate	0.57	0.57	3.55	2.13	0.25	0.02

- C. When firing natural gas, visible emissions from each boiler shall not exceed 10% opacity on a six-minute block average basis, except for no more than one six-minute block average in a three-hour period. [06-096 CMR 101(2)(B)(1)(c)]
- D. When firing distillate fuel, visible emissions from each boiler shall not exceed 20% opacity on a six-minute block average basis, except for no more than one six-minute block average in a three-hour period. [06-096 CMR 101(2)(B)(1)(b)]

(17) **Generator #1**

- A. Generator #1 shall fire propane. [06-096 CMR 115, BPT]
- B. Generator #1 is limited to 100 hours per year of non-emergency operation, on a calendar-year basis. Compliance shall be demonstrated by records of all generator use, with the records specifying both non-emergency and emergency hours of operation. [06-096 CMR 115, BPT]
- C. Emissions from Generator #1 shall not exceed the following:

Equipment	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1	0.07	0.07	0.02	0.38	0.51	0.01

- E. Visible emissions from Generator #1 shall not exceed 20% opacity on a six-minute block average basis, except for no more than two six-minute block averages in a three-hour period. [06-096 CMR 101 (2)(B)(d)]
- F. Generator #1 shall meet the applicable requirements of 40 CFR Part 60, Subpart JJJJ, including the following:

1. **Manufacturer Certification**

Generator #1 shall be certified by the manufacturer as meeting the emission standards for new nonroad spark ignition engines found in 40 CFR Part 60, Subpart JJJJ, Table 1.

2. **Non-Resettable Hour Meter**

A non-resettable hour meter shall be installed and operated on Generator #1. [40 CFR §60.4237 and 06-096 CMR 115, BPT]

3. Annual Time Limit for Maintenance and Testing

- a. As an emergency engine, Generator #1 shall be limited to 100 hours/year for maintenance checks and readiness testing, emergency demand response, and periods of voltage or frequency deviation from standards. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity unless the conditions in §60.4243(d)(3)(i) are met). The limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written log) of all engine operating hours. [40 CFR §60.4243(d) and 06-096 CMR 115]
- b. AVX shall keep records that include maintenance conducted on Generator #1 and the hours of operation recorded through the non-resettable hour meter. Documentation shall include the number of hours Generator #1 operated for emergency purposes, including what classified the operation as emergency, and the number of hours Generator #1 operated for non-emergency purposes. If Generator #1 is operated during a period of demand response or deviation from standard voltage or frequency, or to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4243(d)(3)(i), AVX shall keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation for these purposes.

4. Operation and Maintenance

Generator #1 shall be operated and maintained according to the manufacturer's written instructions or procedures developed by AVX that are approved by the engine manufacturer. AVX may only change those settings that are permitted by the manufacturer. [40 CFR §60.4243]

5. Annual Reporting For Demand Response Availability Over 15 Hours Per Year

If AVX operates or is contractually obligated to be available for more than 15 hours per calendar year in a demand response program, during a period of deviation from standard voltage or frequency, or to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4243(d)(3)(i), AVX shall submit an annual report containing the information in §60.4245(e)(1)(i) through (vii). The annual report for each calendar year must be submitted no later than March 31<sup>st</sup> of the following calendar year. The annual report must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). However, if

the reporting form is not available in CEDRI at the time that the report is due, the written report must be submitted to the following address:

U.S. Environmental Protection Agency, Region I  
5 Post Office Square, Suite 100 (OES04-2)  
Boston, MA 02109-3912  
Attn: Air Compliance Clerk

[40 CFR §60.4245(e)]

**(18) Pyrolysis Ovens PO3, PO4 and PO5**

- A. AVX shall operate the pyrolysis ovens in accordance with the facility's written procedures and work practices, based on manufacturer recommendation. [06-096 CMR 115, BPT]
- B. AVX shall not exceed an annual NO<sub>x</sub> emission limit of 11 tons/year from the pyrolysis ovens, on a twelve-month rolling total basis. Compliance shall be demonstrated by recordkeeping including monthly records of chemical use. [06-096 CMR 115, BPT]

**(19) De-flash Machines**

- A. Particulate matter emissions from the de-flash machines shall be vented through fabric filter dust collectors. The de-flash machines shall be maintained so as to prevent PM leaks. [06-096 CMR 115, BPT]
- B. Particulate matter emissions from the de-flash machines shall be limited to a total of 2 tons/year, on a twelve-month rolling total basis. Compliance shall be demonstrated by recordkeeping including monthly records of media use and the control efficiency estimate of the fabric filters. [06-096 CMR 115, BPT]
- C. Opacity from each of the de-flash machine exhausts shall not exceed 20% on a six-minute block average basis, except for no more than one six-minute block average in a one-hour period. [06-096 CMR 115, BPT]

**(20) VOC Processes**

- A. AVX shall close all containers containing VOC material when not in immediate use. [06-096 CMR 115, BPT]
- B. AVX shall maintain usage records of ink and thinner to document that actual coatings use, as applied, from the marking operations are below the 06-096 CMR 129 threshold of 50 gallons per year. [06-096 CMR 129 and 06-096 CMR 115, BPT]

- C. AVX shall maintain monthly records of the total solvent used in the vapor degreaser (added and removed). The vapor degreaser shall be operated accordance with the applicable requirements of 06-096 CMR 130 (as amended). [06-096 CMR 130 and CMR 115, BPT]
- D. AVX shall not exceed an annual VOC emission limit of 10 tons/year from facility process operations, on a twelve-month rolling total basis. Compliance shall be demonstrated by monthly records of VOC emissions. [06-096 CMR 115, BPT]
- (21) AVX may add or remove equipment from the pyrolysis or de-flash operations as long as the installation or removal of the components does not result in noncompliance with any terms of the Air Emission License or any representations made in the Air Emission License application. [06-096 CMR 115, BPT]
- (22) AVX shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S.A. §605).

DONE AND DATED IN AUGUSTA, MAINE THIS 6 DAY OF June, 2016.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Corse for  
PAUL MERCER, COMMISSIONER

**The term of this license shall be ten (10) years from the signature date above.**

[Note: If a complete renewal application, as determined by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 M.R.S.A. §10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the renewal of the license.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: March 28, 2016  
Date of application acceptance: March 31, 2016

Date filed with the Board of Environmental Protection:  
This Order prepared by Kevin J Ostrowski, Bureau of Air Quality.

