



STATEMENT OF BASIS
Page 1 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

DATE APPLICATION RECEIVED: December 11, 2014 (updated July 1, 2015)

DATE OF LAST INSPECTION: August 6, 2014 (A follow up inspection will be conducted to determine the compliance status with 40 CFR 63 Subpart ZZZZ.)

FACILITY DESCRIPTION

AVX Corporation (AVX) manufactures electronic capacitor chips for various clients in the electronics industry. The process involves electrode ink and ceramic raw material processing, chip buildup, green chip processing, QA/QC, and ancillary support.

The facility is located in Myrtle Beach (Horry County) in northeastern South Carolina, approximately two kilometers inland from the Atlantic Ocean at U.S. Highway 17 and 17th Avenue South. This site is bordered by the South Carolina National Guard, the Myrtle Beach Jetport, and a residential neighborhood.

There were two manufacturing areas at the facility: the main production building (MB1) and the newer manufacturing building (MB2). MB1 was originally constructed in 1949, renovated in 1985, and is now decommissioned. Construction began on MB2 in 1998. The building was occupied in 2000 and is still in operation.

Operations in the Myrtle Beach complex include the following:

Emission Unit ID	Emission Unit Description	Emission Unit Process Description
014	Raw Materials Manufacturing (RMM) Department	The chip manufacturing process begins with the RMM Department. Individual metal salts are blended together with water and dispersants in a batch process to produce a formulated ceramic compound. The ceramic material is then ground and milled to reduce particle size. Ceramic powder is prilled to reduce water content by placing the material on a belt moving through a heater. The material is then either fired to physically react the constituents or further dried to remove excess moisture and dispersant. Emissions from this portion of RMM are primarily PM emissions from grinding and milling operations. These emissions are controlled by three baghouses.
015	Slip Manufacturing (SLIP) Department	Ceramic powders from RMM are transferred to the Slip Manufacturing Department building. The powders are blended with organic solvents such as butyl cellosolve (BC) and propylene glycol monomethyl ether (PGME) to produce ceramic slurries, also known as slip. Mixing takes place in various sized mixing vessels and holding tanks as appropriate to prepare a particular slurry batch. The slurry is mixed and milled to achieve the necessary particle size distribution. Mixing and milling occurs primarily in sealed or covered containers to maintain specific product viscosity specifications. This limits the VOC and HAP emissions generated from the mixing of solvents with the powder and equipment cleaning. The emissions are vented to the atmosphere through a single room vent and as fugitive emissions through window and door openings.
016	RESERVED	RESERVED
017	CMAP Buildup (CMAP) Department	In the CMAP operations, capacitors are produced in a "buildup" process in which the ceramic slip is laid down with alternating layers of electrode ink on glass plates. VOC in slip and ink are emitted during application of the materials when manufacturing the capacitors. The CMAP machines are designed with enclosures which capture a large percentage of emissions and vent to the atmosphere. A smaller percentage of emissions will be not be captured and is considered fugitive emission loss. A small amount of HAPs is present in denatured alcohol used for machine cleaning. N-butyl acetate is also used for cleaning in the CMAP Department.
018	CMAP Support (CMAP SUP) Department	CMAP Support consists of a number of processes that support the CMAP Buildup activities. These processes are: glass buildup plate preparation, dicing operations, chip removal, green chip corner rounding, chip drying (moisture removal), and formation of cured ceramic chip body (burnout and firing).



STATEMENT OF BASIS
Page 2 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

		<p>The glass plates used in the CMAP Buildup process are prepared in CMAP Support by water washing, drying, and applying a release paper or plastic film to the plate. This is the surface onto which the buildup of ceramic slip and electrode ink occurs in the CMAP Buildup process and allows for easy removal of the individual chips after dicing.</p> <p>Once the ceramic and electrode ink layers have been created on the glass plates, the ceramic buildup is cut or "diced" into predetermined shapes and sizes to form individual capacitor chips. The majority of dicing is accomplished using a wet process where there are no emissions. For certain product lines, dicing is completed using a dry process that results in a small amount of PM. These PM emission are controlled by a vacuum/fabric filter system.</p> <p>The individual capacitors created from dicing are known as "green" chips prior to the burn out and sintering steps. In the green chip area, chips are sorted, washed, and dried at low temperatures, and corner rounded. The average time chips spend in this area is 5.5 days. No VOC (HAP/TAP) from solvents are present in the chips after this process step when entering the Kiln Room. A small amount of organic material is present in the binder removed from the chips during processing in the burnout ovens.</p> <p>CMAP Support includes the Kiln Room, which contains electric burnout ovens and firing kiln ovens. The green chips enter burnout ovens to remove electrode ink binder material prior to ceramic firing. The burnout cycle time ranges from about 24 hours to as high as 30 hours with temperatures peaking at around 500 degrees F in inert and oxidizing atmospheres. After the binder material is evacuated from the chips, they enter the kilns to fire and cure (sinter) the ceramic. Average firing cycle time is 33 hours reaching a maximum temperature of 2300 degrees F.</p>
019	Metallization (METALLIZ) Department	<p>Metallization Department operations include the chip termination and plating processes. Previously, Termination and Plating Departments were separate emission units. To streamline the facility's operating permit, these departments have been combined.</p> <p>The termination process is the application of metal paste to capacitor chips to make the connection to the internal electrode layers. After application of the termination paste, the chips are fired on a time-temperature profile to bond the paste material to the electrode end of the capacitor. VOC in the terminations paste are emitted during the application and curing and exhausted through room exhausts. VOC and HAP emissions also result from denatured alcohol and iso spirits used to clean the equipment.</p> <p>Following termination, the electrode layer connections are then plated to provide a surface suited for solder application for product quality. There are five Spouted Bed Electrode (SBE) plating lines used for the small parts plating process. Small amounts of particulate matter, nickel, and lead are potentially emitted from the plating solutions in the SBE lines.</p>
020	Thin Film Process (TFP) Department	<p>As opposed to the traditional layering process in CMAP Buildup, the Thin Film Process creates electronic wafers using acid etching. The Thin Film Process is a considerably lower volume production operation (compared to CMAP) manufacturing specialty electronic wafer components. Emissions from the Thin Film Process are from the use of acid solutions. Soluble gases and PM are controlled by two parallel rotating, fluidized bed wet scrubbers.</p>
021	Miscellaneous Support	<p>In addition to the processes listed above, there are a number of other activities at the facility that support the manufacturing processes. Equipment such as a boiler, soldering pots, and a ground water air stripping system emit small amounts of criteria</p>



STATEMENT OF BASIS
Page 3 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

		pollutants and HAP. These are included in the Miscellaneous Support source group.
--	--	---

PROJECT DESCRIPTION

AVX has submitted an application to receive a Conditional Major operating permit per a meeting with SC DHEC (Veronica Barringer and Wanda Parnell) on 10/13/2014. Due to significant changes in the Myrtle Beach operations (including a decline in present production levels) and the removal of ethylene glycol monobutyl ether (EGBE) from the federal HAP list, AVX is demonstrating that the facility can now be considered an area source with respect to emissions of HAP. Therefore, this project will revise the facility's current operational classification as a major Title V source. The USEPA (EPA) Applicability Determination (Control No. M090018) and the facility's historical potential HAP emissions summary from 2005 to 2013 were included as part of the application.

The facility is also requesting a federally enforceable limit of 94,482 CMAP (chip buildup) machine-hours per year in order to limit its PTE VOC emissions to less than major source thresholds. This limit will allow up to 10.8 machines to run continuously in any consecutive 12-month period. There is no new construction associated with this application.

CHANGES SINCE LAST OP ISSUANCE

Date	Action
03/26/2014	One (1) labeling laser (Unit ID 019, Equip ID IA-TL) was decommissioned and removed.
05/08/2014	One (1) electrode milling machine (Unit ID 016, Equip ID MMILL) and four (4) electrode mixing machines (Unit ID 016, Equip ID MMIX) were removed.
06/25/2014	One (1) prep device for adding dry material to slurry (Unit ID ID 014, Equip ID RMMPPSC) was removed.
06/25/2014	One (1) dry dicing machine (Unit ID 018, Equip ID DD) was removed.
10/27/2014	Two (2) air motors to mix electrode inks (Unit ID 016, Equip ID MMIX) were removed.
10/27/2014	Two (2) pot mixers (Equip ID SMIX) were transferred from Unit ID 015 to Unit ID 014.
02/10/2015	Three (3) machines to mix electrode inks (Unit ID 016, Equip ID MMIX) and one (1) machine to mill electrode ink (Unit ID 016, Equip ID MMILL) were removed.
03/30/2015	Two (2) filter presses (Unit ID 016, Equip ID IA-MFP) were removed.
---	The following buildings have been decommissioned: APTC, MIS, M&E, MB1 (except Raw Materials, wastewater, and warehouse), and the Admin Building.
06/26/2015	Unit ID 016 emission sources were decommissioned and removed from the site.

SOURCE TEST REQUIREMENTS

A source test is not required for this project.

SPECIAL CONDITIONS, MONITORING, LIMITS

- (1) The former Title V permit required the two (2) TFP scrubbers (Unit ID 020, Control Device ID TFS) to be tested every 3 years or when process or design conditions change to warrant additional testing to ensure removal efficiencies are being met. The TFP is a specialty manufacturing process with a potential production of only 500 wafers per year. The scrubbers were initially tested on 12/10/2013. Test results showed that after 11 years in operation, the measured PM emission rate was 0.037 lb PM/hr, which is only 11% of the 0.318 lb PM/hr Standard No. 4 emission limit. In addition, the facility is enhancing the integrity inspections as required by this permit. In light of this and at the facility's request, the Department has re-evaluated and revised the test frequency of the scrubbers. Performance testing of the TFP scrubbers shall be performed 5 years from the date of the last test and every 5 years thereafter.
- (2) The facility currently has 18 CMAP machines (Equip ID CMAP) in the CMAP Buildup Department (Unit ID 017); however, all are not operational. For this application, the facility is requesting a federally enforceable limit of 94,482 CMAP machine-hours/year to limit the PTE VOC emissions to less than the major source threshold of 100 tons/year. This limit on CMAP machine-hours/year is based on a target uncontrolled VOC emission rate of 52.2 tons/year from the machines. With this limit, up to 10 CMAP machines could operate continuously for any 12-month period.
- (3) This application does not include emissions from the Adsorber/Desorber/Thermal Oxidizer system (Unit ID 017, Control Device IDs AD-1, AD-2, AD-3, and TO-1). The equipment is still located at the facility; however, the facility has assumed its operation is no longer necessary with this modification.
- (4) The facility's capacitor chip manufacturing process uses primarily a BC/PM solvent as a carrier for ceramic and electrode ink used for chip buildup in CMAP machines. A main component of BC/PM solvent is EGBE (2-butoxyethanol, CAS No. 111-76-2). In 1998, the facility initially applied for a permit to construct the new Manufacturing Building (MB2) to expand capacitor chip manufacturing at the Myrtle Beach location. At that time, EGBE was considered a HAP per CAA Section 112(b)(1) and was emitted at a significantly



STATEMENT OF BASIS
Page 4 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

higher rate than any other HAP at the facility. The MB2 air permit application included facility-wide potential emission estimates in excess of the 10/25 TPY major source HAP thresholds. Since there was no NESHAP applicable to the capacitor chip manufacturing process, the facility submitted a NESHAP 112(g) Case-by-Case Maximum Achievable Control Technology (MACT) application in May 2000 for the MB2 project. A permit to construct was granted that included operation of an Adsorber/Desorber/Thermal Oxidizer system to control organic HAP emissions from the MB2 CMAP machines determined to comply with Section 112(g). Refer to Construction Permits 1340-0002-CS and -CT issued 11/14/2000.

On 11/29/2004, the EPA published the final rule (FR Vol. 69, No. 228) removing EGBE from the CAA Section 112(b)(1) list of HAPs. It had previously been the facility's understanding that the facility was to remain classified as a major source per the EPA "once in, always in" (OIAI) policy regardless of the revised list of federal HAP. As such, the Myrtle Beach facility was required to operate per the requirements of the Title V Operating Permit issued 04/17/2013.

Recently, the Department (Veronica Barringer) advised the facility of a U.S. EPA Regulatory Determination (Control Number M090018) dated 08/26/2008 that similarly applies to the facility and the emissions of delisted EGBE. In summary, the Reynolds Flexible Packaging Plant in Louisville, KY requested that the EPA make a determination whether its facility was subject to a MACT following the removal of methyl ethyl ketone (MEK) from the federal HAP list. The EPA determination stated, in part: "When EPA removes (delists) a HAP from the CAA Section 112(b)(1) HAP list pursuant to the procedures specified in Section 112(b), we believe that it is appropriate to allow facilities to look back to the first substantive compliance date of the relevant Maximum Achievable Control Technology (MACT) standard and determine what the facility's potential to emit HAP on that date would have been without counting emissions of the delisted pollutant. If the results of the recalculation show that the facility's potential HAP emissions would have been below the major source thresholds on that date, and that potential HAP emissions since that date have not exceeded the major source thresholds, then EPA would consider the facility to have been an area source, rather than a major source, on the operative compliance date." Per the guidelines in the 08/26/2008 Applicability Determination, this facility has provided to the Department a historical potential HAP Emission Summary for the period of 2001 to present. Peak facility HAP emissions occurred in 2003 and 2004 as MB2's CMAP capacity increased. In 2005, the facility began reducing CMAP production capacity and moved bulk capacitor chip manufacturing to other facility locations. This trend continued through 2009. As indicated in the summary table, potential, uncontrolled HAP emissions excluding EGBE have historically been below the single 10 ton per year and aggregate 25 ton per year major source thresholds from the time of the 112(g) MACT determination. Accordingly, the facility has clearly demonstrated that facility-wide HAP emissions are less than 10/25 TPY and that it is, by definition, an area source for HAP emissions.

With this new application, the Department has determined that this facility is an area source for HAP emissions and is no longer required to hold a Title V Operating Permit. Refer to the files for the referenced documents and additional information.

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)					
Unit ID	Equipment ID	Pollutant	lb/hr	TPY	Method for Estimating Emissions
014	All Sources	PM	0.13	0.57	AP-42, 5 th Ed., Section 11.12, cement bin loading, 0.72 lb/ton, 1583 TPY
014	All Sources	PM ₁₀	0.13	0.57	AP-42, 5 th Ed., Section 11.12, cement bin loading, 0.72 lb/ton, 1583 TPY
014	All Sources	PM _{2.5}	0.13	0.57	AP-42, 5 th Ed., Section 11.12, cement bin loading, 0.72 lb/ton, 1583 TPY
015	All Sources	VOC	5.58	24.46	Production Records, Engineering Calculation – see TV renewal application dated 5/12/2011 for details
015	All Sources	Bis(2-ethylhexyl) Phthalate	0.03	0.13	Production Records, Engineering Calculation – see TV renewal application dated 5/12/2011 for details
015	All Sources	Methyl Alcohol	1.76E-03	7.70E-03	Production Records, Engineering Calculation – see TV renewal application dated 5/12/2011 for details
015	All Sources	Methyl Isobutyl Ketone	9.27E-04	4.06E-03	Production Records, Engineering Calculation – see TV renewal application dated 5/12/2011 for details



STATEMENT OF BASIS
Page 5 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)					
Unit ID	Equipment ID	Pollutant	lb/hr	TPY	Method for Estimating Emissions
017	CMAP	VOC	19.89	87.12	Process emission factor 70 kg material/machine/day
017	CMAP	Ethyl Benzene	0.07	0.29	Production Records, Engineering Calculation (See TV renewal application dated 05/12/2011 for details.)
017	CMAP	Bis(2-ethylhexyl) Phthalate	0.20	0.86	Production Records, Engineering Calculation (See TV renewal application dated 05/12/2011 for details.)
017	CMAP	Toluene	0.07	0.29	Production Records, Engineering Calculation (See TV renewal application dated 05/12/2011 for details.)
017	CMAP	Xylene	0.07	0.29	Production Records, Engineering Calculation (See TV renewal application dated 05/12/2011 for details.)
017	CMAPCLN	VOC	2.54	11.1	Production Records, Material Balance (See TV renewal application dated 05/12/2011 for details.)
017	CMAPCLN	Methyl Alcohol	0.024	0.11	Production Records, Material Balance (See TV renewal application dated 05/12/2011 for details.)
017	CMAPCLN	Methyl Isobutyl Ketone	0.013	0.06	Production Records, Material Balance (See TV renewal application dated 05/12/2011 for details.)
018	DD	PM	3.48	15.26	Material Recovery Records, Engineering Calculation – see TV renewal application dated 5/12/2011 for details
018	DD	PM ₁₀	3.48	15.26	Material Recovery Records, Engineering Calculation – see TV renewal application dated 5/12/2011 for details
018	DD	PM _{2.5}	3.48	15.26	Material Recovery Records, Engineering Calculation – see TV renewal application dated 5/12/2011 for details
018	DD	VOC	0.27	1.19	June 29, 2009 Source Test
019	TOVEN	VOC	0.52	2.29	Usage Records, Engineering Calculation (See TV renewal application dated 05/12/2011 for details.)
019	Termination (Cleaning)	VOC	1.15	5.05	Usage Records, Material Balance (See TV renewal application dated 05/12/2011 for details.)
019	Termination (Cleaning)	Methyl Alcohol	0.21	0.91	Usage Records, Material Balance (See TV renewal application dated 05/12/2011 for details.)
019	Termination (Cleaning)	Methyl Isobutyl Ketone	0.11	0.48	Usage Records, Material Balance (See TV renewal application dated 05/12/2011 for details.)
019	PBSBE	PM	2.38E-03	1.04E-02	Usage Records, Engineering Calculation (See TV renewal application dated 04/20/2012 for details.)



STATEMENT OF BASIS
Page 6 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)					
Unit ID	Equipment ID	Pollutant	lb/hr	TPY	Method for Estimating Emissions
019	PBSBE	PM ₁₀	2.38E-03	1.04E-02	Usage Records, Engineering Calculation (See TV renewal application dated 04/20/2012 for details.)
019	PBSBE	PM _{2.5}	2.38E-03	1.04E-02	Usage Records, Engineering Calculation (See TV renewal application dated 04/20/2012 for details.)
019	PBSBE	Nickel	2.28E-03	9.99E-03	Usage Records, Engineering Calculation – see TV renewal application dated 4/20/12 for details
019	PBSBE	Lead	7.01E-06	3.07E-05	Usage Records, Engineering Calculation – see TV renewal application dated 4/20/12 for details
020	TFP	PM	0.75	3.26	Summation of HAP/TAP acids, HF and lead compounds.
020	TFP	PM ₁₀	0.75	3.26	Summation of HAP/TAP acids, HF and lead compounds.
020	TFP	PM _{2.5}	0.75	3.26	Summation of HAP/TAP acids, HF and lead compounds.
020	TFP	VOC	0.47	2.07	Usage Records, Engineering Calculation (See TV renewal application dated 04/20/2012 for details.)
020	TFP	Lead	0.02	0.06	Usage Records, Engineering Calculation – see TV renewal application dated 9/5/11 for details
020	TFP	Hydrogen Fluoride	0.02	0.08	Usage Records, Engineering Calculation – see TV renewal application dated 9/5/11 for details
020	TFP	2-Ethanolamine	0.10	0.454	Usage Records, Engineering Calculation (See TV renewal application dated 09/05/2011 for details.)
020	TFP	Hydrochloric Acid	0.09	0.40	Usage Records, Engineering Calculation – see TV renewal application dated 9/5/11 for details
020	TFP	Nitric Acid	0.39	1.70	Usage Records, Engineering Calculation – see TV renewal application dated 9/5/11 for details
020	TFP	Phosphoric Acid	0.16	0.70	Usage Records, Engineering Calculation – see TV renewal application dated 9/5/11 for details
020	TFP	Sulfuric Acid	0.07	0.320	Usage Records, Engineering Calculation – see TV renewal application dated 9/5/11 for details
021	B201	PM	0.12	0.55	AP-42, 5 th Ed., Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf, 7.6 lb/10 ⁶ scf
021	B201	PM ₁₀	0.12	0.55	AP-42, 5 th Ed., Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	PM _{2.5}	0.12	0.55	AP-42, 5 th Ed., Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	NO _x	1.64	7.19	AP-42, 5 th Ed., Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf, 100 lb/10 ⁶ scf



STATEMENT OF BASIS
Page 7 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)					
Unit ID	Equipment ID	Pollutant	lb/hr	TPY	Method for Estimating Emissions
021	B201	SO ₂	0.01	0.04	AP-42, 5 th edition, Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf, 0.6 lb/10 ⁶ scf
021	B201	CO	1.38	6.04	AP-42, 5 th edition, Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf, 84 lb/10 ⁶ scf
021	B201	VOC	0.09	0.40	AP-42, 5 th edition, Tables 1.4-1 & 2; 16.738 4 MMBTU/hr, 1020 BTU/scf, 5.5 lb/10 ⁶ scf
021	B201	CO ₂	2.40	8.62	AP-42, 5 th Ed., Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	N ₂ O	0.04	0.16	AP-42, 5 th edition, Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf, 2.2 lb/10 ⁶ scf
021	B201	Methane	0.05	0.17	AP-42, 5 th Ed., Tables 1.4-1 & 2; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	Benzene	4.25E-05	1.51E-04	AP-42, 5 th Ed., Tables 1.4-3; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	POM	1.76E-06	6.34E-06	AP-42, 5 th Ed., Tables 1.4-3; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	Naphthalene	1.22E-05	4.38E-05	AP-42, 5 th Ed., Tables 1.4-3; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	Toluene	6.8E-05	2.44E-04	AP-42, 5 th Ed., Tables 1.4-3; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	Formaldehyde	1.50E-03	5.39E-03	AP-42, 5 th Ed., Tables 1.4-3; 16.738 MMBTU/hr, 1020 BTU/scf
021	B201	Hexane	0.03	0.129	AP-42, 5 th Ed., Tables 1.4-3; 16.738 MMBTU/hr, 1020 BTU/scf
021	SS	PM	0.002	0.01	AP-42, 5 th edition, Tables 12.19-1 (SMAW Welding Process)
021	SS	PM ₁₀	0.002	0.01	AP-42, 5 th edition, Tables 12.19-1 (SMAW Welding Process)
021	SS	PM _{2.5}	0.002	0.01	AP-42, 5 th edition, Tables 12.19-1 (SMAW Welding Process)
021	SS, ST	Lead	2.13E-05	9.32E-05	AP-42, 5 th edition, Tables 12.19-2 (SMAW Welding Process)
021	SS, ST	Chromium	1.71E-06	7.48E-06	AP-42, 5 th edition, Table 12.19-2 (SMAW Welding Process)
021	SS, ST	Manganese	1.11E-04	4.86E-04	AP-42, 5 th edition, Table 12.19-2 (SMAW Welding Process)
021	ST	VOC	0.50	2.19	Summation
021	ST	Ethylidene Dichloride	0.11	0.482	Vendor Model, 2001 Title V application
021	ST	Trichloroethylene	0.3	1.32	Vendor Model (Arcadis, July 2009)
021	ST	Vinyl Chloride	0.09	0.395	Vendor Model (Arcadis, July 2009)

CONTROLLED/LIMITED POTENTIAL EMISSIONS (PROJECT ONLY)					
Unit ID	Equipment ID	Pollutant	lb/hr	TPY	Method for Estimating Emissions
014	All Sources	PM	3.9E-05	1.7E-04	100% capture, 99.97% removal efficiencies
014	All Sources	PM ₁₀	3.9E-05	1.7E-04	100% capture, 99.97% removal efficiencies
014	All Sources	PM _{2.5}	3.9E-05	1.7E-04	100% capture, 99.97% removal efficiencies
017	CMAF	VOC	11.88	52.2	1.10 lb VOC/machine/hr (94,482 machine-hr/yr)



STATEMENT OF BASIS
Page 8 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

CONTROLLED/LIMITED POTENTIAL EMISSIONS (PROJECT ONLY)

Unit ID	Equipment ID	Pollutant	lb/hr	TPY	Method for Estimating Emissions
017	CMAP	Ethyl Benzene	0.039	0.17	Material Balance (94,482 machine-hr/yr)
017	CMAP	Bis(2-ethylhexyl) Phthalate	0.12	0.52	Material Balance (94,482 machine-hr/yr)
017	CMAP	Toluene	0.039	0.17	Material Balance (94,482 machine-hr/yr)
017	CMAP	Xylene	0.039	0.17	Material Balance (94,482 machine-hr/yr)
017	CMAPCLN	VOC	1.3	5.7	Material Usage Balance
017	CMAPCLN	Methyl Alcohol	0.01	0.05	Material Usage Balance
017	CMAPCLN	Methyl Isobutyl Ketone	1.12E-02	0.03	Material Usage Balance
018	DD	PM	0.05	0.23	100% capture, 99.5% removal efficiencies
018	DD	PM ₁₀	0.05	0.23	100% capture, 99.5% removal efficiencies
018	DD	PM _{2.5}	0.05	0.23	100% capture, 99.5% removal efficiencies
020	TFP	PM	0.01	0.03	Summation of HAP/TAP acids, HF, and lead compounds
020	TFP	PM ₁₀	0.01	0.03	Summation of HAP/TAP acids, HF, and lead compounds
020	TFP	PM _{2.5}	0.01	0.03	Summation of HAP/TAP acids, HF, and lead compounds
020	TFP	VOC	0.24	1.05	100% capture, 50% removal efficiencies
020	TFP	Lead	1.27E-04	5.57E-04	100% capture, 99% removal efficiencies
020	TFP	Hydrogen Fluoride	1.75E-04	7.67E-04	100% capture, 99% removal efficiencies
020	TFP	Hydrochloric Acid	9.18E-04	4.02E-03	100% capture, 99% removal efficiencies
020	TFP	Nitric Acid	3.88E-03	1.70E-02	100% capture, 99% removal efficiencies
020	TFP	Sulfuric Acid	7.21E-04	3.16E-03	100% capture, 99% removal efficiencies
020	TFP	Phosphoric Acid	1.59E-03	6.98E-03	100% capture, 99% removal efficiencies
020	TFP	2-Ethanolamine	5.19E-02	0.227	100% capture, 50% removal efficiencies

FACILITY WIDE EMISSIONS

Pollutant	CAS	Uncontrolled Emissions	Controlled/Limited Emissions
		TPY	TPY
PM		19.58	2.0
PM ₁₀		19.58	2.0
PM _{2.5}		19.58	2.0
SO ₂		0.04	0.04
NO _x		7.2	7.2
CO		6.0	6.0
VOC		128.18	< 100
Lead	7439-92-1	6.01E-02	6.81E-04
Ethanolamine	141-43-5	0.454	0.227
Benzene (H,T,V)	71-43-2	1.51E-04	1.51E-04
Bis(2-ethylhexyl) Phthalate (H,T,V)	117-81-7	0.992	0.652
Chromium (H)		7.48E-06	7.48E-06
Ethyl Benzene (H,T,V)	100-41-4	0.287	0.173
Ethylidene Dichloride (H,T,V)	75-34-3	0.482	0.482
Formaldehyde (H,T,V,112(f))	50-00-0	5.39E-03	5.39E-03
Hexane (H,T,V)	110-54-3	0.129	0.129
Sulfuric Acid (H ₂ SO ₄) (T)	7664-93-9	0.320	3.16E-03
Hydrochloric Acid (HCl) (H,T,112(f))	7647-01-0	0.40	4.02E-02
Hydrogen Fluoride (H,112(f))	7664393	0.08	7.67E-04
Manganese (H)	7439-96-5	4.86E-04	4.86E-04



STATEMENT OF BASIS
Page 9 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

FACILITY WIDE EMISSIONS			
Pollutant	CAS	Uncontrolled Emissions	Controlled/Limited Emissions
		TPY	TPY
Methyl Alcohol (H,T,V)	67-56-1	1.02	0.973
Methyl Isobutyl Ketone (MIBK) (H,T,V)	108-10-1	0.540	0.513
Naphthalene (H,T,V,P)	91-20-3	4.38E-05	4.38E-05
Nickel (H,T)	7440-02-0	9.99E-03	9.99E-03
Nitric Acid (HNO ₃) (T)	7697-37-2	1.70	1.70
Phosphoric Acid (T)	7664-38-2	0.70	0.70
Polycyclic Organic Matter (POM) (H,T,V)	50-32-8	6.34E-06	6.34E-06
Trichloroethylene (TCE) (H, T)	79-01-6	1.32	1.32
Toluene (H,T,V)	108-88-3	0.288	0.173
Vinyl Chloride (Chloroethylene) (H, T)	75-01-4	0.395	0.395
Xylene (H,T,V)	1330-20-7	0.287	0.219
CO ₂		8.62	8.62
Nitrous Oxide (N ₂ O)		0.16	0.16
Methane		0.17	0.17
Highest single HAP - Bis(2-ethylhexyl) Phthalate		0.997	0.652
Total HAP		5.87	5.04

Note: H = HAP; T = TAP; V = VOC

OPERATING PERMIT STATUS

This facility was last issued a Title V Operating Permit on 04/17/2013 and a subsequent revision on 07/16/2013. The facility is major for Title V for VOC emissions, but is requesting a federally enforceable emission limitation of less than 100 TPY VOC to avoid Title V applicability and to become a Conditional Major source.

REGULATORY APPLICABILITY REVIEW

Regulation	Comments/Periodic Monitoring Requirements																
Section II.E - Synthetic Minor	(Not Applicable) The facility is a major source of VOC emissions. However, the facility has taken federally enforceable emission limitations of less than 100 TPY VOC to avoid Title V applicability.																
Standard No. 1	<p>(Applicable) The Natural Gas-Fired Boiler (Unit ID 021, Equipment ID B201) is subject to Opacity (Section I), PM (Section II), and SO₂ (Section III) limits imposed by this standard.</p> <table border="1"> <thead> <tr> <th rowspan="2">Equip ID</th> <th rowspan="2">Opacity (%)</th> <th rowspan="2">PM Allowable 0.6 lb/10⁶ BTU (lb/hr)</th> <th rowspan="2">SO₂ Allowable 2.3 lb/10⁶ BTU (lb/hr)</th> <th colspan="2">Uncontrolled Emissions (lb/hr)</th> <th rowspan="2">Monitoring</th> </tr> <tr> <th>PM</th> <th>SO₂</th> </tr> </thead> <tbody> <tr> <td>B201</td> <td>20</td> <td>10.04</td> <td>38.5</td> <td>0.12</td> <td>0.01</td> <td>Burn only pipeline grade natural gas as fuel</td> </tr> </tbody> </table>	Equip ID	Opacity (%)	PM Allowable 0.6 lb/10 ⁶ BTU (lb/hr)	SO ₂ Allowable 2.3 lb/10 ⁶ BTU (lb/hr)	Uncontrolled Emissions (lb/hr)		Monitoring	PM	SO ₂	B201	20	10.04	38.5	0.12	0.01	Burn only pipeline grade natural gas as fuel
Equip ID	Opacity (%)					PM Allowable 0.6 lb/10 ⁶ BTU (lb/hr)	SO ₂ Allowable 2.3 lb/10 ⁶ BTU (lb/hr)		Uncontrolled Emissions (lb/hr)		Monitoring						
		PM	SO ₂														
B201	20	10.04	38.5	0.12	0.01	Burn only pipeline grade natural gas as fuel											
Standard No. 3 (state only)	(Not Applicable) This facility does not contain waste combustion or reduction sources.																
Standard No. 4	(Applicable) The emission sources below have opacity limits (including any fugitives) of 20% each and/or Particulate Matter (PM) allowable emissions rates (based on a process weight rate in tons per hour) imposed by this standard.																
	<table border="1"> <thead> <tr> <th>Unit</th> <th>PM</th> <th>Process</th> <th>Uncontrolled</th> <th>Controlled</th> <th>Monitoring</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Unit	PM	Process	Uncontrolled	Controlled	Monitoring										
Unit	PM	Process	Uncontrolled	Controlled	Monitoring												



STATEMENT OF BASIS
Page 10 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

Regulation	Comments/Periodic Monitoring Requirements					
	ID	Allowable (lb/hr)	Weight Rate (ton/hr)	PM Emissions (lb/hr)	PM Emissions (lb/hr)	
	014	3.22	0.7	0.13	3.9E-05	Weekly O & M checks; Daily pressure drop readings; Baghouses, scrubber operational at all times
	015	N/A	88.4	N/A	N/A	
	017	N/A	N/A	N/A	N/A	
	018	0.20	0.011	3.48	0.5	
	019	2.97	0.62	2.38E-03	2.38E-03	
	020	0.318	0.022	0.75	0.0074	
	021	1.83	0.30	0.002	0.002	
	<p>Note: All processes can comply with the limits based on production rates except for the TFP (Unit ID 020). The TFP must continue to operate and maintain the Thin Film Scrubber (Control Device ID TFS) in order to comply with the limit. Periodic testing of the scrubber efficiency is required.</p>					
Standard No. 5	(Not Applicable) None of the processes, which are regulated by this regulation, apply.					
Standard No. 5.1 (state only)	(Not Applicable) The facility was built before July 1, 1979. The facility's baseline VOC emissions as of the promulgation of this standard were 608 tons/year (based on 1978 emissions inventory data). The facility's current PTE VOC emissions is 134.34 tons/year. The facility is limited to less than 708 tons/year before being being subject to BACT/LAER.					
Standard No. 5.2	(Not Applicable) The natural gas-fired boiler (Unit ID 021, Equipment ID B201) was permitted to construct before 06/25/2004 and the burner assembly has not been replaced. The remaining sources (emergency power generators) fall under one of the seventeen exemptions from this standard.					
Standard No. 7	(Not Applicable) The facility's PTE for any pollutant is less than 250 TPY; therefore, the facility is not major for PSD.					
61-62.6	(Not Applicable) There are no fugitive PM (dust) emissions associated with this facility.					
40 CFR 60 and 61-62.60	(Applicable) Subpart Dc Standards of Performance For Small Industrial-Commercial-Institutional Steam Generating Units apply to each steam generating unit for which construction, modification, or reconstruction is commenced after 06/09/1989 and that has a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than or equal to 10 MMBtu/hr. Therefore, the boiler (Unit ID 021, Equipment ID B201) is an existing affected source subject to the applicable requirements of Subparts A and Dc and therefore, shall comply with the monthly fuel usage requirements.					
40 CFR 61 and 61-62.61	(Not Applicable) None of the processes, which are regulated by the regulation, apply.					
40 CFR 63 and 61-62.63	<p>This facility is an area source of HAP emissions (PTE is less than 10 TPY single HAP or less than 25 TPY total HAP).</p> <p>(Applicable) Subpart ZZZZ establishes national emission limitations and operating limitations for HAP emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. The 86 brake horsepower Diesel Fire Pump (Equipment ID DFP), 100 kW Diesel-Fired Emergency Engine (Equipment ID E1) and 565 kW Diesel-Fired Emergency Engine (Equipment ID E7), all exempt sources, are existing sources subject to this subpart. As applicable to existing, diesel-fired, emergency, non-contract response engines (less than 500 HP or greater than 500 HP), the facility shall keep records of maintenance on the engines, hours of operation, and ULSD fuel consumption.</p> <p>(Applicable) The plating operations (Unit ID 019, Equipment ID PBSBE) are existing affected sources subject to the applicable requirements of Subparts A and WWWW. The facility shall maintain records of work practice and maintenance requirements, wetting agent/fume suppressant application, and annual compliance certification.</p>					
61-62.68	(Not Applicable) The facility does not store or use chemicals subject to 112(r) above the threshold					



STATEMENT OF BASIS
Page 11 of 11
 BAQ Engineering Services Division

Company Name:	AVX Corporation	Permit Writer:	Wanda Parnell
Permit Number:	CM-1340-0002	Date:	8/18/15

Regulation	Comments/Periodic Monitoring Requirements
	quantities).
40 CFR 64	(Not Applicable) This is no longer a Title V facility, therefore CAM does not apply.

AMBIENT AIR STANDARDS REVIEW

Regulation	Comments/Periodic Monitoring Requirements
Standard No. 2	(Applicable) This facility has demonstrated compliance through modeling; see Modeling Summary dated 03/27/2015. No operational restriction has been established to ensure compliance with the modeled emission rates.
Standard No. 7.c	(Not Applicable) There are no MSBD established for PM ₁₀ , SO ₂ , or NO ₂ in Horry County.
Standard No. 8 (state only)	(Applicable) This facility has demonstrated compliance through modeling for all TAP; see Modeling Summary dated 03/27/2015.

PUBLIC NOTICE

This Conditional Major Permit will undergo a 30-day public notice period in accordance with SC Regulation 61-62.1, Section II(N). This permit was placed on the SC DHEC Public Notice website on July 16, 2015. The comment period was open from July 16, 2015 to August 14, 2015. No comments were received during the comment period.

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.