TECHNICAL REVIEW DOCUMENT
for
OPERATING PERMIT 98OPJE205
to be issued to:

ACX Technologies, Inc.
Coors Ceramics Company - Structural Division
Jefferson County
Source ID 0590066

Prepared by Ashley L. Kendall
January 15, 1999

I. Purpose:

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. The conclusions made in this report are based on information provided in the original application submittal of September 25, 1998. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short term emission and production/throughput limits on Construction permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, if applicable, appropriate modeling to demonstrate compliance with the National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison to annual emission limits unless there is a specific condition in the permit restricting hours of operation.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon

issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

II. Source Description:

This source is classified as an industrial ceramic manufacturing facility which falls into the Standard Industrial Classification 3264. The facility consists of twenty-five (25) natural gas-fired kilns, four (4) natural gas-fired spray dryers, Rubber mold press area and numerous insignificant activities. Raw materials in powder form are mixed with water to form a wet slurry. The slurry is sent to the spray dryers. The spray dryers spray product at a constant rate which evaporates the appropriate amount of liquid forming a dry slurry. All spray dryers are controlled with a combination of baghouses, cyclones and/or wet scrubbers to collect the product. The dry slurry is then molded and fired in the appropriate kiln. Several other insignificant activities take place at different steps in the process to create completed products such as wear-resistant bricks, grinding balls and various structural ceramic parts.

The facility is located in the city of Golden in Jefferson County within an area designated as non-attainment for PM-10 and CO. This facility is within 100 km of two Class I areas, Eagles Nest Wilderness area and Rocky Mountain National Park. There are no states within 50 miles. The applicant certified that they are not subject to the provisions of the Section 112(r) or the Federal Clean Air Act. During technical review it was determined the newest spray dryer is subject to New Source Performance Standard (NSPS) Subpart UUU, Standards of Performance for Calciners and Dryers in Mineral Industries. Facility wide emissions are as follows:

Pollutant	Potential to Emit (tpy)	Actuals (tpy)
PM/PM10	16.08	10.96
NOx	77.97	43.41
VOC	102.7	57.14
CO	149.54	84.88
SO2	29.23	17.25

Potential emissions include the most recent APENs submitted (dated 9/21/98) as well as insignificant activities indicated in the Title V application. Actual emissions are from calculations in the application for data from 10/96 to 9/97 plus insignificant activities indicated in the Title V application.

A representative stack test was performed on one of each group of kilns and spray dryers. The tests were done at maximum process throughput in order to obtain emission factors that represented both combustion gases as well as particulate from the process.

III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site:

<u>Units L-1, L-2, L-3 and I-2</u> - Four (4) Low Temperature Continuous Kilns, Three (3) Tunnel Kilns and One (1) Circular Tunnel Kiln, Rated at 5.445, 13.8, 7.0, and 2.49 MMBtu/hr.

<u>Units L-33, L-68, L-84, L-95</u> - Four (4) High Temperature Continuous Tunnel Kilns, Three (3) Rated at 2.52 MMBtu/hr each and One (1) at 6.5 MMBtu/hr.

<u>Units L-6, L-12, L-(20-23), L-30, L-45, L-58, L-82, L-83, L-112</u> - Twelve (12) High Temperature Periodic Kilns, Four (4) Kilns Rated at 1.176, 10.0, 10.0 and 5.4 MMBtu/hr, Three (3) Tube Kilns Rated at 4.944, 4.944 and 7.716 MMBtu/hr, Four (4) Updraft Kilns Rated at 5.562 for Three (3) and 8.613 and One (1) Downdraft kiln at 4.0 MMBtu/hr.

<u>Units L-80, L-18, L-19, L-8 and L-81</u> - Five (5) Low Temperature Periodic Kilns, One (1) Kiln Rated at 6.75 MMBtu/hr, Two (2) Updraft Kilns Rated at 4.545 MMBtu/hr each and Two (2) Test Kiln/Furnaces Rated at 0.972 MMBtu/hr each.

<u>Dryers # 1, 2, 4 and 5</u> - Two (2) Spray Dryers Controlled with Micro-Pulsaire Dust Collectors Rated at 3.24 and 5.4 MMBtu/hr, One (1) Slip Spray Dryer Controlled with a Cyclone and Secondary Wet Scrubber Rated at 2.403 MMBtu/hr and One (1) Ceramic Slip Dryer Controlled with a Cyclone and Sly Dust Collector Rated at 4.76 MMBtu/hr.

Discussion:

1. Applicable Requirements- The low temperature continuous kilns were installed and began operating in 1929, 1942, 1949 and 1934.

The high temperature continuous kilns were installed in 1966, 1973, 1991 and 1995.

The high temperature periodic kilns were installed in 1929, 1961, 1969, 1975, 1988, 1993 and one yet to be installed in 1998/1999.

The low temperature periodic kilns were installed in 1953, 1954, 1960 and 1980.

The spray dryers were installed in 1943, 1962, 1978 and 1997.

All units installed prior to February 1, 1972 were originally grandfathered from permitting requirements, however, a facility wide construction permit (95JE1059) was issued December 14, 1998 including all significant emission points at the facility with the following applicable requirements:

Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes.

Emissions of air pollutants shall not exceed the following limitations:

Particulate Matter	19.31 tons per year
PM10	19.31 tons per year
Sulfur Dioxide	20.23 tons per year
Nitrogen Oxides	54.40 tons per year
VOCs	67.98 tons per year
Carbon Monoxide	105.73 tons per year

The emissions above were determined based on a limited fuel use in an attempt to be classified as a synthetic minor source. With the addition of another kiln the source determined that it was major and applied for an operating permit. Within the operating permit application, the source requested higher throughputs and slightly different emission factors due to representative stack tests and the addition of propane as a back-up fuel. The emissions limits for the facility are the following:

Particulate Matter	12.56 tons per year
PM10	12.56 tons per year
Sulfur Dioxide	28.52 tons per year
Nitrogen Oxides	67.17 tons per year
VOCs	101.16 tons per year
Carbon Monoxide	146.29 tons per year

The table titled, “Coors Ceramics’ attached at the end of this technical review document separates out the emissions for each group of emission sources

Screen 3 modeling was conducted using the maximum design rates of the equipment. The emission limits requested above will not violate any National Ambient Air Quality Standards.

The total natural gas consumption of all ceramic kilns covered by APENs 1, 2, 3, and 4 shall not exceed 325 million cubic feet per year. This limit has been increased to 509 MMscf/yr. 206.9 MMscf/year for the low temperature continuous kilns, 117.3 MMscf/yr for the high temperature continuous kilns, 153.26 MMscf/yr for the high temperature periodic kilns, 30.62 MMscf/yr for the low temperature periodic kilns and 50.00 MMscf/year for the spray dryers.

The source requested in their operating permit application to use propane as a back-up fuel. The following propane consumption limits correspond to the requested facility emissions; 2386.19 Mgal/year for the low temperature

continuous kilns, 1352.81 Mgal/year for the high temperature continuous kilns, 1767.49 Mgal/year for the high temperature periodic kilns, 353.12 Mgal/year for the low temperature periodic kilns and 576.64 Mgal/year for the spray dryers.

All manufacturing processes are subject to the requirements of Regulation No. 1.III.C.1. - Standards of Performance for Manufacturing Processes.

All manufacturing processes constructed, reconstructed, or modified after January 30, 1979 are subject to the requirements of Regulation No. 6., Part B, Section III.C. - Standards of Performance for New Manufacturing Processes.

APEN submittal as required by Regulation No. 3, Part A.II.

Also applicable but not included in the construction permit for this facility is Regulation No. 1.III.A.1 for all fuel burning equipment and Regulation No. 6, Part B.II. - Standards of Performance for New Fuel Burning Equipment, for all fuel burning equipment constructed, reconstructed, or modified after January 30, 1979.

In addition Spray Dryer # 5 is subject to NSPS Subpart UUU - Standards of Performance for Calciners and Dryers in Mineral Industries requirements (as adopted by reference in Regulation No. 6, Part A, Subpart UUU). Applicable requirements include particulate matter less than or equal to 0.057 g/dscm and opacity no greater than 10%. Because a dust collector is used to control emissions a continuous emissions monitor must be installed, calibrated, maintained and operated to measure and record the opacity. An initial performance test per 40 CFR 60.8 is also required. The source is subject to Regulation No. 6, Part A, Subpart A as applicable.

Some units on the construction permit were determined to be insignificant activities and have been removed as significant emission sources. Those units have been included in the list of insignificant activities in part IV below.

All the spray dryers are equipped with a combination of control equipment used for product recovery and are therefore considered inherent to the process.

The due date of the first semi-annual monitoring report required by this operating permit will be more than 180 days after the initial approval construction permit was issued and/or the equipment commenced operation. Therefore, the Division considers that the Responsible Official certification submitted with that report will serve as the self-certification for construction permit 95JE1059 and the appropriate provisions of the construction permit have been directly incorporated into this operating permit.

2. Emission Factors - Emissions from these units are produced during the combustion process, and are dependent upon operating conditions and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NO_X), Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Sulfur Oxides (SO_X), Particulate Matter (PM and PM_{10}) and Lead. Small quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency. The Compliance Emission Factors used to determine compliance with emission limits in the Permit are from stack tests and include the portion of particulate emissions from processing the material. The emission factors were converted from the lb/hr stack test value to lb/MMscf for each group of equipment. The emission factors for natural gas combustion are listed below, AP-42 emission factors are shown on the last line for comparison purposes.

Equipment	PM/PM10	SOx	NOx	VOC	CO
Low Temp Cont.	79	152	148	239	370
High Temp Cont.	10	66	305	91	344
High Temp Period.	10	31	232	263	735
Low Temp Period.	79	420	75	2873	1998
Spray Dryers	73	5	101	210	10
AP-42 (1.4-1)	7.6	.6	100	5.5	84

The emission factors for propane combustion are from AP-42 1.5-1 (10/96), 'Emission Factors for LPG Combustion' in lb/Mgal.

3. Monitoring Plan - The source will record metered natural gas on a monthly basis and use the emission factors stated above to calculate emissions on a rolling twelve month total. If propane is used during the year, the amount shall be recorded and emissions included in the months it was used.

4. Compliance Status - Current APENs reporting criteria and hazardous air pollutants are on file with Division. The source certified to being in compliance with all applicable requirements. Therefore, this facility is currently considered to be in compliance with all applicable requirements.

<u>Press</u> - Rubber Mold Press Area.

Discussion:

1. Applicable Requirements- The installation date of this area is unknown. The uncontrolled actual emissions for this facility are above the deminimis levels, therefore, a permit is required under Regulation No. 3, Part B. A facility wide construction permit (95JE1059) was issued December 14, 1998 and includes this point. Applicable requirements for this unit include the following:

Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes.

Facility wide emissions shall not exceed the following limitations:

Particulate Matter	12.56 tons per year
PM10	12.56 tons per year
Sulfur Dioxide	28.52 tons per year
Nitrogen Oxides	67.17 tons per year
VOCs	101.16 tons per year
Carbon Monoxide	146.29 tons per year

APEN submittal as required by Regulation No. 3, Part A.II.

2. Emission Factors - The pollutant of concern for this unit is Volatile Organic Compounds (VOC). Emissions from this unit are produced from heating the rubber during molding. The emission factors below were supplied by the source on their most recent APEN (9/15/97).

Pollutant	Emission Factor
VOC	0.859 lb/hr

A limit of 1.718 tons/yr is based on a requested maximum of 4000 hrs/yr.

3. Monitoring Plan - The source shall determine emissions on a monthly basis and total the facility wide emissions to compare to the rolling twelve month limit.

4. Compliance Status - Current APENs reporting criteria pollutants are on file with the Division. The source certified to being in compliance with all applicable requirements. Therefore, this facility is currently considered to be in compliance with all applicable requirements.

IV. Insignificant Activities

TEK vacuum induction furnace
PVT electric furnace
Elatec Ceramvac radiative vacuum furnace
Sam Dick Q 1375V vaporizer
Cupmaker drying oven
Peerless process heater
Peerless plant heater
Cleaver Brooks steam (bldg.) heater
Rheem, Lennox et al HVAC units (comfort heaters)
American Wheelabrator refractory presses
Various dry presses, 3 electric kilns
Various operations (dryers, sanders, lathe, glaze machines, presses and pelletizers)
Material handling
Refractory/SiC Dust Collector
Three electric ovens and a electric periodic kiln
Spray coating booth
Large wash line
Fume hood
Lab outlets
Small electric tunnel kiln
Two LPG pressurized tanks, 18,000 gal each

V. Alternative Operating Scenarios

No alternative operating scenarios were requested.

VI. Permit Shield

Regulation No 3, Part B, Section IV.D.2 (NSR) - This source is a major stationary source for CO with respect to New Source Review (NSR) requirements. Prior modifications at this facility did not trigger major NSR requirements. However, future modifications at this facility above the significant level thresholds may trigger NSR requirements.