

# Fact Sheet



## *For Final Renewal Permitting Action Under 45CSR30 and Title V of the Clean Air Act*

Permit Number: R30-09700001-2010  
Application Received: 05-28-2008  
Plant Identification Number: 097-00001  
Permittee: Saint-Gobain Ceramics and Plastics, Inc.  
dba. Corhart Refractories  
Mailing Address: Route 10, Box 82  
Buckhannon, WV 26201

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Physical Location: Buckhannon, Upshur County, West Virginia  
UTM Coordinates: 465.3 km Easting • 4,316.8 km Northing • Zone 17  
Directions: Interstate 79 to Exit 99. Proceed east on US Route 33 to Route 151 at Brushy Fork. Go east on Route 151 to Liggett Avenue. Travel 1/10 mile to plant on the left.

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### **Facility Description**

The Corhart Refractories Buckhannon facility is a non-clay refractory manufacturing facility covered by Standard Industrial Classification (SIC) 3297. The facility has the potential to operate seven (7) days per week, twenty-four (24) hours per day and fifty-two (52) weeks per year. The Title V renewal application encompasses seven (7) natural gas fueled dryers, twenty two (22) natural gas fueled kilns, one (1) diesel fueled emergency back-up electrical generator, various pieces of equipment to form articles, one (1) bulk material storage bin, various crushers, screeners, and mixers for material handling, various machines for surface grinding, sawing, milling, drilling, lathes, and packaging equipment.

The operations at the facility are broken up into three product lines, chromium oxide, zirconium silicate (zircon), and tin oxide. All products are used for refractory type applications mainly within the glass industry. The tin oxide, which makes up the smallest fraction of products, is used as a heating electrode. The other products are primarily used to line high temperature glass melting vessels and troughs.

The chromium oxide product is made up of chromium (III) oxide [Cr<sub>2</sub>O<sub>3</sub>] and small amounts of binder and titanium oxide. These raw materials are blended and pressed into various forms. This green material is dried and then treated in high temperature kilns for cycles extending from 7 to 28 days. The chromium oxide product utilizes a reducing atmosphere within the kilns, which results in fuel rich burner mixtures.

The Zircon product is made up of zirconium (IV) silicate [ZrSiO<sub>4</sub>] and small amounts of binder. This particular product requires a certain percentage of grog, which is pre-fired zirconium silicate that has been pressed and dried and then ground and reintroduced as raw material. Zircon production utilizes isostatic pressing techniques to form various shapes that are then treated in high temperature kilns for cycle times extending from 13 to 50 days.

Tin oxide products also contain small amounts of antimony dioxide and cupric oxide. They are isomolded into shapes and then heat treated in high temperature kilns, which reaches 1480 C, for an 11 day cycle.

After the heat treating process the products are cut into various shapes, assembled into customer defined geometries like a puzzle and then labeled for shipping.

## Emissions Summary

<b>Plantwide Emissions Summary [Tons per Year]</b>		
<b>Regulated Pollutants</b>	<b>Potential Emissions</b>	<b>2008 Actual Emissions</b>
Carbon Monoxide (CO)	166.42	27.01
Nitrogen Oxides (NO <sub>x</sub> )	73.38	25.02
Particulate Matter (PM <sub>10</sub> )	5.86	3.81
Total Particulate Matter (TSP)	5.86	3.81
Sulfur Dioxide (SO <sub>2</sub> )	0.48	0.10
Volatile Organic Compounds (VOC)	68.87	7.34
<i>PM<sub>10</sub> is a component of TSP.</i>		
<b>Hazardous Air Pollutants</b>	<b>Potential Emissions</b>	<b>2008 Actual Emissions</b>
Total Chrome	0.017	0.007702
Benzene	0.0015	0.000321
Formaldehyde	0.053	0.011469

*Some of the above HAPs may be counted as PM or VOCs.*

## Title V Program Applicability Basis

This facility has the potential to emit 166 tons per year of carbon monoxide (CO). Due to this facility's potential to emit over 100 tons per year of criteria pollutant, Corhart Refractories is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

**Legal and Factual Basis for Permit Conditions**

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the State of West Virginia Operating Permit Rule 45CSR30 for the purposes of Title V of the Federal Clean Air Act and the underlying applicable requirements in other state and federal rules.

This facility has been found to be subject to the following applicable rules:

Federal and State:	45CSR2 45CSR6 45CSR7 45CSR10 45CSR11 45CSR13 WV Code § 22-5-4 (a) (14)  45CSR30 40 C.F.R. Part 61 40 C.F.R. Part 82, Subpart F	Opacity limits Open burning prohibited. Particulate matter and opacity limits Sulfur dioxide limit for kilns and dryers Standby plans for emergency episodes.  The Secretary can request any pertinent information such as annual emission inventory reporting. Operating permit requirement. Asbestos inspection and removal Ozone depleting substances
State Only:	45CSR4	No objectionable odors.

Each State and Federally-enforceable condition of the draft Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the draft Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the draft Title V permit as such.

The Secretary's authority to require standards under 40 C.F.R. Part 60 (NSPS), 40 C.F.R. Part 61 (NESHAPs), and 40 C.F.R. Part 63 (NESHAPs MACT) is provided in West Virginia Code §§ 22-5-1 *et seq.*, 45CSR16, 45CSR15, 45CSR34 and 45CSR30.

**Active Permits/Consent Orders**

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit ( <i>if any</i> )
R13-0412	6-28-1978	
R13-0536	1-3-1980	
R13-0778	2-11-1985	
R13-2412	11-6-2000	
R13-2433B	12-10-2009	

Conditions from this facility's Rule 13 permit(s) governing construction-related specifications and timing requirements will not be included in the Title V Operating Permit but will remain independently enforceable under the applicable Rule 13 permit(s). All other conditions from this facility's Rule 13 permit(s) governing the source's

operation and compliance have been incorporated into this Title V permit in accordance with the "General Requirement Comparison Table B," which may be downloaded from DAQ's website.

**Determinations and Justifications**

The renewal application reflects the removal of #2, #5, and #7 zircon dryers, the #1 chrome dryer and K-3 kiln as well as the 044 boiler. Additional equipment changes involve the X, Y, Z, HW, K-29 press batch mixers, and the 047 batch hopper that were removed from the Title V equipment table, but not from the facility. These changes are a result of emission point modifications that removed each of the vertical outlet stacks. The baghouse control devices now vent inside the building with new finish filters being placed on their outlets. As a result of these equipment changes, a number of original Title V permit sections were removed as follows: Section 8.0 – (044 boiler), Section 9.0 – (024-028 Mixers), and Section 12.0 – (Batch Hopper #47).

Since the original Title V permit was issued, the 050 car bell kiln K-36 was added to the facility within section 6.0 of the proposed permit as new equipment permitted under minor source NSR permit R13-2433A in 2005. Also, on April 7, 2009, the permittee submitted a request for a minor modification to their Title V permit, which involved the addition of a small R&D Kiln #38, point ID 051. This kiln is rated at 4.0 MMBtu/hr using natural gas and therefore, no minor source NSR permitting thresholds were triggered. As a result, this new R&D kiln was added as a new manufacturing source subject to 45CSR7 PM requirements within section 6.0. Please see additional details discussed further below. Permit R13-2433A was further revised to R13-2433B on December 10, 2009, to incorporate new NOx limits as well as a consolidation of R13-2182A equipment. The history of this consolidation is discussed further below.

During this review, the writer determined the following consent order documents were no longer in effect. All compliance plans were satisfied and complete. Rebecca Johnson, DAQ Enforcement and Compliance Inspector, was also involved in the review and came to a similar conclusion that all obligations established within the orders have been satisfied.

Permit or Consent Order Number	Date of Issuance	Description of Compliance Plan
CO 97-43	7-20-1997 (10-14-1997)	Action Plan submit permit modification for Kilns 26,27,30,33, 34
CO-R13,30-E-2007-11	10-19-2007	Kiln 35 emission test. First test showed violation of CO and VOC limits. 2 <sup>nd</sup> test showed that a cold thermal oxidizer TO was the problem and compliance was verified when TO set point raised from 1200 to 1500F
CO-R30-E-2004-07	7-2-2004	Opacity Reduction Plan Discontinued use of PEG400

Additionally, while the Title V renewal permit was being processed, WV DEP Division of Air Quality's Enforcement and Compliance Group was evaluating a non compliance situation involving elevated NOx emissions from several kilns. The elevated NOx levels were brought to light during a stack testing event, which focused in on the high temperature regions of the firing cycle for kilns utilizing excess air mixtures. Kilns that were tested as well as others having similar operating profiles were identified as K-26, K-27, K-30, K-33, K-34, K-35, and K-36. As a result, the permittee submitted an application to revise their minor source NSR, Rule 13 (45CSR13) permits, to reflect a new hourly limit, which shall be complied with during kiln cycle times above 1480° C. In order to incorporate all affected equipment the NSR permit writer consolidated permit number R13-2182A into a new R13-2433B modification permit. The requirements of this new permit alleviated the noncompliance situation and were therefore, incorporated within the Title V renewal permit within sections 4.0 and 6.0.

Within the original Title V permit, conditions 4.1.6, 4.1.7, 4.1.8, 4.1.9, 6.1.7, 6.1.8, 6.1.9, 6.1.10, 7.1.4, 7.1.5, 7.1.6, and 7.1.7 all relating to 45CSR7 PM requirements were relocated to the facility wide section of the permit under conditions 3.1.9, 3.1.10, and 3.3.1. This was due to the general nature of these requirements as well as their applicability spanning more than just one section of the Title V permit.

Original permit condition 4.1.5 was also removed and was determined to no longer be needed as a result of the more specific PM limits contained with 4.1.2. In order to facilitate this change, condition 4.1.2 was also updated to add streamlining language that addresses compliance with the original 45CSR7 PM requirement, 45CSR7-4.1.

Additionally, streamlining language was removed from 5.1.1 of the original permit, which pertained to a PM limit placed on an emergency generator. The streamlining language specified that this PM limit also demonstrated compliance with 45CSR7 for manufacturing sources. During this review it was determined that the generator did not constitute a manufacturing source and therefore 45CSR7 limitations were not applicable.

Within section 6.0, which is specific to kilns 35, 36, and 38, condition 6.1.5 was removed as a result of no longer having any subject storage structures. This condition was originally incorporated to prohibit PM emissions from raw material storage operations in accordance with 45CSR§7-3.7 however, all material handling activities now vent within the building and are tightly controlled. Additionally, condition 6.1.12 was incorporated for new emission unit 51s (R&D Kiln) in order to recognize the permittee's voluntary limit of 0.051 lb PM/hr. This limit was requested during a minor modification request of April 7, 2009. This PM requirement justifies streamlining language that also addresses compliance with 45CSR§7-4.1. The opacity requirement for the new 51s kiln are proposed within 6.1.6 in accordance with 45CSR§7-3.1. Corresponding monitoring is also incorporated within 6.2.2 under Title V's authority to implement necessary monitoring in order to demonstrate compliance with applicable standards. This Title V authority was cited under the monitoring section of 6.2.2 as 45CSR§30-5.1.c. Also, within section 6.0, the monitoring requirement of proposed condition 6.2.3 also exercised Title V's authority to implement necessary monitoring requirements in accordance with 45CSR§30-5.1.c. This requirement pertains to measuring operating temperatures of kilns K-49 and K-50 as well as their within their respective afterburner control devices. The original 45CSR13 permit starts out saying that afterburners and kilns shall be equipped with a temperature measuring device however, the rest of the language goes on to only address the specifics of the afterburner combustion chamber. The writer found it necessary to also add "each kiln" and afterburner shall measure representative combustion chamber temperatures.

Original permit conditions 7.3.1, 10.3.1, and 11.3.1, which cited 45CSR§7-8.1 testing requirements, were deleted to alleviate the duplication in multiple sections, this condition was therefore consolidated within facility wide condition 3.3.1. As a result of this change, new language was added to the corresponding Zircon, Chrome, and Brick Dryer Section 8.0, Grandfathered Kilns – Section 7, and for the Zircon Spray Dryer, Section 9.0 of the proposed renewal. This new language provides a cross link reference to the facility wide testing section 3.3.1. Additionally, recordkeeping provisions for opacity monitoring were added under newly proposed sections 7.4.1, 8.4.1, and 9.4.1, corresponding to original permit conditions 7.4.1, 10.4.1 and 11.4.1, to recognize the facility wide recordkeeping requirement of 3.4.1.

### **Non-Applicability Determinations**

The following requirements have been determined not to be applicable to the subject facility due to the following:

This facility was evaluated for 40CFR64 CAM applicability and was found not to have any uncontrolled pollutant specific emission units, which exceed major source thresholds. Carbon monoxide is the only pollutant to exceed 100 tons per year facility as a result of aggregate emissions from multiple kilns and dryers. Most of the kilns actually don't emit much more than 10 tpy CO per kiln.

40 C.F.R. 63, subpart DDDDD – National Emission Standards for Hazardous Air Pollutants: Industrial/Commercial/Institutional Boilers and Process Heaters (Major Sources). This regulation does not apply to Corhart because the facility is not defined as a major source of HAPs.

40 C.F.R. 63, subpart SSSSS – National Emission Standards for Hazardous Air Pollutants: Refractory Products Manufacturing (Major Sources). This regulation does not apply to Corhart because the facility is not a major source of HAPs.

40 C.F.R. 63, subpart HH – National Emission Standards for Hazardous Air Pollutants: Natural Gas Production Facilities including area sources. Although there is a small TEG unit onsite the permittee does not operate the unit. The unit is under contract with and operated by the gas company.

### **Request for Variances or Alternatives**

None

### **Insignificant Activities**

Insignificant emission unit(s) and activities are identified in the Title V application.

### **Comment Period**

Beginning Date: February 19, 2010

Ending Date: March 19, 2010

All written comments should be addressed to the following individual and office:

Jesse Hanshaw, P.E.  
Title V Permit Writer  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

### **Procedure for Requesting Public Hearing**

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall grant such a request for a hearing if he/she concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

### **Point of Contact**

Jesse Hanshaw, P.E.  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304  
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### **Response to Comments (Statement of Basis)**

No comments received.