Company Name:	Showa Denko Carbon, Inc.	**Permit Writer:**	Sheila Watts
Permit Number:	0900-0025-CZ	**Date:**	06/08/2012

DATE APPLICATION RECEIVED: June 14, 2011 Expedited PSD Permit Request (denied June 15, 2011)
August 8, 2011 Expedited PSD Permit Request (Accepted August 11, 2011)
February 17, 2012 Revised PSD Permit Application Received

OCRM APPROVAL: June 20, 2011

DATE OF LAST INSPECTION: January 19, 2011. A comprehensive inspection was completed and compliance status was delayed, pending BAQ review of the exempt status of baghouse CD-110-01A, listed in Construction Permit 0900-0025-CW-R1. BAQ has determined since baghouse (CD-110-01A) vents to another baghouse (CD-110-02), that baghouse CD-110-02 will have testing requirements as part of the TV renewal.

FACILITY DESCRIPTION The facility manufactures graphite electrodes for use in the steel manufacturing industry.

PROJECT DESCRIPTION This is a Class I expedited PSD project. This project is for a proposed increase in the production of finished graphite electrodes from 45,000 to 85,000 metric tons per year. Modifications to the facility will involve the use of existing processes and/or new processes (duplication of existing process). Detailed source descriptions along with equipment ID will be provided under the Emissions category of this statement of basis. The following processes will be added and/or modified as part of the proposed construction:

1) Mill, Mix, and Extrusion process – This process involves the steps required to mix two (2) primary ingredients (needle coke and binder pitch) to form green electrodes. The proposed expansion will include a new Mill, Mix, and Extrusion Process. After the proposed expansion there, will be two (2) Mill, Mix, and Extrusion Processes located at the facility.
2) Bake/Rebake Process – This process involves the use of carbottom furnaces to Bake and Rebake the electrodes. The Bake cycle is the baking of the green electrodes in the carbottom furnaces. The Rebake cycle involves use of the carbottom furnaces to rebake the electrodes after they are impregnated by impregnation pitch. The proposed expansion will include a new Bake/Rebake Process that will be composed of fifteen (15) carbottom furnaces. After the proposed expansion, there will be two (2) Bake/Rebake Processes located at the facility, with a total of 32 carbottom furnaces on site.
3) Rebake Load and Unload/Graphitizing Preparation – This process involves preparing the rebaked pitch impregnated electrodes for graphitizing. The proposed project will use existing sources for the Rebake Load and Unload/Graphitizing Preparation process; however, some sources in this process will be relocated within the facility.
4) Bake Load and Unload and Baked Electrode Cleaning – This process involves getting the green electrodes ready for baking by loading them upright into stainless steel cylinders (saggers) and the void space is packed with sand to support the electrodes. When baking is complete, the electrodes are unloaded and the sand is recycled back to the feed process. The baked electrode is cleaned to remove residual sand and surface debris. The proposed project will only use existing sources for the Bake Load and Unload and Baked Electrode Cleaning process.
5) Pitch Impregnation – This process involves baked and cleaned electrodes being fed into preheaters to prepare them for pitch impregnation (increases the density of the electrodes). After impregnation, electrodes are cooled in water spray coolers and a water trough; placed in non-supporting baskets; and loaded on carbottom platforms for the rebake process. Pitch has normally been delivered to the facility in liquid form; however, due to supply issues of liquid pitch, the facility currently operates a temporary solid pitch melting system. The facility will continue to use both the solid and liquid pitch in their pitch impregnation process. The proposed project will use existing sources and new sources for the Pitch Impregnation process.
6) Insulating Media Receiving – Insulating media is delivered by truck and transferred to a storage silo and is then transferred from the storage silo to the graphitizing building in hoppers. A crane mounted vacuum system (gulper system) is used to transfer the insulating media from graphitizing building to the furnaces. The proposed project will only use existing sources for the Insulating Media Receiving process.
7) Graphitizing – This process involves the electrodes being placed on insulating media coke and connected to a direct current (DC) circuit. The electrodes are covered with additional insulating media for thermal insulation and power is supplied to the electrodes through a rectifier. The electrodes are in the graphitizing furnaces from 5 to 24 hours. The graphitizing process changes the crystalline structure of the amorphous carbon to graphitic carbon, decreasing the resistivity and increasing the machinability. When the furnace cycle is complete and the insulating media has cooled, the insulating media is transferred pneumatically by the gulper system. The graphite electrodes are transferred to the cleaning and inspection process and the insulating media is sorted to remove fines that are unusable in the graphitizing furnaces. Coarse materials are stored in the gulper system and replaced into the furnaces for reuse. Sorted fines are stored in an outside silo. Showa Denko currently operates 27 graphitizing furnaces. The

proposed expansion will include a new Graphitizing Process that will be composed of ten (10) graphitizing furnaces. The existing Graphitizing Process will undergo modifications as part of the proposed project. After the proposed expansion, there will be two (2) Graphitizing Processes located at the facility.

8) Cleaning and Inspection – The graphitized electrodes are cleaned to remove any residual insulating media coke and are inspected for resistivity. The proposed project will only use existing sources for the Cleaning and Inspection process; however, some sources in this process will be relocated within the facility.
9) Machining and Shipping – Clean graphitize electrodes are transferred to machining and finishing. The machining process involves turning electrodes to final diameter and machining threaded sockets into the ends. Matching threaded graphite connecting pins are then inserted into one end of the electrode. Also, stripes and other identifying marks are painted on the electrodes. Graphite tailings and chips generated by the machining process are screened and stored in various bins, bagged, then packaged for delivery to customers. The proposed project will only use existing sources for the Machining and Shipping process.

*Currently Showa Denko uses petroleum coke for needle coke and uses metallurgical coke as the insulating media. Petroleum coke and metallurgical coke will continue to be used for the proposed project as well.

SOURCE TEST REQUIREMENTS The following table includes all equipment (process, equipment ID and description) that may be subject to source testing as part of this permit. All control devices that previously had equipment ID starting with CE are now identified beginning with CD.

PROCESS	EQUIPMENT ID	DESCRIPTION
New Mill, Mix, and Extrusion	E-110-2-4203-15	Green Scrap Service Bin No. 1&2; store green scrap
New Mill, Mix, and Extrusion	E-110-2-4216-06	Green Scrap Weigh Scale; weigh green scrap for appropriate feed to mixers
New Mill, Mix, and Extrusion	E-110-2-4203-01	Service Bin Nos. 1&2; store coke of specific size and specific material
New Mill, Mix, and Extrusion	E-110-2-4203-03	Service Bin Nos. 3&4; store coke of specific size and specific material
New Mill, Mix, and Extrusion	E-110-2-4203-07	Service Bin Nos. 5&6; store coke of specific size and specific material
New Mill, Mix, and Extrusion	E-110-2-4203-09	Service Bin Nos. 7&8; store coke of specific size and specific material
New Mill, Mix, and Extrusion	E-110-2-4203-11	Service Bin Nos. 9&10; store coke of specific size and specific material
New Mill, Mix, and Extrusion	E-110-2-4203-13	Service Bin Nos. 11&12; store coke of specific size and specific material
New Mill, Mix, and Extrusion	E-110-2-4203-15	Service Bin Nos. 13&14; store coke of specific size and specific material
New Mill, Mix, and Extrusion	E-110-2-4223-02	Coarse Coke Bucket Elevator
New Mill, Mix, and Extrusion	E-110-2-4223-03	Fines Coke Bucket Elevator
New Mill, Mix, and Extrusion	E-110-2-4202-02	Inside Coke Crusher Bin; sort coke of various size
New Mill, Mix, and Extrusion	E-110-2-4291-02	Double Roll Crusher; crush coke to finer size
New Mill, Mix, and Extrusion	E-110-2-4221-02	Primary Coarse Coke Screen; sort coke to various size
New Mill, Mix, and Extrusion	E-110-2-4221-03	Secondary Coarse Coke Screen; sort coke to various sizes
New Mill, Mix, and Extrusion	E-110-2-4221-04	Fines Screen; sort coke to various sizes
New Mill, Mix, and Extrusion	E-110-2-4202-03	Cage Impactor Crusher Bin
New Mill, Mix, and Extrusion	E-110-2-4293-01	Cage Impactor Crusher; crush coke to finer size

New Mill, Mix, and Extrusion	E-110-2-4216-01	Coke Weigh Scale No. 1; weigh coke for appropriate feed to mixers
New Mill, Mix, and Extrusion	E-110-2-4216-02	Coke Weigh Scale No. 2; weigh coke for appropriate feed to mixers
New Mill, Mix, and Extrusion	E-110-2-4216-03	Coke Weigh Scale No. 3; weigh coke for appropriate feed to mixers
New Mill, Mix, and Extrusion	E-110-2-4216-04	Coke Weigh Scale No. 4; weigh coke for appropriate feed to mixers
New Mill, Mix, and Extrusion	E-110-2-4232-01	Mixer Feed System Pan Conveyor
New Mill, Mix, and Extrusion	E-110-2-4227-29	Scale No. 1 Retractable Spout
New Mill, Mix, and Extrusion	E-110-2-4227-30	Scale No. 2 Retractable Spout
New Mill, Mix, and Extrusion	E-110-2-4227-31	Scale No. 3 Retractable Spout
New Mill, Mix, and Extrusion	E-110-2-4227-32	Scale No. 4 Retractable Spout
New Mill, Mix, and Extrusion	E-110-2-4204-01	Pre-heat Hopper No. 1; preheats coke before discharge to mixers
New Mill, Mix, and Extrusion	E-110-2-4204-02	Pre-heat Hopper No. 2; preheats coke before discharge to mixers
New Mill, Mix, and Extrusion	E-110-2-4205-11	Coke Silo #11; store recycled coke of various sizes
New Mill, Mix, and Extrusion	E-110-2-4223-04	Recycle Coke Bucket Elevator; transports coke from silo #11 through coarse coke loop
New Mill, Mix, and Extrusion	E-110-2-4221-08	Coarse Belt Conveyor; transfer point between existing 110 and 110-2 buildings
New Mill, Mix, and Extrusion	E-110-2-4221-09	Fines Belt Conveyor; transfer point between existing 110 and 110-2 buildings
New Mill, Mix, and Extrusion	E-110-2-4221-23	Recycle Belt Conveyor; transfers material to coke silo #11
New Mill, Mix, and Extrusion	E-110-2-4202-04	Mill Feed Bin
New Mill, Mix, and Extrusion	E-110-2-4202-05	Iron Oxide Bin; store iron oxide
New Mill, Mix, and Extrusion	E-110-2-4216-05	Iron Oxide Scale; weigh iron oxide for appropriate feed to mixers
New Mill, Mix, and Extrusion	E-110-2-4253-01/ E-110-2-4253-02/ E-110-2-4253-03/ E-110-2-4253-04	Mixer Nos. 1 – 4
New Mill, Mix, and Extrusion	E-110-2-4221-10	Mixer Discharge Belt
New Mill, Mix, and Extrusion	E-110-2-4222-20	Screw Spreader
New Mill, Mix, and Extrusion	E-110-2-4221-11	Cooling Belt Position 1
New Mill, Mix, and Extrusion	E-110-2-4221-12	Cooling Belt Position 2
New Mill, Mix, and Extrusion	E-110-2-4253-05	Homogenizer
New Mill, Mix, and Extrusion	E-110-2-4221-13	Homogenizer Discharge Belt
New Mill, Mix, and Extrusion	E-110-2-4283-03	Coke Silo #2 Vibrating Feeder
New Mill, Mix, and Extrusion	E-110-2-4283-04	Coke Silo #3 Vibrating Feeder
New Mill, Mix, and Extrusion	E-110-2-4283-06	Coke Silo #4 Vibrating Feeder
New Mill, Mix, and Extrusion	E-110-2-4283-07	Coke Silo #5 Vibrating Feeder
New Mill, Mix, and Extrusion	E-110-2-4283-20	Coke Silo #1 Vibrating Feeder
New Mill, Mix, and Extrusion	E-110-2-4283-24	Coke Silo #8 Vibrating Feeder
New Mill, Mix, and Extrusion	E-110-2-4283-25	Coke Silo #7 Vibrating Feeder
New Mill, Mix, and Extrusion	E-110-2-4205-09	Coke Silo #9; vibrating feeder x 2
New Mill, Mix, and Extrusion	E-110-2-4205-10	Coke Silo #10; vibrating feeder x 2

New Mill, Mix, and Extrusion	E-110-2-4221-03	Coarse Belt Conveyor; transfer point between silo conveyor and transfer conveyor
New Mill, Mix, and Extrusion	E-110-2-4221-05	Fines Belt Conveyor; transfer point between silo conveyor and connecting conveyor
New Mill, Mix, and Extrusion	E-110-2-4221-07	Fines Belt Conveyor; transfer point between connecting conveyor and transfer conveyor
New Mill, Mix, and Extrusion	E-110-2-4275-01	5 million Btu/hr Hot Oil Heater
New Mill, Mix, and Extrusion	E-110-25	Binder Pitch Tank
New Mill, Mix, and Extrusion	CD-110-2-4345-02	Baghouse
New Mill, Mix, and Extrusion	CD-110-2-4345-01	Baghouse
New Mill, Mix, and Extrusion	CD-110-2-4345-22	Baghouse
New Mill, Mix, and Extrusion	CD-110-2-4345-24	Baghouse
New Mill, Mix, and Extrusion	CD-110-4345-28	Dry Fume Scrubber/Baghouse
New Mill, Mix, and Extrusion	CD-110-2-4345-03	Baghouse
New Mill, Mix, and Extrusion	CD-110-14	Vent Condenser
New Bake/Rebake	E-210-2-4271-18/32	Fifteen (15), 18 million Btu/hr Carbottom Furnaces
New Bake/Rebake	CD-210-2-4333-01	16 million Btu/hr Thermal Oxidizer
Existing Rebake Load and Unload/Graphitizing Preparation	E-220-01	End Facing Machine; prepare electrode face
Existing Rebake Load and Unload/Graphitizing Preparation	E-220-02	Basket Cleaner; clean rebake baskets
Existing Rebake Load and Unload/Graphitizing Preparation	E-220-03	Pitch Coke Crusher; crush pitch chips from basket cleaner
Existing Rebake Load and Unload/Graphitizing Preparation	E-220-04	Pitch Coke Storage Silo; store crushed pitch chips
Existing Rebake Load and Unload/Graphitizing Preparation	E-220-05	Pitch Coke Loading Station; load petroleum pitch to transport vehicles as product
Existing Rebake Load and Unload/Graphitizing Preparation	E-220-06	Storage Bin; store carbon chips
Existing Rebake Load and Unload/Graphitizing Preparation	CD-220-01	Carborundum Co. Model HP1015-S Baghouse
Existing Bake Load and Unload and Baked Electrode Cleaning	E-250-02	Sand Storage Bin; store used sand from recycle system
Existing Bake Load and Unload and Baked Electrode Cleaning	E-250-03	Sagger Loading System; load sagger can with sand and electrode
Existing Bake Load and Unload and Baked Electrode Cleaning	E-250-04	Sagger Unloading System; remove electrode and sand from saggers
Existing Bake Load and Unload and Baked Electrode Cleaning	E-250-06	Sagger Cleaning; clean sagger cans for reuse
Existing Bake Load and Unload and Baked Electrode Cleaning	E-250-07	Electrode Cleaner; remove residual sand from electrode/surface preparation
Existing Bake Load and Unload and Baked Electrode Cleaning	CD-250-01	Carborundum Co. Model W16 HPS-7B Bin Vent Filter
Existing Bake Load and Unload and Baked Electrode Cleaning	CD-250-02	Carborundum Co. Model HP1015-S Baghouse
Existing Bake Load and Unload and	CD-250-03	Carborundum Co. Model HP1015-S

Baked Electrode Cleaning		Baghouse
Existing Bake Load and Unload and Baked Electrode Cleaning	CD-250-04	LSTC Air Vent Filter, Model 551 STC81, Style III Baghouse
New Pitch Impregnation	E-310-2-4272-21	One (1) Preheater, 12.0 million Btu/hr (6.0 million Btu/hr x 2 zones)
New Pitch Impregnation	E-310-2-4201-01	One (1) Autoclave/Spray Cooler/Cooling Bath
New Pitch Impregnation	E-310-2-4275-01	5 million Btu/hr Hot Oil Heater
New Pitch Impregnation	CD-310-2-4333-01	7.5 million Btu/hr Thermal Oxidizer
Existing Pitch Impregnation	E-310-04	40,000 Gallon Impregnation Pitch Storage Tank; store impregnation pitch from delivery truck
Existing Pitch Impregnation	E-310-09	25,345 Gallon Impregnation Pitch Storage Tank; store melted pitch
Existing Pitch Impregnation	E-310-10	25,345 Gallon Impregnation Pitch Storage Tank; store melted pitch
Existing Pitch Impregnation	CD-310-07	Vent Condenser
Existing Pitch Impregnation	CD-310-08	Vent Condenser
Existing Pitch Impregnation	CD-310-09	Vent Condenser
Existing Insulating Media Receiving	E-410-01	Insulating Media Unloading Station; unload insulating media from delivery truck
Existing Insulating Media Receiving	E-410-02	Insulating Media Silo; store insulating media
Existing Insulating Media Receiving	E-420-03	Transport Hopper Loading – hopper is transferred via forklift from building 410 to building 430
Existing Insulating Media Receiving	CD-410-01	Carborundum Co. Model HP1015-TH Baghouse
Existing Insulating Media Receiving	CD-430-02	Mikropul Model 109-8-231 Baghouse
New Graphitizing	E-460-4271-01/10	Ten (10) Graphitizing Furnaces; graphitize electrodes
New Graphitizing	E-460-4349-02	Sodium Carbonate Storage Bin (supports SO_2 scrubber system)
New Graphitizing	E-460-4225-01	Gulper System; feed/remove insulating media to graphitizing furnaces
New Graphitizing	E-460-4202-01	Insulating media Dust Bin; stores fines of insulating media
New Graphitizing	E-460-4202-06	Insulating media Dust Bin; load insulating media fines to truck
New Graphitizing	E-460-4202-02	Insulating media Recycle (gulper system)
New Graphitizing	CD-460-4349-03	Wet Scrubber
New Graphitizing	CD-460-4349-02	Baghouse
New Graphitizing	CD-460-02	Baghouse
New Graphitizing	CD-460-04	Baghouse
Existing Graphitizing	E-430-01	Twenty-seven (27) Graphitizing Furnaces; graphitize electrodes
Existing Graphitizing	CD-430-01	Wet Scrubber
Existing Cleaning and Inspection	E-490-01	Electrode Cleaning Machine; remove residual insulating media from electrode
Existing Cleaning and Inspection	CD-490-01B	SLY ST J-811-10 Baghouse

Existing Machining and Shipping	E-510-01	Station No. 1 – rough bore and face ends; machining/finishing of electrodes
Existing Machining and Shipping	E-510-02	Station No. 2 – finish turn OD and face ends; machining/finishing of electrodes
Existing Machining and Shipping	E-510-03	Station No. 3 – threading; machining/finishing of electrodes
Existing Machining and Shipping	E-510-06	Graphite Chip Screen; screen graphite chips to various sizes
Existing Machining and Shipping	E-510-07	Graphite Storage Bin #1; store graphite of specific size
Existing Machining and Shipping	E-510-08	Graphite Storage Bin #2; store graphite of specific size
Existing Machining and Shipping	E-510-09	Graphite Storage Bin #3; store graphite of specific size
Existing Machining and Shipping	E-520-10	Powderizer System; screen graphite chips to specific sizes
Existing Machining and Shipping	E-520-12	Cyclone Collector; collects fines from graphite dust
Existing Machining and Shipping	E-520-13	Bag Packer; packs fines from cyclone collector
Existing Machining and Shipping	CD-510-01	Carborundum Co. Model HP1015 Baghouse
Existing Machining and Shipping	CD-510-05	TONT DALDSON DFT 4-32 Baghouse
Existing Machining and Shipping	CD-510-06	MAC 96A VR14 Style III Baghouse

SPECIAL CONDITIONS, MONITORING, LIMITS Special conditions, monitoring, and limits are listed in the preliminary determination, statement of basis project regulatory review applicability section, and the permit.

PUBLIC NOTICE This construction permit will undergo a 30-day public notice period and a 45-day EPA comment period to establish PSD and 112g limits in accordance with SC Regulation 61-62.1, Section II(N). This permit was placed in The Journal Scene newspaper on April 13, 2012. The comment period was open from April 13, 2012 to May 16, 2012 and was placed on the BAQ website during that time period.

ADDITIONAL PUBLIC PARTICIPATION A question and answer session along with a public hearing was held on May 14, 2012 at the Ridgeville Town Hall Auditorium located at 105 School Street in Ridgeville, South Carolina 29472

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4203-15	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = green scrap; and throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4216-06	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	1.80 0.86 0.13	7.9 3.7 0.57	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = green scrap; throughput of 15 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4203-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.425 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4203-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.425 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4203-07	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.425 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4203-09	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.425 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4203-11	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.425 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4203-13	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.425 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4203-15	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.425 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4223-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4223-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4202-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4291-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-04	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4202-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4293-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4216-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4216-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4216-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4216-04	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4232-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4227-29	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4227-30	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4227-31	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4227-32	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4204-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4204-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4205-11	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4223-04	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-08	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-09	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-23	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.80 2.28 0.344	21.02 10.0 1.51	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 40 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4202-04	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	3.00 1.43 0.215	13.14 6.2 0.94	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 25 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4202-05	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.10 0.048 0.0074	0.4 0.2 0.03	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.068 lb/ton, 0.032 lb/ton, and 0.0049 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = iron oxide; throughput of 1.5 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4216-05	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.10 0.048 0.0074	0.4 0.2 0.03	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.068 lb/ton, 0.032 lb/ton, and 0.0049 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = iron oxide; throughput of 1.5 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4253-01/ E-110-2-4253-02/ E-110-2-4253-03/ E-110-2-4253-04/ E-110-2-4221-10/ E-110-2-4222-20/ E-110-2-4221-11/ E-110-2-4221-12/ E-110-2-4253-05/ E-110-2-4221-13	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) VOC POM (V,H,T)	2.26 1.078 0.162 0.71 0.71	9.9 4.7 0.73 3.12 3.12	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke/green scrap; throughput of 18 tons/hr. Emission factors (0.068 lb/ton, 0.032 lb/ton, and 0.0049 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = iron oxide; throughput of 1.5 tons/hr VOC and POM uncontrolled emissions were based on a source test of the fume particulator conducted 12/21/93 at the facility. Results from the test showed 0.42 lbs/hr POM entering the fume particulator; assuming a maximum production rate of 11.5 tons/hr. For the new sources a maximum production rate of 19.5 tons/hr correlates to 0.71 lbs/hr of VOC and POM TPY emissions for PM, PM_{10}, $PM_{2.5}$, VOC, and POM are based on 8760 hrs/yr
E-110-2-4283-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	7.20 3.42 0.52	31.5 15.0 2.26	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 60 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4283-04	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4283-06	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4283-07	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4283-20	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4283-24	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4283-25	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4205-09	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4205-10	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-05	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-2-4221-07	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	6.00 2.85 0.43	26.3 12.5 1.88	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors (0.12 lb/ton, 0.057 lb/ton, and 0.0086 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = pet coke; throughput of 50 tons/hr TPY emissions based on 8760 hrs/yr
E-110-25	VOC POM (V,H,T)	3.96 3.96	0.30 0.30	Uncontrolled lb/hr emission rate for VOC and POM was estimated using physical properties of coal tar pitch into the ideal gas law to calculate a vapor density. Calculated vapor density = 0.00282 lbs/ft^3 Hourly average pumping rate = 175 gal/min Annual throughput = 1.57 million gal/year

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-210-2-4271-18/32	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 NO_x VOC POM (V,H,T) GHG (CO_2e)	410 410 410 275 275 275 46.67 61.2 1,414 1,414 5,265.5	1780 1780 1780 1210 1210 1210 141.3 181.85 6,191 6,191 23,065 (short tons)	Filtered PM and PM_{10} emissions are based on a stack test (01/1985). An emission factor of 0.3125 lbs of filterable PM/hr/furnace in fuming condition was developed. Engineering tests (10/2011) confirmed the emission factor. $PM_{2.5}$ emissions are assumed to be equal to PM_{10}. Condensable PM, PM_{10}, and $PM_{2.5}$ are based on engineering tests (10/2011) where an emission factor of 0.2118 lbs of condensable PM/hr/furnace in fuming condition was developed. The facility has stated that only 14 of the 17 existing furnaces and 13 of the 15 proposed furnaces can operating in a fuming condition state at any given time. For process SO_2 emissions, the facility developed emission models based on mass balance calculations, engineering testing data (09/2011 and 12/2011), and raw material sulfur content of needle coke, binder pitch, and impregnation pitch. For process NO_x emissions, the facility developed emission models based on mass balance calculations, analytical data, engineering testing data (09/2011 and 12/2011), and raw material nitrogen content of needle coke, binder pitch, and impregnation pitch. POM emissions are based on mass balance of electrodes before and after the bake/rebake process. POM emissions from furnaces are calculated conservatively, assuming no POM is combusted within the furnace. POM is a VOC, therefore VOC emissions = POM emissions. Process CO_2 emissions were calculated based on Equation F-7 of 40 CFR Part 98 Subpart F, Greenhouse Gas Reporting for Aluminum Production. TPY emissions based on 8760 hrs/yr
E-310-2-4201-01	VOC POM (V,H,T)	300 300	1,313 1,313	0.0965 tons of pitch absorbed by each ton of electrode fed to rebake process; 54,427 tons electrodes/yr; total pitch absorbed = 5,252.2 tons/yr; pitch purchased = 6,565 tons/yr Tons per year uncontrolled VOC and POM emissions = {Pitch purchased (TPY) – Pitch absorbed (TPY)} Converted to lb/hr using conversion factors (8760 hrs/yr and 2000 lbs/ton)
E-460-4271-01/10	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 NO_x CO	7.67 7.63 7.60 5.0 5.0 5.0 329.9 2.5	33.6 33.4 33.3 22.1 22.1 22.1 721.7 11.1 4,572	Stack test (1984) was used to estimate PM, PM_{10}, (assumed $PM_{2.5}$=PM_{10}=PM); PM emission factor of 0.00061 lbs PM/lb production was developed based on the 1984 stack test; a cumulative PM condensable emission factor of 4.06 x 10^{-4} lbs of condensable PM per lb of electrode was developed based on previous permitting assumptions and engineering testing data. PM_{10}, and $PM_{2.5}$ and part of PM emissions were calculated using equation (1) from AP-42,

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
	Chromium Mercury GHG (CO_2e)	1,690 $3.82x10^{-5}$ $1.57x10^{-7}$ 7,500.4	$1.68x10^{-4}$ $6.91x10^{-7}$ 32,852	Chapter 13.2.4, Aggregate Handling and Storage Piles, emission factors (0.013 lb/ton, 0.006 lb/ton, and 0.00091 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = metallurgical coke; throughput of 5.51 tons/hr. SO_2 peak hourly and annual emissions were calculated based on sulfur content of raw materials, mass balance equations, analytical data, and engineering test data. Peak hourly and annual NO_x emissions were calculated using a NO_x emission factor of 2.042×10^{-4} lbs of NOx per lb of electrode which was developed based on engineering testing data (11/2011). The existing graphitizing furnaces are equipped with a CO CEMs. CO CEMs data from 2007 and 2008 was used to develop a CO emission factor of 0.136 lbs of CO per lb of electrode for max. hourly and 0.084 lbs of CO per lb of electrode for annual emissions. Chromium and Mercury emissions are calculated as a function of uncontrolled filterable PM and based on supplier information that states the insulating media contains 4.98 mg of chromium per kg of insulating media and 0.0202 mg of mercury per kg of insulating media. Chromium and Mercury emissions represent material handling from graphitizing furnaces + graphitizing furnaces. Process CO_2 emissions were calculated based on Equation F-8 of 40 CFR Part 98 Subpart F, Greenhouse Gas Reporting for Aluminum Production minus carbon equivalent CO emissions. TPY emissions based on 8760 hrs/yr
E-460-4349-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) Chromium Mercury	0.26 0.120 0.018 $1.29x10^{-6}$ $5.36x10^{-9}$	1.14 0.53 0.08 $5.67x10^{-6}$ $2.35x10^{-8}$	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors PM, PM_{10}, and $PM_{2.5}$ (0.013 lb/ton, 0.006 lb/ton, and 0.00091 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = metallurgical coke; throughput of 20 tons/hr Chromium and Mercury emissions are calculated as a function of uncontrolled filterable PM and based on supplier information that states the insulating media contains 4.98 mg of chromium per kg of insulating media and 0.0202 mg of mercury per kg of insulating media. TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-460-4225-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) Chromium Mercury	0.33 0.15 0.023 $1.62x10^{-6}$ $6.70x10^{-9}$	1.42 0.66 0.10 $7.09x10^{-6}$ $2.93x10^{-8}$	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors PM, PM_{10}, and $PM_{2.5}$ (0.013 lb/ton, 0.006 lb/ton, and 0.00091 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = metallurgical coke; throughput of 25 tons/hr Chromium and Mercury emissions are calculated as a function of uncontrolled filterable PM and based on supplier information that states the insulating media contains 4.98 mg of chromium per kg of insulating media and 0.0202 mg of mercury per kg of insulating media. TPY emissions based on 8760 hrs/yr
E-460-4202-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) Chromium Mercury	0.33 0.15 0.023 $1.62x10^{-6}$ $6.70x10^{-9}$	1.42 0.66 0.10 $7.09x10^{-6}$ $2.93x10^{-8}$	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors PM, PM_{10}, and $PM_{2.5}$ (0.013 lb/ton, 0.006 lb/ton, and 0.00091 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = metallurgical coke; throughput of 25 tons/hr Chromium and Mercury emissions are calculated as a function of uncontrolled filterable PM and based on supplier information that states the insulating media contains 4.98 mg of chromium per kg of insulating media and 0.0202 mg of mercury per kg of insulating media. TPY emissions based on 8760 hrs/yr
E-460-4202-06	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) Chromium Mercury	0.33 0.15 0.023 $1.62x10^{-6}$ $6.70x10^{-9}$	1.42 0.66 0.10 $7.09x10^{-6}$ $2.93x10^{-8}$	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors PM, PM_{10}, and $PM_{2.5}$ (0.013 lb/ton, 0.006 lb/ton, and 0.00091 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = metallurgical coke; throughput of 25 tons/hr Chromium and Mercury emissions are calculated as a function of uncontrolled filterable PM and based on supplier information that states the insulating media contains 4.98 mg of chromium per kg of insulating media and 0.0202 mg of mercury per kg of insulating media. TPY emissions based on 8760 hrs/yr

UNCONTROLLED POTENTIAL EMISSIONS (Project Only)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-460-4202-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) Chromium Mercury	0.33 0.15 0.023 1.62×10^{-6} 6.70×10^{-9}	1.42 0.66 0.10 7.09×10^{-6} 2.93×10^{-8}	Equation (1) from AP-42, 5th Edition, Vol. I, Chapter 13, Section 13.2.4, Aggregate Handling and Storage Piles was used to calculate emission factors PM, PM_{10}, and $PM_{2.5}$ (0.013 lb/ton, 0.006 lb/ton, and 0.00091 lb/ton for PM, PM_{10}, and $PM_{2.5}$ respectively); Material = metallurgical coke; throughput of 25 tons/hr Chromium and Mercury emissions are calculated as a function of uncontrolled filterable PM and based on supplier information that states the insulating media contains 4.98 mg of chromium per kg of insulating media and 0.0202 mg of mercury per kg of insulating media. TPY emissions based on 8760 hrs/yr

1) Process PM emissions from the New Mill, Mix, and Extrusion process are estimated to be filterable PM. This is based on engineering test data from targeted material handling sources. Test data indicated condensable PM was below the detection limit from these sources.
2) Process filterable PM emissions from the New Bake/Rebake process were derived from stack test data (01/1985) and confirmed by engineering tests (10/2011). Process condensable PM emissions from the New Bake/Rebake process are estimated based on engineering tests (10/2011).
3) Engineering tests (11/2011) were used to measure PM emissions from the Existing Graphitizing process in order to estimate process PM emissions from the New Graphitizing process. Although a measurable PM condensable emission was not detected, previous assumptions and engineering testing data were used to develop PM condensable emissions values for the New Graphitizing process. The remaining proposed equipment for the New Graphitizing furnaces only represents filterable PM emissions since test data indicated condensable PM was below the detection limit from these sources.

UNCONTROLLED POTENTIAL EMISSIONS from New Sources due to Combustion (PROJECT ONLY)				
ID	**Pollutant**	**(lb/hr)**	**(TPY)**	**Method for Estimating Emissions**
E-110-2-4275-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 CO NO_x VOC Lead GHG (CO_2e)	0.01 0.01 0.01 0.03 0.03 0.03 0.003 0.41 0.50 0.06 2.45×10^{-6} 706	0.05 0.05 0.05 0.12 0.12 0.12 0.01 1.81 2.20 0.24 1.07×10^{-5} 3,093 (short tons)	For natural gas usage, emissions factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.4, Tables 1.4-1 and 1.4-2, Natural Gas Combustion; Heat capacity of natural gas = 1020 Btu/ft^3 For propane usage, emission factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.5, Table 1.5-1, Liquefied Petroleum Gas Combustion; Heat capacity of 90,500 Btu/gal; sulfur content = 0.0014% weight AP-42 low NOx burner emission factor = 9.1 lbs/1000 gal 40 CFR Part 98, Subpart A, Table A-1 – Global Warming Potentials Total heat input = 5 million Btu/hr

UNCONTROLLED POTENTIAL EMISSIONS from New Sources due to Combustion (PROJECT ONLY)				
ID	**Pollutant**	**(lb/hr)**	**(TPY)**	**Method for Estimating Emissions**
E-210-2-4271-18/32	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 CO NO_x VOC Lead GHG (CO_2e)	0.597 0.597 0.597 1.509 1.509 1.509 0.159 22.38 11.76 2.98 1.32×10^{-4} 38,138.13	2.61 2.61 2.61 6.61 6.61 6.61 0.70 98.01 51.5 13.07 5.80×10^{-4} 167,045 (short tons)	Calculations for all pollutants except NO_x involved emissions factors based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.4, Tables 1.4-1 and 1.4-2, Natural Gas Combustion; Heat capacity of natural gas = 1020 Btu/ft^3 or AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.5, Table 1.5-1, Liquefied Petroleum Gas Combustion; Heat capacity of 90,500 Btu/gal; sulfur content = 0.0014% Emission factors used depended on which fuel type (natural gas or propane) resulted in the worst case of emissions for each pollutant. Total heat input = 270 million Btu/hr NOx emissions were based on facility developed emissions models using propane gas as fuel and an AP-42 low NO_x burner emission factor = 9.1 lbs/1000 gal 40 CFR Part 98, Subpart A, Table A-1 – Global Warming Potentials
CD-210-2-4333-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 CO NO_x VOC Lead GHG (CO_2e)	0.035 0.035 0.035 0.089 0.089 0.089 0.009 1.33 2.30 0.177 7.48×10^{-6} 2,260	0.15 0.15 0.15 0.39 0.39 0.39 0.04 5.81 10.07 0.77 3.44×10^{-5} 9,899 (short tons)	For natural gas usage, emissions factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.4, Tables 1.4-1 and 1.4-2, Natural Gas Combustion; Heat capacity of natural gas = 1020 Btu/ft^3 For propane usage, emission factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.5, Table 1.5-1, Liquefied Petroleum Gas Combustion; Heat capacity of 90,500 Btu/gal; sulfur content = 0.0014% weight 40 CFR Part 98, Subpart A, Table A-1 – Global Warming Potentials Total heat input = 16 million Btu/hr
E-310-2-4272-21	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 CO NO_x VOC Lead GHG (CO_2e)	0.027 0.027 0.027 0.067 0.067 0.067 0.007 0.994 1.21 0.133 5.88×10^{-6} 1,695	0.12 0.12 0.12 0.29 0.29 0.29 0.03 4.36 5.29 0.58 2.58×10^{-5} 7,424 (short tons)	For natural gas usage, emissions factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.4, Tables 1.4-1 and 1.4-2, Natural Gas Combustion; Heat capacity of natural gas = 1020 Btu/ft^3 For propane usage, emission factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.5, Table 1.5-1, Liquefied Petroleum Gas Combustion; Heat capacity of 90,500 Btu/gal; sulfur content = 0.0014% weight AP-42 low NOx burner emission factor = 9.1 lbs/1000 gal 40 CFR Part 98, Subpart A, Table A-1 – Global Warming Potentials Total heat input = 12 million Btu/hr

UNCONTROLLED POTENTIAL EMISSIONS from New Sources due to Combustion (PROJECT ONLY)				
ID	**Pollutant**	**(lb/hr)**	**(TPY)**	**Method for Estimating Emissions**
E-310-2-4275-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 CO NO_x VOC Lead GHG (CO_2e)	0.01 0.01 0.01 0.03 0.03 0.03 0.003 0.41 0.50 0.06 2.45×10^{-6} 706	0.05 0.05 0.05 0.12 0.12 0.12 0.01 1.81 2.20 0.24 1.07×10^{-5} 3,093 (short tons)	For natural gas usage, emissions factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.4, Tables 1.4-1 and 1.4-2, Natural Gas Combustion; Heat capacity of natural gas = 1020 Btu/ft^3 For propane usage, emission factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.5, Table 1.5-1, Liquefied Petroleum Gas Combustion; Heat capacity of 90,500 Btu/gal; sulfur content = 0.0014% weight AP-42 low NOx burner emission factor = 9.1 lbs/1000 gal 40 CFR Part 98, Subpart A, Table A-1 – Global Warming Potentials Total heat input = 5 million Btu/hr
CD-310-2-4333-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2 CO NO_x VOC Lead GHG (CO_2e)	0.25 0.25 0.25 0.92 0.92 0.92 0.004 4.84 9.18 0.083 3.68×10^{-6} 2,048.6(2)	0.26 0.26 0.26 0.96 0.96 0.96 0.02 5.07 9.61 0.36 1.61×10^{-5} 8,973 (2) (short tons)	Calculations on SO_2, VOC, and Lead emissions for natural gas usage, emissions factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.4, Tables 1.4-1 and 1.4-2, Natural Gas Combustion; Heat capacity of natural gas = 1020 Btu/ft^3 For propane usage, emission factors were based on AP-42, Vol. I, 5th Ed., Chapter 1, Section 1.5, Table 1.5-1, Liquefied Petroleum Gas Combustion; Heat capacity of 90,500 Btu/gal; sulfur content = 0.0014% weight 10/2011 engineering tests determined PM, PM_{10}, $PM_{2.5}$(filterable and condensable), CO, and NO_x emissions from the existing fume incinerator were greater than combustion emissions calculated using AP-42 factors for natural gas/propane, therefore emission factors were developed for these pollutants based on the 10/2011 engineering tests. 40 CFR Part 98, Subpart A, Table A-1 – Global Warming Potentials and assuming a volatile carbon content of 90 tons of carbon per 100 tons of VOC. Total heat input = 7.5 million Btu/hr

UNCONTROLLED POTENTIAL EMISSIONS from New Sources due to Combustion (PROJECT ONLY)				
ID	**Pollutant**	**(lb/hr)**	**(TPY)**	**Method for Estimating Emissions**
E-240-2-4365-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) SO_2 CO NO_x VOC GHG (CO_2e)	1.43 0.82 0.69 0.02 12.18 45.86 1.29 2366	0.07 0.04 0.03 0.001 0.61 2.29 0.06 118.3 (short tons)	Emissions factors were based on AP-42, Vol. I, 5th Ed., Chapter 3, Section 3.4, Tables 3.4-1 and 3.4-2, Large Stationary Diesel and All Stationary Dual-Fuel Engines; Heat capacity = 137,000 Btu/gal; sulfur content = 0.0015 % weight Default GHG emission factor for N_2O referenced from 40 CFR Part 98, Subpart C, Table C-2 40 CFR Part 98, Subpart A, Table A-1 – Global Warming Potentials Total heat input = 9.85 million Btu/hr Based on 100 hrs/yr of operation

(1) All of the new combustion sources except for the diesel emergency generator will utilize natural gas as a primary fuel and propane as a back-up fuel. Emissions were based using natural gas or propane as fuel, whichever resulted in a "worst" case of emissions for each pollutant operating 8760 hrs/year.

(2) The GHG (CO_2e) emissions for CD-310-2-4333-01 (7.5 million Btu/hr thermal oxidizer used to control VOC and POM emissions from the autoclave/spray cooler/cooling bath) accounts for those process autoclave volatiles combusted by the thermal oxidizer + combustion emissions from thermal oxidizer based on AP-42 factors and 40 CFR Part 98.

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4203-15/ E-110-2-4216-06	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.14 0.14 0.14	0.63 0.63 0.63	Baghouse (CD-110-2-4345-02) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 3,363 ft^3/min TPY emissions based on 8760 hrs/yr
E-110-2-4203-01/ E-110-2-4203-03/ E-110-2-4203-07/ E-110-2-4203-09/ E-110-2-4203-11/ E-110-2-4203-13/ E-110-2-4203-15/ E-110-2-4223-02/ E-110-2-4223-03/ E-110-2-4202-02/ E-110-2-4291-02/ E-110-2-4221-02/ E-110-2-4221-03/ E-110-2-4221-04/ E-110-2-4202-03/ E-110-2-4293-01/ E-110-2-4216-01/ E-110-2-4216-02/ E-110-2-4216-03/ E-110-2-4216-04/ E-110-2-4232-01/ E-110-2-4227-29/ E-110-2-4227-30/ E-110-2-4227-31/ E-110-2-4227-32/ E-110-2-4204-01/ E-110-2-4204-02/ E-110-2-4205-11/ E-110-2-4223-04/ E-110-2-4221-08/ E-110-2-4221-09/ E-110-2-4221-23	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	1.41 1.41 1.41	6.17 6.17 6.17	Baghouse (CD-110-2-4345-01) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 32,870 ft^3/min TPY emissions based on 8760 hrs/yr
E-110-2-4202-04	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.09 0.09 0.09	0.38 0.38 0.38	Baghouse (CD-110-2-4345-22) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 2,000 ft^3/min TPY emissions based on 8760 hrs/yr

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-110-2-4202-05/ E-110-2-4216-05	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.09 0.09 0.09	0.38 0.38 0.38	Baghouse (CD-110-2-4345-24) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 2,000 ft^3/min TPY emissions based on 8760 hrs/yr
E-110-2-4253-01/ E-110-2-4253-02/ E-110-2-4253-03/ E-110-2-4253-04/ E-110-2-4221-10/ E-110-2-4222-20/ E-110-2-4221-11/ E-110-2-4221-12/ E-110-2-4253-05/ E-110-2-4221-13	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) VOC POM (V,H,T)	2.79 2.79 2.79 0.071 0.071	12.20 12.20 12.20 0.31 0.31	Dry Fume Scrubber/Baghouse (CD-110-2-4345-28) is used to control emissions. PM, PM10, and PM2.5 emissions are calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 65,000 ft^3/min VOC and POM emissions were calculated with capture efficiency of approx. 100% and control efficiency of 90% TPY emissions based on 8760 hrs/yr
E-110-2-4283-03/ E-110-2-4283-04/ E-110-2-4283-06/ E-110-2-4283-07/ E-110-2-4283-20/ E-110-2-4283-24/ E-110-2-4283-25/ E-110-2-4205-09/ E-110-2-4205-10/ E-110-2-4221-03/ E-110-2-4221-05/ E-110-2-4221-07	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.69 0.69 0.69	3.03 3.03 3.03	Baghouse (CD-110-2-4345-03) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 16,141 ft^3/min TPY emissions based on 8760 hrs/yr
E-110-25	VOC POM (V,H,T)	0.40 0.40	0.03 0.03	Vent Condenser (CD-110-14) Capture efficiency of approx. 100% and Control efficiency of 90%
E-210-2-4271-18/32	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) CO VOC POM (V,H,T)	4.106 4.106 4.106 2.765 2.765 2.765 0.67 14.17 14.14	17.826 17.826 17.826 12.166 12.166 12.166 2.94 62.04 61.91	Thermal Oxidizer (CD-210-2-4333-01) Capture efficiency of approx. 100% Control efficiency for PM, VOC, POM is 99% Control efficiency for CO is 97%
E-310-2-4201-01	VOC POM (V,H,T)	3.0 3.0	13.13 13.13	Thermal Oxidizer (CD-310-2-4333-01) Capture efficiency of approx. 100% and Control efficiency of 99%

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
E-460-4271-01/10	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable) PM (condensable) PM_{10} (condensable) $PM_{2.5}$ (condensable) SO_2	3.64 3.62 3.61 2.375 2.375 2.375 21.94	15.96 15.865 15.82 10.50 10.50 10.50 47.99	Wet Scrubber (CD-460-4349-03) Assuming 95% of uncontrolled emissions go through the exhaust stack and 5 % go through the roof monitor. The wet scrubber will only control emissions from the exhaust stack. Capture efficiency of approx. 100% Control efficiency for filterable and condensable PM is 50% Control efficiency for SO_2 is 93%
E-460-4349-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.039 0.039 0.039	0.17 0.17 0.17	Baghouse (CD-460-4349-02) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 900 ft^3/min TPY emissions based on 8760 hrs
E-460-4225-01/ E-460-4202-01/ E-460-4202-06	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.19 0.19 0.19	0.83 0.83 0.83	Baghouse (CD-460-02) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 4,424 ft^3/min TPY emissions based on 8760 hrs
E-460-4202-02	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	0.1286 0.1286 0.1286	0.56 0.56 0.56	Baghouse (CD-460-02) is used to control emissions. Calculated using {exhaust flow rate (ft^3/min) x 0.005 grains/dry standard cubic feet (dscf) x lb/7000 grains x 60 min/hr} = lb/hr of controlled potential emissions. Exhaust flow rate = 3,000 ft^3/min TPY emissions based on 8760 hrs

*Existing Sources Having Increased Utilization – Net Increase of Actual to Future Potential Controlled Emissions (PROJECT ONLY)					
ID	**Pollutant**	**Potential Uncontrolled (TPY)**	**Actual Controlled (TPY)**	**Future Potential Controlled (TPY)**	**Net Increase (TPY)**
E-220-01/ E-220-02/ E-220-03/ E-220-04/ E-220-05/ E-220-06	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	24.21 11.51 1.73	0.034 0.016 0.002	0.24 0.12 0.02	0.21 0.10 0.02
E-250-02/ E-250-03/ E-250-04/ E-250-06/ E-250-07	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	54.25 39.44 28.16	0.09 0.04 0.01	0.54 0.39 0.28	0.45 0.35 0.27

*Existing Sources Having Increased Utilization – Net Increase of Actual to Future Potential Controlled Emissions (PROJECT ONLY)					
ID	**Pollutant**	**Potential Uncontrolled (TPY)**	**Actual Controlled (TPY)**	**Future Potential Controlled (TPY)**	**Net Increase (TPY)**
E-310-04/ E-310-09/ E-310-10	 VOC POM	0.55 0.55	 0.023 0.023	 0.055 0.055	 0.032 0.032
E-410-01/ E-410-02/ E-410-03	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	4.26 1.98 0.30	0.00086 0.00040 0.00006	3.29 3.29 3.29	3.28 3.28 3.28
E-490-01	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	8.76 8.76 8.76	0.029 0.029 0.029	0.09 0.09 0.09	0.06 0.06 0.06
E-510-01/ E-510-02/ E-510-03/ E-510-06/ E-510-07/ E-510-08/ E-510-09/ E-510-10/ E-510-12/ E-510-13	PM (filterable) PM_{10} (filterable) $PM_{2.5}$ (filterable)	24.85 11.82 1.77	0.01 0.01 0.0008	0.25 0.12 0.02	0.23 0.11 0.02

* Existing baghouses are in place to control PM, PM_{10}, and $PM_{2.5}$ emissions from these processes and vent condensers are in place to control VOC and POM emissions. The actual potential emissions for the existing sources was used by taking an average production throughput for 2007 and 2008, AP-42 emission factors, and control efficiencies (99% for baghouses in place, except for Equip IDs E-310-04, E-310-09, and E-310-10 where 90% is used due to vent condensers being in place). Future potential controlled emissions for existing sources have been calculated as part of this application (see Volume 1, Assumptions and Calculations). Net increase is obtained by subtracting actual potential controlled emissions from future potential controlled emissions, therefore quantifying the controlled emissions increase from existing sources that will result from the expansion. Equip. IDs E-310-09 and E-310-10 are part of construction permit # 0900-0025-cy and have not been installed yet. PSD limit will be based on future potential controlled number of 0.055 tpy (total) for all three tanks (E-310-04, E-310-09, and E-310-10). All PM, PM_{10}, and $PM_{2.5}$ for the existing sources that have increased utilization are estimated to be filterable PM, based on engineering test data from targeted material handling sources. Test data indicated condensable PM was below the detection limit from these sources. Engineering test data included measurements of actual hourly grain loading for PM, PM_{10} and $PM_{2.5}$ on several of the existing baghouses. The actual controlled hourly grain loading (lb/hr) was less than calculated potential controlled hourly emissions (using 0.005 grains/dscf) for those same baghouses. Therefore, PSD limits for PM, PM_{10}, and $PM_{2.5}$ will be established based on calculated potential controlled emissions using a grain loading of 0.005 grains/dscf.

NEW SOURCE PROJECT EMISSIONS		
Pollutant	**Uncontrolled Emissions**	**Controlled Emissions**
	TPY	**TPY**
PM (filterable)	2720.21	64.75
PM_{10} (filterable)	2245.15	64.28
$PM_{2.5}$ (filterable)	1881.29	63.98
PM (condensable)	1240.59	26.66
PM_{10} (condensable)	1240.59	26.66
$PM_{2.5}$ (condensable)	1240.59	26.66
SO_2*	863.81	226.2

NEW SOURCE PROJECT EMISSIONS		
Pollutant	**Uncontrolled Emissions**	**Controlled Emissions**
	TPY	**TPY**
CO	4,689.48	4594.41
NO_x	276.11	-----
VOC	7522.74	77.79
Lead	6.78×10^{-4}	-----
GHG (CO_2e)	255,562.3 (short tons)	-----
POM (V,H,T)	7,507.42	75.4
HAP (Single Greatest)	7,507.42	75.4
HAP (Total)	7,507.42	75.4

* The new source project emissions table does not include any uncontrolled emissions from existing equipment that will be experiencing an increase in throughput as part of this project but does include the net controlled emissions increase from these existing sources. The new source project emissions table does not include any SO_2 uncontrolled and controlled emissions from the existing graphitizing furnaces which will undergo modifications as a part of this project. Existing graphitizing furnace emissions that are being currently vented through an uncontrolled main exhaust stack and building roof vent will be vented through a controlled main exhaust stack (controlled by a wet scrubber) and through two (2) new uncontrolled stacks.

PROJECT REGULATORY APPLICABILITY REVIEW			
Regulation	**Applicable**		**Comments**
	Yes	**No**	
South Carolina Regulation 61-62.1 through 62.99: Air Pollution Regulations (PROJECT ONLY)			
Section II(E): Synthetic Minor		No	For the expansion, the facility is being issued a PSD permit, and no synthetic minor limits are being established.
Section II(G): Conditional Major		No	The facility has an active TV Operating Permit issued on 07/01/2005.
Standard 1: Fuel Burning Operations	Yes		The two (2), 5 million Btu/hr hot oil heaters are the only indirect fired fuel burning sources being proposed. Per Standard 1, each hot oil heater is subject to the 20% opacity limitation, maximum allowable PM emission rate of 0.6 lbs PM/million Btu heat input, and a maximum allowable SO_2 emission rate of 3.5 lbs SO_2/million Btu heat input. See Table below.
Standard 2: Ambient Air Quality Standards	Yes		This facility has demonstrated compliance through modeling as of April 10, 2012.
Standard 3: Waste Combustion/Reduction (state only)	Yes		The proposed thermal oxidizers (CD- 210-2-4333-01 and CD-310-2-4333-01) are subject to this standard as industrial incinerators and each has a 20% opacity limitation and 0.5 lb PM per million BTU heat input limit. Waste analysis for the thermal oxidizers has been exempted per Section V(G)(1) for special knowledge of the waste. The operator training requirements have been exempted per Section IX(D). Due to liquid or solid waste not being combusted, the PM source testing requirement will be waived.
Standard 3.1: HMI Waste Incinerators		No	No medical waste incineration.
Standard 4: Emissions from Process Industries	Yes		The proposed project involves several processes that have process-related PM emissions as described by this standard. PM allowable emission rates (based on a process weight rate in tons per hour) and opacity limits for those processes are imposed by this standard. See Table below.

PROJECT REGULATORY APPLICABILITY REVIEW			
Regulation	**Applicable**		**Comments**
	Yes	**No**	
Standard 5: Volatile Organic Compounds		No	The facility was not in existence in 1979 or 1980; it was constructed in 1983 after issuance of a construction permit on 01/11/1982.
Standard 5.1: BACT/LAER For VOC (state only)	Yes		The proposed project will involve an increase of VOC emissions, whose net since 1983 (facility construction start) exceeds 100 tons per year, therefore Standard 5.1 applies. Standard 5.1 will be met for the proposed project by applying BACT to VOC emissions.
Standard 5.2: Control of Oxides of Nitrogen		No	As per Section I(a) a facility that has undergone a BACT review for NOx for it's new proposed sources, is exempt from this standard.
Standard 7: Prevention of Significant Deterioration	Yes		As shown in Table 1 below, this project exceeds the significant threshold as defined under PSD for PM, PM_{10}, $PM_{2.5}$, NO_x, CO, VOC, and GHG emissions. A BACT analysis has been performed and the proposed BACT limits are outlined in the Preliminary Determination. The facility is netting out of SO_2 due to installation of a control device on the existing graphitizing furnaces.
Standard 7(c): Ambient Air Increments	Yes		The facility has demonstrated compliance through modeling for the PSD Class II increments as of April 10, 2012.
Standard 7.1: Standards for Non Attainment Areas		No	The facility is not located in an area of non-attainment.
Standard 8: Toxic Air Pollutants (state only)	Yes		The facility has demonstrated compliance through modeling for all TAPs as of April 10, 2012.
Regulation 61-62.6: Control of Fugitive Particulate Matter	Yes		The fugitive PM (Dust) emissions are controlled in a manner that should not produce undesirable levels of PM (Dust) emissions. Fugitive emissions from the sand unloading system are controlled by a baghouse. A portable vacuum system and street sweeper are also used for housekeeping to minimize dust in sand handling areas.
Regulation 61-62.60: SC Designated Facility Plan and NSPS	Yes		Refer to Federal Regulations section below.
Regulation 61-62.61: NESHAP		No	Refer to Federal Regulations section below.
Regulation 61-62.63: NESHAP For Source Categories	Yes		Refer to Federal Regulations section below
Regulation 61-62.68: Chemical Accident Prevention		No	This facility does not store or use chemicals subject to 112(r) above the threshold quantities.
Regulation 61-62.70: Title V	Yes		The facility is a major source for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, and VOC and has an active TV Operating Permit issued 07/01/2005. A TV renewal application was submitted on May 12, 2010 and is currently under review.
Regulation 61-62.72: Acid Rain		No	The facility is not an affected unit under the Acid Rain Program.
Regulation 61-62.96: Nitrogen Oxides (NO_X) and Sulfur Dioxide (SO_2) Budget Trading Program		No	The facility does not participate in the NO_x and SO_2 Budget Trading Program.
Regulation 61-62.99: Nitrogen Oxides (NO_X) Budget Program Requirements for Stationary Sources Not In the Trading Program		No	The facility does not have cement kilns.
Federal Regulations (PROJECT ONLY)			

PROJECT REGULATORY APPLICABILITY REVIEW			
Regulation	**Applicable**		**Comments**
	Yes	**No**	
NSPS (Part 60) Subpart(s)	Yes		The emergency diesel-fired generator is subject to comply with 40 CFR Subpart IIII. The proposed binder pitch tank storage tank has a storage capacity greater than 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kPa; therefore NSPS subpart Kb is not applicable {40 CFR Part 60, Subpart Kb 60.110b(b)}.
NESHAP (Part 61) Subpart(s)		No	The facility does not emit pollutants subject to this standard (asbestos, benzene, beryllium, coke oven emissions, arsenic, mercury, radio nuclide, radon, or vinyl chloride).
MACT (Part 63) Subpart(s)	Yes		The facility is major for HAP emissions (PTE is greater than 10 TPY single HAP or 25 TPY combination HAPs). This project is subject to a case-by-case MACT determination (112g). The Notice of MACT Approval (NOMA) is included within the Preliminary Determination/NOMA document. The emergency diesel-fired generator is subject to 40 CFR 63 Subpart ZZZZ. Requirements of 40 CFR 63 Subpart ZZZZ will be met by complying with 40 CFR 60 Subpart IIII which is more stringent. EPA has issued a stay (5/16/11) for 40 CFR Part 63 Subpart DDDDD (NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters), therefore the MACT does not apply to the facility at this time.
Area Source Standards (Part 63) Subpart(s)		No	The facility is a major source for HAP emissions.
Compliance Assurance Monitoring (CAM) (Part 64)		No	All equipment, as part of this project, that utilize control devices do not emit > 100 tpy post-control device for any pollutant. Therefore, the proposed project is not subject to CAM.

Standard 1 Applicability

ID	Opacity	PM Allowable (0.6 lb/10^6 BTU) lb/hr	SO_2 Allowable (3.5 lb/10^6 BTU) lb/hr	Uncontrolled Emissions (lb/hr)		Controlled Emissions (lb/hr)		Monitoring
				PM	SO_2	PM	SO_2	
E-110-2-4275-01	20%	3	17.5	0.04	0.003	0.04	0.003	Fuel use is limited to natural gas or propane. Fuel usage must be monitored, recorded and kept on site.
E-310-2-4275-01	20%	3	17.5	0.04	0.003	0.04	0.003	Fuel use is limited to natural gas or propane. Fuel usage must be monitored, recorded and kept on site.

Standard 4 Applicability

Process	Opacity (%)	PM Allowable (lb/hr)	Process Weight Rate (tons/hr)	Uncontrolled PM Emissions (lb/hr)	Controlled PM Emissions (lb/hr)	Monitoring
New Mill, Mix, and Extrusion	20	28.43	18	204.71	5.21	Daily visual opacity inspections, baghouses with pressure drop gauges and performance testing.
New Bake/Rebake	20	23.91	13.9	687.23	7.0	Daily visual opacity inspections and performance testing of thermal oxidizer.
Existing Rebake Load & Unload/ Graphitizing Preparation	20	36.54	26.18	5.5	0.86	Daily visual opacity inspections, baghouses with pressure drop gauges and performance testing.
Existing Bake Load & Unload and Baked Electrode Cleaning	20	35.41	24.98	12.39	1.89	Daily visual opacity inspections, baghouses with pressure drop gauges and performance testing.

Process	Opacity (%)	PM Allowable (lb/hr)	Process Weight Rate (tons/hr)	Uncontrolled PM Emissions (lb/hr)	Controlled PM Emissions (lb/hr)	Monitoring
Existing Pitch Impregnation	20	15.10	7	1.37	1.37	Daily visual opacity inspections. N/A for PM (PM emissions are combustion only).
New Pitch Impregnation	20	13.92	6.2	1.30	1.30	Daily visual opacity inspections. N/A for PM (PM emissions are combustion only).
Existing Insulating Media Receiving	20	9.42	3.46	0.98	0.75	Daily visual opacity inspections, baghouses with pressure drop gauges and performance testing.
New Graphitizing	20	13.94	6.2	14.2	7.07	Daily visual opacity inspections, baghouses with pressure drop gauges and performance testing.
Existing Cleaning & Inspection	20	35.43	25	2.0	0.38	Daily visual opacity inspections, baghouses with pressure drop gauges and performance testing.
Existing Machining & Shipping	20	35.43	25	5.7	1.36	Daily visual opacity inspections, baghouses with pressure drop gauges and performance testing.

N/A = Not Applicable

Table 1. Showa Denko – PSD Applicability Analysis

Pollutant	Controlled Emissions Increase	PSD Significant Threshold	Significant Increase?
	TPY	TPY	
PM	93.4	25	Yes
PM_{10}	93.08	15	Yes
$PM_{2.5}$	92.8	10	Yes
SO_2*	-113.5	40	No
NO_X	324.6	40	Yes
CO	4,757.0	100	Yes
VOC	115.5	40	Yes
Lead	0.0001	0.6	No
Combustion CO_{2e} (GHG)	255,455	75,000	Yes

*****Controlled emissions increase of SO_2 reflect installing a wet scrubber on the existing graphitizing furnaces and proposed graphitizing furnaces. Therefore this project does not contribute to a PSD significant increase for SO_2 emissions. See table below.

PSD Netting Analysis for SO_2			
Equipment ID	Source Description	Stack ID	SO_2 (TPY)
Project Emissions			
E-110-2-4275-01	Hot Oil Heater (New Mill, Mix, and Extrusion)	S-110-2-4349-01	0.01
E-210-2-4271-18/32	Carbottom Furnaces Nos. 18-32 equipped with Thermal Oxidizer (New Bake/Rebake Process)	S-210-2-4333-01	142.10
E-310-2-4272-21	Preheater (New Pitch Impregnation Process)	S-310-2-4349-24	0.03
E-310-2-4275-01	Hot Oil Heater (New Pitch Impregnation Process)	S-310-2-4349-02	0.02
E-310-2-4201-01/ CD-310-2-4333-01	Autoclave/Spray Cooler/Cooling Bath equipped with Thermal Oxidizer (New Pitch Impregnation Process)	S-310-02-4349-01	0.01
E-460-4271-01/10	Graphitizing Furnaces/Stack Emissions (New Graphitizing Process)	S-460-4349-03	48.00
E-460-4271-01/10	Graphitizing Furnaces/Roof Monitor Emissions (New Graphitizing Process)	Roof Monitor	36.10
		Total for New Source Emissions	**226.27**
Average Past Actual Emissions (2007-2008)			
E-210-01	Carbottom Furnaces Nos. 1-17 equipped with Thermal Oxidizer (Existing Bake/Rebake Process)	S-210-01/S-210-02	128.83
E-430-01	Graphitizing Furnaces/Stack Emissions (Existing Graphitizing Process)	S-430-03	443.3
E-430-01	Graphitizing Furnaces/Roof Monitor Emissions (Existing Graphitizing Process)	S-430-01 (Roof Monitor)	308.03
		Total Past Actual Emissions	**880.2**
Creditable Emissions Increase – Sources that were new/modified within the last 5 years			
E-310-01	(2) Preheaters (installed burners with increased Btu rating; original 2.1 million Btu/hr; new 4.2 million Btu/hr each) (2010)	S-310-03/ S-310-04/ S-310-05/ S-310-06	0.02
E-310-11	Hot Oil Heater (4.5 million Btu/hr) (2010)	S-310-10	0.01
		Total Creditable Emissions Increase – New/Modified Sources	**0.03**
New Allowable Emissions – Existing Sources			
E-210-01	Carbottom Furnaces Nos. 1-17 equipped with Thermal Oxidizer (Existing Bake/Rebake Process)	S-210-01/S-210-02	159.6
E-430-01	Graphitizing Furnaces/Stack Emissions (Existing Graphitizing Process)	S-430-03	47.9
E-430-01	Graphitizing Furnaces/Roof Monitor Emissions (Existing Graphitizing Process)	S-430-01 (Roof Monitor)	332.9
		Total New Allowable Emissions – Existing Sources	**540.4**
Creditable Decrease (Total New Allowable + Total Creditable Increase minus Total Past Actual)			**(339.8)**
		SO_2 Net Increase/Decrease	**(113.5)**

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.