INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

February 21, 2013

Ron Kuntz
Lafayette Quality Products, Inc.
P.O. Box 5827
Lafayette, Indiana, 47903

Re: Response to Review Request No. 157-32829-00464
Permit status evaluation
Plant ID: 157-00464

Dear Ron Kuntz:

Lafayette Quality Products, Inc. was issued an Exemption No. 157-30536-00464 for construction and operation of a stationary new subcontractor to the department of defense and metal coating plant, located at 111 Farabee Drive, Lafayette, IN 47905. This source is classified as exempt from air pollution permit requirements.

On February 13, 2013, the source submitted a request to the Office of Air Quality (OAQ) for a review of the applicability and permit determination regarding the addition of new emission units. Specifically, six (6) HVAC natural gas-fired roof top units and two (2) new bead abrasive blast cabinets.

Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following new emission units are classified as exempt from air pollution permit requirements (see Attachment A for detailed calculations):

(a) Two (2) bead abrasive blast cabinets, identified as BB1 and BB2, constructed in 2013, with a maximum capacity of 100 units per hour, each controlled by fabric filters and cabinet enclosure integral to the process (air will only function with lid closed).

(b) Six (6) HVAC natural gas-fired roof top units, identified as H1 through H6, constructed in 1998, each with a maximum heat input capacity of 0.058 MMBtu/hr, exhausting to stacks HVAC1 through HVAC6.

There have been no changes in rule applicability, and there are no pending standards or regulations that are affected by the new units. It was determined that the bead abrasive blast cabinet process can not operate without the control equipment. Therefore, the controlled particulate matter emissions were used in the permit level determination. OAQ will exercise the discretion not to revoke exemption No. 157-30536-00464 issued on July 13, 2011.

Pursuant to 326 IAC 2-7-1(39), starting July 1, 2011, greenhouse gas (GHG) emissions are subject to regulation at a source with a potential to emit (PTE) 100,000 tons per year or more of CO2 equivalent (CO2e) emissions. Therefore, CO2e emissions have been calculated for this source. Based on the calculations, the unlimited PTE of GHG from the entire source is less than 100,000 tons of CO2e per year (see Attachment A for detailed calculations). This did not require any changes to the exemption.

No revision to the exemption was necessary to accommodate the construction. All conditions of the exemption shall remain unchanged and in effect. Please attach a copy of this letter to the front of the original exemption. A copy of the exemption is available on the Internet at: http://www.in.gov/ai/appfiles/idem-caats/. For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Charles Sullivan, at (800) 451-6027, press 0 and ask for Charles Sullivan or extension 2-8422, or dial (317) 232-8422.

Sincerely,

Chrystal Wagner, Section Chief
Permits Branch
Office of Air Quality

Enclosure: Attachment A- calculations

CW/cbs

cc: File - Tippecanoe County
U.S. EPA, Region V
Tippecanoe County Health Department
Compliance and Enforcement Branch

Appendix A: Emissions Calculations
Summary

Company Name: **Lafayette Quality Products, Inc.**
Address City IN Zip: **111 Farabee Drive, Lafayette, IN 47905**
Exemption Number: **E157-30536-00464**
Reviewer: **C. Sullivan**
Date: **2/20/2013**

	Uncontrolled PTE (tons/year)									
Existing Emission Units	PM	PM10	PM2.5	SO_2	NO_X	VOC	CO	GHGs as CO_2e	Total HAPs	Single HAP
Computerized robotic paint cell (RPC)	3.147	3.147	3.147	-	-	2.465	-	-	0.683	0.28 (Toluene)
RPC Oven	0.003	0.013	0.013	0.001	0.172	0.009	0.144	207.372	0.003	0.003 (Hexane)
Machining Operations	0.601	0.601	0.601	-	-	-	-	-	-	-
Paved Roads	0.001	1.46E-04	1.92E-05	-	-	-	-	-	-	-
New Emission Units										
Abrasive Blasting (2 units)	**0.052**	**0.052**	**0.052**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
HVAC Units (H1 - H6)	**0.003**	**0.011**	**0.011**	**0.001**	**0.149**	**0.008**	**0.126**	**180.414**	**0.003**	**0.003 (Hexane)**
TOTAL	**3.81**	**3.82**	**3.82**	**0.00**	**0.32**	**2.48**	**0.27**	**387.79**	**0.69**	**0.28 (Toluene)**

Appendix A: Emission Calculations
VOC and Particulate Emissions from Surface Coating Operations

Company Name: Lafayette Quality Products, Inc.
Address City IN Zip: 111 Farabee Drive, Lafayette, IN 47905
Exemption Number: E157-30536-00464
Reviewer: C. Sullivan
Date: 2/20/2013

Process ID	Material	Density (lb/gal)	Weight % Volatiles	Volume % Non-Volatiles (solids)	Max. Usage (gal/unit)	Maximum Throughput (unit/hour)	Pounds VOC per Gallon of Coating	PTE of VOC (ton/yr)	Transfer Efficiency	PTE of PM/PM10/PM2.5 Uncontrolled (ton/yr)	Control Efficiency	PTE of PM/PM10/PM2.5 Controlled (ton/yr)
RPC	MIL-PRF-85285D Catalyst, Component B	9.34	13.6%	83.0%	0.00056	72.0	1.27	0.22	50.0%	0.7	80.0%	0.14
	MIL-PRF-85285D, Type 1, Class H two component topcoat with Component B	12.40	28.1%	63.0%	0.00224	72.0	3.49	2.47	50.0%	3.1	80.0%	0.55
	MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part A)	13.21	21.7%	59.0%	0.00168	72.0	2.87	1.52	50.0%	2.7	80.0%	0.41
	MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part B) Hardener	7.52	74.3%	20.0%	0.00056	72.0	5.59	0.99	50.0%	0.2	80.0%	0.03
	MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part A) and (Part B) Hardener	12.07	27.7%	50.5%	0.00224	72.0	3.34	2.36	50.0%	3.1	80.0%	0.43
								2.47		**3.15**		**0.55**

METHODOLOGY
Pounds of VOC per Gallon Coating = Taken from MSDS sheet
Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)

Total = Worst Coating + Sum of all solvents used

Calculation:
Square inches of part = 196 inches
Coverage of 1 part = 900 square feet per gallon = $\sqrt{900}$ = 30 feet = 30ft*12 inches/1ft= $(360)^2$ inches = 129600 square inches per gallon coverage
Divide 196 square inches of part by 129600 square inches per gallon coverage = coverage in gallon per part = 196/129600 = 0.0015

MAXIMUM USUAGE (gal/unit) provided by source
MIL-SPEC FS37038 KIT (INCLUDES TOP COAT AND CATALYST) = .001519
MIL-PRF-85285D CATALYST COMPONENT B = .000560
MIL-DTL-53022D TYPE II PRIMER PART A = .001680

Appendix A: Emission Calculations
HAP Emissions from Surface Coating Operations

Company Name: Lafayette Quality Products, Inc.
Address City IN Zip: 111 Farabee Drive, Lafayette, IN 47905
Exemption Number: E157-30536-00464
Reviewer: C. Sullivan
Date: 2/20/2013

Process ID	Material	Density (lb/gal)	Max. Usage (gal/unit)	Maximum Throughput (unit/hour)	Weight % Hexamethylene Diisocyanate	Weight % Toluene	Weight % Ethylbenzene	Weight % Hexane	Weight % 1,2,4 - Trimethylbenzene	Weight % Zinc Compound	Weight % 1-Butanol	Weight % 4,4 Isopropylidenediphenol
Computerized robotic paint cell (RPC)	[1]MIL-PRF-85285D Catalyst, Component B	9.34	0.00056	72.00	0.20%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%
	[2]MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part A)	13.21	0.00168	72.00	0.00%	4.00%	0.10%	1.00%	0.00%	3.00%	0.00%	0.00%
	[2]MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part B) Hardener	7.52	0.00056	72.00	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	2.00%	4.00%

Process ID	Material	Density (lb/gal)	Max. Usage (gal/unit)	Maximum Throughput (unit/hour)	PTE of Hexamethylene Diisocyanate (tons/yr)	PTE of Toluene (tons/yr)	PTE of Ethylbenzene (tons/yr)	PTE of Hexane (tons/yr)	PTE of 1,2,4 - Trimethylbenzene (tons/yr)	PTE of Zinc Compound (tons/yr)	PTE of 1-Butanol (tons/yr)	PTE of 4,4 Isopropylidenediphenol (tons/yr)	Total Combined HAPs
Computerized robotic paint cell (RPC)	[1]MIL-PRF-85285D Catalyst, Component B	use above			0.003	0.000	0.000	0.000	0.033	0.000	0.000	0.000	0.036
	[2]MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part A)				0.000	0.280	0.007	0.070	0.000	0.210	0.000	0.000	0.567
	[2]MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part B) Hardener				0.000	0.266	0.000	0.000	0.000	0.000	0.027	0.053	0.345
	Total Single Worst HAP from source				**0.00**	**0.28**	**0.01**	**0.07**	**0.03**	**0.21**	**0.03**	**0.05**	
	Total Combined HAPs from source				**0.68**								

Note 1: MIL-PRF-85285D, Type 1, Class H two component topcoat with Component B as applied data sheet did not contain HAPs information. Therefore, the PTE of HAPs were calculated using the data sheet for MIL-PRF-85285D Catalyst, Component B alone.

Note 2: MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part A) and (Part B) Hardener as applied data sheet did not contain HAPs information. Therefore, the PTE of HAPs were calculated using the data sheet for MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part A) alone and for MIL-DTL-53022D Type II Primer, Corrosion Inhibiting (Part B) Hardener alone.

METHODOLOGY
PTE of HAPS (tons/yr) = Density (lb/gal) x Max. Usage (gal/unit) x Max. Throughput (unit/hr) x Weight % HAP x 8760 hrs/yr x 1 ton/2000 lbs

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Direct Heating Units

Company Name: **Lafayette Quality Products, Inc.**
Address City IN Zip: **111 Farabee Drive, Lafayette, IN 47905**
Exemption Number: **E157-30536-00464**
Reviewer: **C. Sullivan**
Date: **2/20/2013**

# of Emission Units	Emission Unit Description	Total Heat Input Capacity (MMBtu/hr)
1	RPC oven	0.40

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
0.40	3.4

for all direct heating units

	Pollutant						
	PM*	PM10*	PM2.5	SO_2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.003	0.013	0.013	0.001	0.172	0.009	0.144

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,020,000 Cubic Feet of Gas
NOx and CO Emission Factors are from AP 42, Chapter 1.4, Table 1.4-1
PM, SO_2, CO_2, N_2O and Methane Emission Factors are from AP 42, Chapter 1.4, Table 1.4-2

PTE (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

See next page for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
HAPs Emissions
Direct Heating Units

Company Name: **Lafayette Quality Products, Inc.**
Address City IN Zip: **111 Farabee Drive, Lafayette, IN 47905**
Exemption Number: **E157-30536-00464**
Reviewer: **C. Sullivan**
Date: **2/20/2013**

	HAPs - Organics				
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	3.61E-06	2.06E-06	0.0001	0.0031	5.84E-06

	HAPs - Metals					
	Lead	Cadmium	Chromium	Manganese	Nickel	
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	Total
Potential Emission in tons/yr	8.59E-07	1.89E-06	2.40E-06	6.53E-07	3.61E-06	0.003

Methodology is the same as previous page.
Organic HAPs Emission Factors are from AP 42, Chapter 1.4, Table 1.4-3
Metal HAPs Emission Factors are from AP 42, Chapter 1.4, Table 1.4-4
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4, Tables 1.4-3 and 1.4-4

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Greenhouse Gas Emissions

Company Name: **Lafayette Quality Products, Inc.**
Address City IN Zip: **111 Farabee Drive, Lafayette, IN 47905**
Exemption Number: **E157-30536-00464**
Reviewer: **C. Sullivan**
Date: **2/20/2013**

		Greenhouse Gas	
	CO2	CH4	N2O
Emission Factor in lb/MMcf	120,000	2.3	2.2
Potential Emission in tons/yr	206.1	0.0	0.0
Summed Potential Emissions in tons/yr	206.13		
CO2e Total in tons/yr	207.37		

Methodology
The N2O Emission Factor for uncontrolled is 2.2. The N2O Emission Factor for low Nox burner is 0.64.
Emission Factors are from AP 42, Table 1.4-2 SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03.
Greenhouse Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

CO2e (tons/yr) = CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (21) + N2O Potential Emission ton/yr x N2O GWP (310).

Appendix A: Emissions Calculations
Machining

Company Name: Lafayette Quality Products, Inc.
Address City IN Zip: 111 Farabee Drive, Lafayette, IN 47905
Exemption Number: E157-30536-00464
Reviewer: C. Sullivan
Date: 2/20/2013

Emission Unit	Maximum Capacity (pounds/day)	Scrap Metal Shavings (lbs/day)	Scrap Metal Shavings (lbs/hr)	Scrap Metal Shavings (tons/yr)	Potential PM/PM10/PM2.5 Emissions (lbs/hr)	Potential PM/PM10/PM2.5 Emissions (tons/yr)
Mazak PFH-5800	40	32	4.00	17.52	0.02	0.09
Mazak PFH-5800	40	32	4.00	17.52	0.02	0.09
Mazak PFH-5800	40	32	4.00	17.52	0.02	0.09
Mazak HCN-5000	25	15	1.88	8.21	0.01	0.04
Mazak Nexus 510C	19	4	0.50	2.19	0.00	0.01
Mazak VTC16A	2	0.99	0.12	0.54	0.00	0.00
Mazak VTC16A	2	0.99	0.12	0.54	0.00	0.00
Mazak VTC16A	2	0.99	0.12	0.54	0.00	0.00
Mazak FJV-20	23	20	2.50	10.95	0.01	0.05
Mazak FJV-20	23	20	2.50	10.95	0.01	0.05
Mazak FJV-20	23	20	2.50	10.95	0.01	0.05
Mazak HP250	26	22.5	2.81	12.32	0.01	0.06
Strippit fabricator	34	19	2.38	10.40	0.01	0.05
					Total (tons/yr)	**0.60**

Note:
Conservatively assumes 0.5% of material loss emitted as particulate emissions.
Assumed PM = PM10 = PM2.5

Potential Emissions from the Cincinnati Shear, six (6) press brake machines, and Brown and Sharpe Coordinate measuring machine, processes are expected to be negligible, therefore no PTE calculations have been performed.

Methodology
Scrap Metal Shavings (lbs/day) provided by Permittee
Scrap Metal Shavings (lbs/hr) = Scrap Metal Shavings (lbs/day) / 8 hours
Scrap Metal Shavings (ton/yr) = Scrap Metal Shavings (lbs/hr) x 8760 hours x 1 ton/2,000 pounds
Potential PM/PM10/PM2.5 (lbs/hr) = Scrap Metal Shavings (lbs/hr) x 0.5% Material Loss as Particulate
Potential PM/PM10/PM2.5 (tons/yr) = Potential PM/PM10/PM2.5 (lbs/hr) x 8760 hours x 1 ton/2,000 pounds

Appendix A: Emission Calculations
Fugitive Dust Emissions - Paved Roads

Company Name: Lafayette Quality Products, Inc.
Address City IN Zip: 111 Farabee Drive, Lafayette, IN 47905
Exemption Number: E157-30536-00464
Reviewer: C. Sullivan
Date: 2/20/2013

Paved Roads at Industrial Site
The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Ch 13.2.1 (12/2003).

Vehicle Information (provided by source)

Type	Maximum number of vehicles per day	Number of one-way trips per day per vehicle	Maximum trips per day (trip/day)	Maximum Weight Loaded (tons/trip)	Total Weight driven per day (ton/day)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/day)	Maximum one-way miles (miles/yr)
Vehicle (entering plant) (one-way trip)	13.0	1.0	13.0	2.5	32.5	100	0.019	0.2	89.9
Vehicle (leaving plant) (one-way trip)	13.0	1.0	13.0	2.5	32.5	100	0.019	0.2	89.9
Truck (entering plant) (one-way trip)	3.0	1.0	3.0	16.0	48.0	100	0.019	0.1	20.7
Truck (leaving plant) (one-way trip)	3.0	1.0	3.0	16.0	48.0	100	0.019	0.1	20.7
		Total	**32.0**		**161.0**			**0.6**	**221.2**

Average Vehicle Weight Per Trip = 5.0 tons/trip
Average Miles Per Trip = 0.02 miles/trip

Unmitigated Emission Factor, Ef = [k * (sL/2)^0.65 * (W/3)^1.5 - C] (Equation 1 from AP-42 13.2.1)

	PM	PM10	PM2.5		
where k =	0.082	0.016	0.0024	lb/mi	= particle size multiplier (AP-42 Table 13.2.1-1)
W =	5.0	5.0	5.0	tons	= average vehicle weight (provided by source)
C =	0.00047	0.00047	0.00036	lb/mi	= emission factor for vehicle exhaust, brake wear, and tire wear (AP-42 Table 13.2.1-2)
sL =	0.6	0.6	0.6	g/m^2	= Ubitiguous Baseline Silt Loading Values of paved roads (Table 13.2.1-3 for summer months)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, Eext = E * [1 - (p/4N)]
Mitigated Emission Factor, Eext = Ef * [1 - (p/4N)]
where p = 125 days of rain greater than or equal to 0.01 inches (see Fig. 13.2.1-2)
N = 365 days per year

	PM	PM10	PM2.5	
Unmitigated Emission Factor, Ef =	0.08	0.02	0.00	lb/mile
Mitigated Emission Factor, Eext =	0.07	0.01	0.00	lb/mile

Process	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)
Vehicle (entering plant) (one-way trip)	3.64E-03	6.93E-04	9.09E-05	3.33E-03	6.33E-04	8.31E-05
Vehicle (leaving plant) (one-way trip)	3.64E-03	6.93E-04	9.09E-05	3.33E-03	6.33E-04	8.31E-05
Truck (entering plant) (one-way trip)	8.39E-04	1.60E-04	2.10E-05	7.68E-04	1.46E-04	1.92E-05
Truck (leaving plant) (one-way trip)	8.39E-04	1.60E-04	2.10E-05	7.68E-04	1.46E-04	1.92E-05
	8.95E-03	**1.71E-03**	**2.24E-04**	**8.19E-03**	**1.56E-03**	**2.05E-04**

Methodology
Total Weight driven per day (ton/day) = [Maximum Weight Loaded (tons/trip)] * [Maximum trips per day (trip/day)]
Maximum one-way distance (mi/trip) = [Maximum one-way distance (feet/trip) / [5280 ft/mile]
Maximum one-way miles (miles/day) = [Maximum trips per year (trip/day)] * [Maximum one-way distance (mi/trip)]
Average Vehicle Weight Per Trip (ton/trip) = SUM[Total Weight driven per day (ton/day)] / SUM[Maximum trips per day (trip/day)]
Average Miles Per Trip (miles/trip) = SUM[Maximum one-way miles (miles/day)] / SUM[Maximum trips per year (trip/day)]
Unmitigated PTE (tons/yr) = [Maximum one-way miles (miles/yr)] * [Unmitigated Emission Factor (lb/mile)] * (ton/2000 lbs)
Mitigated PTE (tons/yr) = [Maximum one-way miles (miles/yr)] * [Mitigated Emission Factor (lb/mile)] * (ton/2000 lbs)
Controlled PTE (tons/yr) = [Mitigated PTE (tons/yr)] * [1 - Dust Control Efficiency]

Abbreviations
PM = Particulate Matter
PM10 = Particulate Matter (<10 um)
PM2.5 = Particle Matter (<2.5 um)
PTE = Potential to Emit

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

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HVAC Units	MMBtu/hr
H1	0.058
H2	0.058
H3	0.058
H4	0.058
H5	0.058
H6	0.058
Total	0.35

Heat Input Capacity MMBtu/hr	HHV mmBtu / mmscf	Potential Throughput MMCF/yr
0.3	1020	3.0

	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	7.6	0.6	100 **see below	5.5	84
Potential Emission in tons/yr	0.0	0.0	0.0	0.0	0.1	0.0	0.1

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
PM2.5 emission factor is filterable and condensable PM2.5 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

See next page for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
HAPs Emissions

Company Name: **Lafayette Quality Products**
Address City IN Zip: **111 Farabee Drive, Lafayette, IN 47905**
Permit Number: **E157-30536-00464**
Reviewer: **C. Sullivan**
Date: **2/20/2013**

	HAPs - Organics				
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	3.138E-06	1.793E-06	1.121E-04	2.690E-03	5.081E-06

	HAPs - Metals				
	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	7.472E-07	1.644E-06	2.092E-06	5.679E-07	3.138E-06
				Total	2.820E-03

Methodology is the same as previous page.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.
See next page for Greenhouse Gas calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Greenhouse Gas Emissions

Company Name: **Lafayette Quality Products**
Address City IN Zip: **111 Farabee Drive, Lafayette, IN 47905**
Permit Number: **E157-30536-00464**
Reviewer: **C. Sullivan**
Date: **2/20/2013**

	Greenhouse Gas		
	CO2	CH4	N2O
Emission Factor in lb/MMcf	120,000	2.3	2.2
Potential Emission in tons/yr	179	0.0	0.0
Summed Potential Emissions in tons/yr	179		
CO2e Total in tons/yr	180		

Methodology

The N2O Emission Factor for uncontrolled is 2.2. The N2O Emission Factor for low Nox burner is 0.64.
Emission Factors are from AP 42, Table 1.4-2 SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03.
Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
CO2e (tons/yr) = CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (21) + N2O Potential Emission ton/yr x N2O GWP (310).

updated 7/11

Appendix A: Emission Calculations
Abrasive Blasting - Confined

Company Name: Lafayette Quality Products
Address City IN Zip: 111 Farabee Drive, Lafayette, IN 47905
Permit Number: E157-30536-00464
Reviewer: C. Sullivan
Date: 2/20/2013

Table 1 - Emission Factors for Abrasives

	Emission Factor	
Abrasive	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al oxides	160
Sand	99
Steel	487
Ballotini © impact beads**	156

** Potters Product Listing Sheet (Density = 2.5 g/cc)
(1 g/cc = 62.43 lb/ft3)

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)
Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

	Nozzle Pressure (psig)							
Internal diameter, in	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) = Abrasive flow rate (lb/hr) with internal nozzle diameter (ID)	
FR1 = Sand flow rate (lb/hr) with internal nozzle diameter (ID1) From Table 3 =	377
D = Density of abrasive (lb/ft3) From Table 2** =	156
D1 = Density of sand (lb/ft3) =	99
ID = Actual nozzle internal diameter (in) =	0.31
ID1 = Nozzle internal diameter (in) from Table 3 =	0.31

Flow Rate (FR) (lb/hr) = **594.346** per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =	0.010	
FR = Flow Rate (lb/hr) =	594.346	
w = fraction of time of wet blasting =	0	%
N = number of nozzles =	1	

Uncontrolled Emissions =	**5.94**	**lb/hr**
	26.03	**ton/yr**
Controlled Emissions[1] =	**0.03**	**ton/yr**

METHODOLOGY

1 - Integral to the Process - Enclosed Process with fabric filters and airflow shuts off when the door is opened. Estimate of dry abrasive control is 99.9%
Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)
Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs
Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)2 x (D/D1)
E = EF x FR x (1-w/200) x N
w should be entered in as a whole number (if w is 50%, enter 50)
** Source: Potters Product Listing Sheet (Density = 2.5 g/cc)
Controlled emissions = Uncontrolled emissions x (1 – Control Efficiency).

updated 1/99
Abrasive.xls 9/95

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

SENT VIA U.S. MAIL: CONFIRMED DELIVERY AND SIGNATURE REQUESTED

TO: Ron Kuntz
Lafayette Quality Products Inc
PO Box 5827
Lafayette, IN 47903

DATE: February 21, 2013

FROM: Matt Stuckey, Branch Chief
Permits Branch
Office of Air Quality

SUBJECT: Final Decision
Review Request
157-32829-00464

Enclosed is the final decision and supporting materials for the air permit application referenced above. Please note that this packet contains the original, signed, permit documents.

The final decision is being sent to you because our records indicate that you are the contact person for this application. However, if you are not the appropriate person within your company to receive this document, please forward it to the correct person.

A copy of the final decision and supporting materials has also been sent via standard mail to:
OAQ Permits Branch Interested Parties List

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178, or toll-free at 1-800-451-6027 (ext. 3-0178), and ask to speak to the permit reviewer who prepared the permit. If you think you have received this document in error, please contact Joanne Smiddie-Brush of my staff at 1-800-451-6027 (ext 3-0185), or via e-mail at jbrush@idem.IN.gov.

Final Applicant Cover letter.dot 11/30/07

Mail Code 61-53

IDEM Staff	DPABST 2/21/2013 Lafayette Quality Products Inc 157-32829-00464 (final)			AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING
Name and address of Sender	▶	Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204	Type of Mail: **CERTIFICATE OF MAILING ONLY**	

Line	Article Number	Name, Address, Street and Post Office Address	Postage	Handing Charges	Act. Value (If Registered)	Insured Value	Due Send if COD	R.R. Fee	S.D. Fee	S.H. Fee	Rest. Del. Fee Remarks
1		Ron Kuntz Lafayette Quality Products Inc PO Box 5827 Lafayette IN 47903 (Source CAATS) (CONFIRM DELIVERY)									
2		Tippecanoe County Commissioners 20 N 3rd St, County Office Building Lafayette IN 47901 *(Local Official)*									
3		Tippecanoe County Health Department 20 N. 3rd St Lafayette IN 47901-1211 *(Health Department)*									
4		Lafayette City Council and Mayors Office 20 North 6th Street Lafayette IN 47901-1411 *(Local Official)*									
5		West Lafayette City Council and Mayors Office 609 W. Navajo West Lafayette IN 47906 *(Local Official)*									
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