



Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

July 21, 2004

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

TO: Interested Parties / Applicant

RE: Kokomo Opalescent Company / 067-19043-00057

FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Registration

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 4-21.5-3-4(d) this order is effective when it is served. When served by U.S. mail, the order is effective three (3) calendar days from the mailing of this notice pursuant to IC 4-21.5-3-2(e).

If you wish to challenge this decision, IC 4-21.5-3-7 requires that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FN-REGIS.dot 9/16/03



Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P. O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.state.in.us/idem

July 21, 2004

Mr. Richard Elliott
Kokomo Opalescent Company, Inc.
1310 South Market Street, P.O. Box 2265
Kokomo, Indiana 46904

Re: Registered Operation Status 067-19043-00057

Dear Mr. Elliott:

This application from Kokomo Opalescent Company, Inc., received on April 30, 2004, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following stationary pressed and blown glass manufacturing plant, located at South Market Street, P.O. Box 2265, Kokomo, Indiana, is classified as registered:

- (a) One silo, identified as K, containing sand with a maximum throughput rate of 525 pounds per hour, controlled by one (1) baghouse and exhausting at stack K.
- (b) One silo, identified as L, containing Feldspar with a maximum throughput rate of 115 pounds per hour, controlled by one (1) baghouse and exhausting at stack L.
- (c) One silo, identified as M, containing Soda Ash with a maximum throughput rate of 190 pounds per hour, controlled by one (1) baghouse and exhausting at stack M.
- (d) One silo, identified as N, containing Lime with a maximum throughput rate of 31.0 pounds per hour, controlled by one (1) baghouse and exhausting at stack N.
- (e) One (1) end loaded bin, containing Dolomite with a maximum throughput rate of 11.5 pounds per hour.
- (f) One (1) batch mixer with a maximum throughput rate of 1010 pounds per hour, controlled by a dust collector and exhausting at stack J.
- (g) One (1) natural gas fired glass-melting furnace (identified as furnace 8-pot), with a maximum throughput capacity of 285 pounds of glass per hour and a maximum heat input capacity of 7.80 MMBtu per hour.
- (h) One (1) natural gas fired glass-melting furnace (identified as furnace 12-pot), with a maximum throughput capacity of 596 pounds of glass per hour and a maximum heat input capacity of 6.81 MMBtu per hour.
- (i) One (1) natural gas fired glass-melting furnace (identified as Day Tank), with a maximum throughput capacity of 129 pounds of glass per hour and a maximum heat input capacity of 1.90 MMBtu per hour.
- (j) One (1) natural gas-fired glass tempering process (identified as Lehr), with a maximum heat input capacity of 6.00 MMBtu per hour.



- (k) One (1) natural gas-fired plate oven with a maximum heat input capacity of 0.002 MMBtu per hour.
- (l) Three (3) natural gas-fired pot arch preheat units, with a combined heat input capacity of 0.66 MMBtu per hour.
- (m) Twelve (12) natural gas-fired unit heaters (identified as UH1 through UH12), each with a maximum heat input capacity of 0.104 MMBtu per hour.
- (n) One (1) spray facility, with a maximum usage rate of 2.51 pounds of tetra-isopropyl titanate per hour.
- (o) One (1) sheet roller, with a maximum throughput rate of 870 pounds per hour.
- (p) One (1) cut and trim facility, with a maximum throughput rate of 1,235 pounds of glass sheets per hour.

The following conditions shall be applicable:

- (a) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following:
 - (1) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period.
- (b) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from the three (3) glass melting furnaces, three (3) silos, one (1) end-loading bin, and one (1) sand mixing shall not exceed the pound per hour limit as shown in the table below.

Emission Unit	Maximum Throughput Rate		Particulate Emission Limit (lbs/hour)
	(lbs/hour)	(ton/hour)	
Melt Furnace (8-pot)	285	0.14	1.11
Melt Furnace (12-pot)	596	0.30	1.82
Melt Furnace (Day Tank)	129	0.06	0.65
Silo 1	525	0.26	1.67
Silo 2	115	0.06	0.61
Silo 3	190	0.10	0.85
Sand Mixing	1010	0.505	2.59

The pounds per hour limitation was calculated with the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67}$$

where E = rate of emission in pounds per hour, and
P = process weight rate in tons per hour.

- (c) Pursuant to 326 IAC 6-3-2(e)(2), the particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) and which has a maximum process weight rate less than

100 pounds per hour and the methods in 326 IAC 6-3-2(b) through (d) do not apply, shall not exceed 0.551 pounds per hour. Therefore, the Silo 4 and end-loading bin shall not exceed 0.551 pounds per hour each.

This registration supercedes CP Registration 067-5018-00057. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

**Compliance Branch
Office of Air Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015**

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Pursuant to Contract No. A305-0-00-36, IDEM, OAQ has assigned the processing of this application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Sanober Durrani, ERG, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560, or call (919) 468-7810 to speak directly to Ms. Durrani. Questions may also be directed to Duane Van Laningham at IDEM, OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call (800) 451-6027, and ask for Duane Van Laningham, or extension 3-6878, or dial (317) 233-6878.

Sincerely,

Original Signed by
Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

ERG/SD

cc: File - Howard County
Air Compliance - Marc Goldman
Permit Tracking - Sara Cloe
Technical Support and Modeling - Michele Boner

Registration Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	Kokomo Opalescent Company, Inc.
Address:	South Market Street P.O. Box 2265
City:	Kokomo, Indiana 46904
Authorized individual:	Mr. Richard Elliott
Phone #:	765-457-8136
Registration #:	067-19043-00057

I hereby certify that Kokomo Opalescent Company, Inc. is still in operation and is in compliance with the requirements of Registration 067-19043-00057.

Name (typed):
Title:
Signature:
Date:

**Indiana Department of Environmental Management
Office of Air Quality**

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	Kokomo Opalescent Glass Company, Inc.
Source Location:	1310 South Market Street, Kokomo, Indiana 46904
County:	Howard
SIC Code:	3229
Permit Revision No.:	067-19043-00057
Permit Reviewer:	ERG/SD

The Office of Air Quality (OAQ) has reviewed an application from Kokomo Opalescent Glass Company, Inc. relating to the operation of a stationary pressed and blown glass manufacturing plant.

Unpermitted Emission Units and Pollution Control Equipment

The source consists of the following unpermitted emission units and pollution control devices:

- (a) One silo, identified as K, containing sand with a maximum throughput rate of 525 pounds per hour, controlled by one (1) baghouse and exhausting at stack K.
- (b) One silo, identified as L, containing Feldspar with a maximum throughput rate of 115 pounds per hour, controlled by one (1) baghouse and exhausting at stack L.
- (c) One silo, identified as M, containing Soda Ash with a maximum throughput rate of 190 pounds per hour, controlled by one (1) baghouse and exhausting at stack M.
- (d) One silo, identified as N, containing Lime with a maximum throughput rate of 31.0 pounds per hour, controlled by one (1) baghouse and exhausting at stack N.
- (e) One (1) end loaded bin, containing Dolomite with a maximum throughput rate of 11.5 pounds per hour.
- (f) One (1) batch mixer with a maximum throughput rate of 1010 pounds per hour, controlled by a dust collector and exhausting at Stack J.
- (g) One (1) natural gas fired glass-melting furnace (identified as furnace 8-pot), with a maximum throughput capacity of 285 pounds of glass per hour and a maximum heat input capacity of 7.80 MMBtu per hour. This unit was constructed prior to 1979.
- (h) One (1) natural gas fired glass-melting furnace (identified as furnace 12-pot), with a maximum throughput capacity of 596 pounds of glass per hour and a maximum heat input capacity of 6.81 MMBtu per hour. This unit was constructed prior to 1979.

- (i) One (1) natural gas fired glass-melting furnace (identified as Day Tank), with a maximum throughput capacity of 129 pounds of glass per hour and a maximum heat input capacity of 1.90 MMBtu per hour.
- (j) One (1) natural gas-fired glass tempering process (identified as Lehr), with a maximum heat input capacity of 6.00 MMBtu per hour.
- (k) One (1) natural gas-fired plate oven with a maximum heat input capacity of 0.002 MMBtu per hour.
- (l) Three (3) natural gas-fired pot arch preheat units, with a combined heat input capacity of 0.66 MMBtu per hour.
- (m) Twelve (12) natural gas-fired unit heaters (identified as UH1 through UH12), each with a maximum heat input capacity of 0.104 MMBtu per hour.
- (n) One (1) spray facility, with a maximum usage rate of 2.51 pounds of tetra-isopropyl titanate per hour.
- (o) One (1) sheet roller, with a maximum throughput rate of 870 pounds per hour.
- (p) One (1) cut and trim facility, with a maximum throughput rate of 1,235 pounds of glass sheets per hour.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted emission units at this source during this review process.

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

- (a) OP 34-01-83-0219, issued on February 1, 1979; and
- (b) CP 067-5018-00057, issued December 19, 1995.

All conditions from previous approvals were incorporated into this Registration.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (°F)
A	12 Pot Furnace	50	3	2,400	300
B	Plate Oven	32	1	100	200
C	8 Pot Furnace	42	2	2,000	400
D	L&S	42	0.75	100	250
E	L&S	42	0.75	100	250
F	L&S	42	0.75	100	250
G	Day Tank	45	1.3	600	250
H	Lehr	30	2	4,000	120
I	Mixing	30	0.75	500	Ambient
J	Silo			2,175	Ambient

Stack ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (°F)
K	Silo			2,175	Ambient
L	Silo			2,175	Ambient
M	Silo			2,175	Ambient
N	Iridescent	30	2	1,000	120

Recommendation

The staff recommends to the Commissioner that the operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on April 30, 2004, with additional information received on May 21, 2004.

Emission Calculations

See Appendix A of this document for detailed emission calculations (Appendix A, pages 1 through 7).

Potential to Emit of the Source Before Controls

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential to Emit (tons/year)
PM	3.48
PM10	3.48
SO ₂	7.56
VOC	11.6
CO	3.35
NO _x	17.2

HAPs	Potential to Emit (tons/yr)
Benzene	7.28E-05
Dichlorobenzene	4.16E-05
Formaldehyde	2.60E-03
Hexane	6.24E-02
Toluene	1.18E-04
Total	6.52E-02

- (a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of all criteria pollutants are less than twenty-five (25) tons per year and potential to emit of NO_x and VOC is greater than ten (10) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-5.5. A registration will be issued.
- (b) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-1.1-1(16)) of a combination of HAPs is less than twenty-five (25) tons per year.

- (c) **Fugitive Emissions**
 Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in Howard County.

Pollutant	Status
PM10	Attainment
SO ₂	Attainment
NO ₂	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Howard County has been designated as attainment for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (b) Howard County has been classified as attainment for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (c) **Fugitive Emissions**
 Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 or 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD, Part 70, or FESOP Definition (emissions after controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	3.48
PM10	3.48
SO ₂	7.56
VOC	11.6
CO	3.35
NO _x	17.2
Single HAP	<10
Combination HAPs	<25

- (a) This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories.

- (b) These emissions were based on the potential to emit calculations for the source (see Appendix A).

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons per year.

Federal Rule Applicability

- (a) The three (3) natural gas-fired glass melting furnaces (identified as 8-pot, 12-pot and Day Tank) are not subject to the New Source Performance Standard (NSPS) 40 CFR Part 60, Subpart CC - Standards of Performance for Glass Manufacturing Plants (326 IAC 12) because they were constructed before June 15, 1979 applicability date for this rule. Also they do not produce more than 5 tons of glass per day and do not meet the definition of all-electric melters.

There are no other New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source.

- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs), 40 CFR Part 63, applicable to this source.

State Rule Applicability – Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in Howard County is not required to operate under the provisions of a Part 70 Permit Program (326 IAC 2-7). Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in the permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 2-2 (Prevention of Significant Deterioration PSD))

This source was built prior to August 7, 1977, and is not one (1) of the twenty-eight (28) source categories. At the time of construction, the potential to emit of all criteria pollutants were less than 250 tons per year. Although the source has been modified, the potential to emit of each criteria pollutant remained below the PSD threshold of 250 tons per year. Therefore, this source is an existing minor source for PSD and the requirements of 326 IAC 2-2 do not apply.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of this stationary pressed and blown glass manufacturing plant will emit less than 10 tons per year of a single HAP and less than twenty-five (25) tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

State Rule Applicability - Melting Furnaces, Silos, and End-Loading Bin

326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations)

The three (3) natural gas-fired glass melting furnaces (identified as 8-pot 12-pot, and Day Tank) are not subject to the requirement of 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations) because the potential to emit of SO₂ is less than twenty-five (25) tons per year.

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

(a) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from the three (3) glass melting furnaces, four (4) silos, one (1) end-loading bin, and one (1) sand mixing shall not exceed the pound per hour limit as shown in the table below.

Emission Unit	Maximum Throughput Rate		Particulate Emission Limit (lbs/hour)
	(lbs/hour)	(ton/hour)	
Melt Furnace (8-pot)	285	0.14	1.11
Melt Furnace (12-pot)	596	0.30	1.82
Melt Furnace (Day Tank)	129	0.06	0.65
Silo 1	525	0.26	1.67
Silo 2	115	0.06	0.61
Silo 3	190	0.10	0.85
Sand Mixing	1010	0.505	2.59

The pounds per hour limitation was calculated with the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour, and} \\ P = \text{process weight rate in tons per hour.}$$

(b) Pursuant to 326 IAC 6-3-2(e)(2), the particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) and which has a maximum process weight rate less than 100 pounds per hour and the methods in 326 IAC 6-3-2(b) through (d) do not apply, shall not exceed 0.551 pounds per hour. Therefore, Silo 4 and one (1) end-loading bin shall not exceed 0.551 pounds per hour each.

Based on potential to emit calculations shown in Appendix A, all of the above emission units are in compliance with this rule.

326 IAC 8-1-6 (New Facilities: General Reduction Requirement)

The three (3) glass melting furnaces are not subject to the requirements of 326 IAC 8-1-6 (New Facilities: General Reduction Requirement) because the potential emissions of VOC from each furnace is less than twenty-five (25) tons per year.

State Rule Applicability – Irradized Flat Glass Spray Operation

326 IAC 8-1-6 (New Facilities: General Reduction Requirement)

The irradiized flat glass spray operation is not subject to the requirements of 326 IAC 8-1-6 (New Facilities: General Reduction Requirement) because the potential emissions of VOC from each furnace is less than twenty-five (25) tons per year.

326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)

The irradiized flat glass spray operation is not subject to the provisions of 326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes) because there are no particulate emissions from this process. The spray used in this application is tetraisopropyl titanate (TIPT), which is chemically suspended in alcohol. The chemical bond is not broken until the product comes into contact with the molten glass, upon which it becomes a free flowing liquid. This free flowing liquid bonds to silica (sand) and forms titanium oxide.

State Rule Applicability – Natural Gas-Fired Unit Heaters

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

The twelve (12) natural gas-fired unit heaters are not subject to the requirements of 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes) because particulate emissions from these units are from combustion only.

Conclusion

The operation of this pressed and blown glass manufacturing plant shall be subject to the conditions of the Registration No.: 067-19043-00057.

**Appendix A: Emission Calculations
PM/PM10 Emissions
From Four (4) Silos and One (1) Bin**

Company Name: Kokomo Opalescent Glass Co, Inc.

Address: South Market Street, PO Box 2265, Kokomo, Indiana 46904

Registration: 067-19043

Plt ID: 067-00057

Reviewer: ERG/SD

Date: May 12, 2004

Emission Unit	Maximum Throughput of Raw Material		Emission Factor PM/PM10 (lbs/ton)	PTE of PM/PM10 (tons/year)	PTE of PM/PM10 (lbs/hour)
	(lbs/hour)	(tons/hour)			
Silo 1 - Sand	525	0.26	0.007	8.04E-03	1.84E-03
Silo 2 - Feldspar	115	0.06	0.007	1.76E-03	4.03E-04
Silo 3 - Soda ash	190	0.10	0.007	2.91E-03	6.65E-04
Silo 4 - Lime	31.0	0.02	0.007	4.75E-04	1.09E-04
Bin - Dolomite	11.5	0.01	0.007	1.76E-04	4.03E-05
TOTAL				1.34E-02	

* Emission factors are from AP-42, Chapter 11.26 (Talc Processing), Table 11.26-1 SCC 3-05-089-85 (11/95).

METHODOLOGY

PTE (tons/year) = Maximum throughput of raw material (tons/hour) * Emission factor (lb/ton) * 8760 hours/year * 1 ton/2000 lbs.

PTE (lbs/hour) = Maximum throughput of raw material (tons/hour) * Emission factor (lb/ton)

**Appendix A: Emission Calculations
Natural Gas-Fired Melting Furnaces (Molten Glass)**

Company Name: Kokomo Opalescent Glass Co, Inc.

Address: South Market Street, PO Box 2265, Kokomo, Indiana 46904

Registration: 067-19043

Pit ID: 067-00057

Reviewer: ERG/SD

Date: May 12, 2004

Emission Unit	Maximum Throughput of Mixture		* Emission Factor		Potential To Emit (tons/year)	Potential To Emit (lbs/hour)
	(lbs/hour)	(tons/hour)	Pollutant	(lbs/ton)		
Melting Furnaces	1010	0.51	PM	1.40	3.10	0.71
			PM10	1.40	3.10	0.71
			SO ₂	3.40	7.52	
			NO _x	6.20	13.7	
			VOC	0.20	0.44	
			CO	0.20	0.44	

* Emission factors are from AP-42, Chapter 11.15, Table 11.15-1 and 11.15-2 (10/86) for uncontrolled furnaces.

METHODOLOGY

PTE (tons/year) = Maximum throughput of mixture (lbs/hour) * 1ton/2000 lbs * Emission factor (lbs of pollutant /tons of glass produced) * 8760 hours/year * 1 ton/2000 lbs.

PTE (lbs/hour) = Maximum throughput of mixture (lbs/hour) * 1ton/2000 lbs * Emission factor (lbs of pollutant /tons of glass produced)

**Appendix A: Emission Calculations
Fifteen (15) Natural Gas-Fired Units**

Company Name: Kokomo Opalescent Glass Co, Inc.
Address: South Market Street, PO Box 2265, Kokomo, Indiana 46904
Registration: 067-19043
Plt ID: 067-00057
Reviewer: ERG/SD
Date: May 12, 2004

Heat Input Capacity
MMBtu/hour
7.91 (15 Units Total)

Potential Throughput
MMCF/year
69.3

	Pollutant					
	* PM	* PM10	SO ₂	** NO _x	VOC	CO
Emission Factor (lb/MMCF)	7.6	7.6	0.6	100	5.5	84
Potential To Emit (tons/year)	0.26	0.26	0.02	3.5	0.19	2.91

*PM and PM10 emission factors are filterable and condensable PM and PM10 combined.

**Emission factors for NO_x: Uncontrolled = 100 lb/MMCF.

Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (July, 1998).

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

METHODOLOGY

Potential Throughput (MMCF/year) = Heat Input Capacity (MMBtu/hour) * 8760 hours/year * 1 MMCF/1000 MMBtu

Potential To Emit (tons/year) = Potential Throughput (MMCF/year) * Emission Factor (lb/MMCF) * 1 ton/2000 lbs

See next page for HAPs emissions calculations.

**Appendix A: Emission Calculations
Fifteen (15) Natural Gas-Fired Units**

Company Name: Kokomo Opalescent Glass Co, Inc.

Address: South Market Street, PO Box 2265, Kokomo, Indiana 46904

Registration: 067-19043

Plt ID: 067-00057

Reviewer: ERG/SD

Date: May 12, 2004

HAPs - Organics

Emission Factor (lb/MMCF)	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential To Emit (tons/year)	7.28E-05	4.16E-05	2.60E-03	6.24E-02	1.18E-04

TOTAL

6.52E-02

HAPs - Metals

Emission Factor (lb/MMCF)	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential To Emit (tons/year)	1.73E-05	3.81E-05	4.85E-05	1.32E-05	7.28E-05

Methodology is the same as previous page.

The five highest organic and metal HAPs emission factors provided above are from AP-42, Chapter 1.4, Table 1-4.2, 1.4-3 and 1.4-4 (July, 1998). Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Appendix A: Emission Calculations
PM/PM10 Emissions
From Sand Mixing and Handling**

Company Name: Kokomo Opalescent Glass Co, Inc.
Address: South Market Street, PO Box 2265, Kokomo, Indiana 46904
Registration: 067-19043
Plt ID: 067-00057
Reviewer: ERG/SD
Date: May 12, 2004

Process	Maximum Throughput of Raw Material (tons/hour)	*Emission Factor		PTE of PM/PM10 (tons/year)	PTE of PM/PM10 (lbs/hour)
		Pollutant	(lb/ton)		
Sand Mixing	0.505	PM/PM10	0.0013	0.10	0.022

Control = Dust Collector with 97 % efficiency

METHODOLOGY

PTE (tons/year) = Maximum throughput of raw material (tons/hour) * Emission factor (lb/ton) * 8760 hours/year * 1 ton/2000 lbs * 1/(1-control efficiency %).
 PTE (lbs/hour) = Maximum throughput of raw material (tons/hour) * Emission factor (lb/ton) * 1/(1-control efficiency %).

**Appendix A: Emission Calculations
PM/PM10 Emissions
From Irradized Spray Operation**

Company Name: Kokomo Opalescent Glass Co, Inc.
Address: South Market Street, PO Box 2265, Kokomo, Indiana 46904
Registration: 067-19043
Pit ID: 067-00057
Reviewer: ERG/SD
Date: May 12, 2004

Process	Maximum Usage Rate of Spray (lbs/hour)	Volatile VOC %	Potential To Emit VOC (tons/year)
Irradized Spray	2.51	100%	11.0

* As per CP-067-5018, assume 100 % Volatility for PTE calculations.

METHODOLOGY

PTE of VOC (tons/year) = Maximum usage rate (lbs/hour) * Volatile VOC % * 8760 hours/year * 1 ton/2000 lbs.

**Appendix A: Emission Calculations
Summary**

Company Name: Kokomo Opalescent Glass Co, Inc.
Address: South Market Street, PO Box 2265, Kokomo, Indiana 46904
Registration: 067-19043
Pit ID: 067-00057
Reviewer: ERG/SD
Date: May 12, 2004

POTENTIAL TO EMIT IN TONS PER YEAR

Emission Units	PM	PM10	SO₂	NOx	VOC	CO
4 Silos and 1 Bin	0.013	0.013				
Melt Furnace -Molten Glass	3.10	3.10	7.52	13.7	0.44	0.44
Iradized Spray Facility	0.0	0.0	0.0	0.0	11.0	0.0
Combusion Units -Natural Gas Only	0.26	0.26	0.02	3.46	0.19	2.91
Sand Mixing	0.10	0.10				
TOTAL	3.47	3.47	7.54	17.2	11.6	3.35