

**CONSTRUCTION PERMIT  
OFFICE OF AIR MANAGEMENT  
and  
Anderson Office of Environmental Management**

**Owens-Brockway Glass Container Inc.  
2481 Brookside  
Lapel, IN 46051**

is hereby authorized to construct

a 84.7 MMBtu/hr natural gas fired regenerative glass melting furnace (Furnace No. 32) with a maximum raw material input of 22.2 tons per hour. Emissions are exhausted through a 6 foot diameter, 160 feet tall stack designated as Furnace "B" stack. This construction permit supersedes Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-2, 40 CFR 52.21 and 40 CFR 52.124 (Prevention of Significant Deterioration), with conditions listed on the attached pages.

Construction Permit No.: CP 095-8204-00012	
Issued by:  Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

## Construction Conditions

1. General Construction Conditions  
That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).
2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.
3. Effective Date of the Permit  
That pursuant to 40 CFR Parts 124.15 124.19 and 124.20, the effective date of this permit will be thirty-three (33) days from its issuance.
4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).
6. First Time Operation Permit  
That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:
  - (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
  - (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
  - (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.
  - (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1(Fees).
  - (e) The Permittee has submitted their Part 70 permit on May 31, 1996 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

7. NSPS Reporting Requirement

That pursuant to the New Source Performance Standards (NSPS), Part 60.290, Subpart CC, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and
- (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Management  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, IN 46206-6015

and

Anderson Office of Air Management  
P.O. Box 2100  
120 East 8<sup>th</sup> Street  
Anderson, IN 46011

The application and enforcement of these standards have been delegated to the IDEM-OAM. The requirements of 40 CFR Part 60 are also federally enforceable.

8. That when the facility is constructed and placed into operation the following operation conditions shall be met:

## Operation Conditions

1. General Operation Conditions

That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).

2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

3. Preventive Maintenance Plan

That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:

- (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.
- (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.
- (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM and Anderson Office of Air Management upon request and shall be subject to review and approval.

4. Transfer of Permit

That pursuant to 326 IAC 2-1-6 (Transfer of Permits):

- (a) In the event that ownership of this glass melt furnace is changed, the Permittee shall notify OAM, Permit Branch and Anderson Office of Air Management, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.
- (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
- (c) The OAM and Anderson Office of Air Management shall reserve the right to issue a new permit.

5. Permit Revocation

That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate

may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

6. Availability of Permit

That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, Anderson Office of Air Management or other public official having jurisdiction.

7. Performance Testing

That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for Furnace B stack, SO<sub>x</sub>, NO<sub>x</sub> and PM emissions within 60 days, but no later than 180 days after initial start-up. Test shall be performed at a minimum of ninety percent (90%) production rate for amber glass production and data shall be extrapolated for peak load operation. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.

- (a) A test protocol shall be submitted to the OAM, Compliance Data Section and Anderson Office of Air Management, 35 days in advance of the test.
- (b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
- (c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
- (d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM and Anderson Office of Air Management that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.
- (e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

8. Malfunction Condition

That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) and Anderson Office of Air Management or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

9. Annual Emission Reporting

That pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for the source. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. A copy of this rule is enclosed. The annual statement must be submitted to:

Indiana Department of Environmental Management  
Technical Support and Modeling Section, Office of Air Management  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Anderson Office of Air Management  
P.O. Box 2100  
120 East 8<sup>th</sup> Street  
Anderson, IN 46011

The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

10. Opacity Limitations

That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
- (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.
- (c) The EPA approved alternative method of using a maximum bridgewall furnace temperature of 2820 °F as demonstration of particulate compliance shall be accepted and the requirements of 40 CFR 60.293(c)(3) through (c)(5) are not applicable. This temperature shall be used until a new temperature is established from the performance test.

11. Fuel Usage Limitation

That the fuel used in Furnace No. 32 shall be limited to natural gas or an alternate fuel with a pounds SO<sub>x</sub>/MMBtu emission rate less than or equal to that of natural gas (0.0006 lbs SO<sub>x</sub>/MMBtu).

12. Existing Record Keeping Requirements

Pursuant to Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991, records shall be kept of the following data and parameters on a daily basis for Furnace No. 32 and made available to the Office of Air Management (OAM) and Anderson Office of Air Management when requested:

- (a) Maximum furnace bridgewall optical temperature (°F)
- (b) glass production rate (tons/day)
- (c) furnace air-to-gas ratio
- (d) fuel usage
- (e) percent cullet in material input
- (f) SO<sub>x</sub> content of material input (lbs SO<sub>x</sub>/ton)
- (g) percent SO<sub>x</sub> retention in the glass produced

13. 40 CFR Part 60 Subpart CC Particulate Matter Limitations for Modified Processes

That pursuant to 326 IAC 12.1-32 (40 CFR 60.293(b)(1)), particulate matter (PM) emissions shall not exceed 0.5 grams per kilogram of glass produced as measured according to 60.293(e).

14. 40 CFR Part 60 Subpart CC Monitoring Requirements

In lieu of installing a continuous opacity monitor, the alternate procedure approved by EPA of using maximum bridgewall furnace temperature as demonstration of particulate compliance shall be accepted. The present maximum bridgewall temperature of 2820 °F shall be maintained until a new bridgewall temperature is established for amber glass production during the performance test.

15. Production and Emission Limitations

Furnace No. 32 shall have the following production and emission limitations on a twelve (12) month rolling average, based on the type of glass produced:

Production and Emission Limitations
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Type of Glass	Amber	Flint (clear) & Green
Maximum Production	361 tons per day	412 tons per day
PM emissions*	55 tons per year***	55 tons per year***
SO <sub>x</sub> emissions	193.4 tons per year**	112 tons per year
NO <sub>x</sub> emissions*	443 tons per year	443 tons per year

\* Synthetic Minor Limits: the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21 does not apply.

\*\* PSD Limit: satisfies the requirements of the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21 provided that the sulfur content of the amber glass batch shall not exceed 0.3% by weight.

\*\*\* Satisfies the requirements of 326 IAC 6-3-2(c), Particulate Emission Limitations: Process Operations

Flint (clear) and green glass emission limitations are pursuant to Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991.

16. Determination of Compliance with Emission Limitations

Pursuant to Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991, compliance with the emission limitations contained in Operation Condition 15 shall be determined based on the following equations used to calculate daily emissions. These equations shall be used for amber glass production until emission factors (in lbs pollutant per ton of glass produced) have been established from the performance test.

$$PM = 0.64 \times 969 \times C \times 10^{((-35000)/(D + 460) + 5.44)} \times 24/2000 \text{ (tons per day)}$$

$$SO_2 = (C/2000) \times (B - (A/100) \times 2000 \times 64/80) - PM \times 64/142 \text{ (tons per day)}$$

$$NO_x = 0.28 \times ((0.159 \times D - 387) \times (E^2 - 8 \times E - 9) \times 10^{-3}/2000 \times F \times G \times 10^{-3} \text{ (tons per day)}$$

where:

- A = retained SO<sub>3</sub> in glass made (%)
- B = batch input SO<sub>2</sub> (lbs/ton of glass made)
- C = glass melted (tons per day)
- D = maximum bridgewall optical temp. (°F)
- E = air : fuel ratio (A:F)
- F = fuel usage (MCF/day)
- G = fuel heat content (BTU/ft<sup>3</sup>)

17. Reporting Requirements

That a log of information necessary to document compliance with Operation Permit Condition No. 10, 11, 12, 13, 14, 15, and 16 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM) and Anderson Office of Air Management.

- (a) A quarterly summary shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Management  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Anderson Office of Air Management  
P.O. Box 2100  
120 East 8<sup>th</sup> Street  
Anderson, IN 46011

within thirty (30) calendar days after the end of the quarter being reported in the format attached. These reports shall include monthly emissions of PM, SO<sub>x</sub> and NO<sub>x</sub>.

- (b) Unless otherwise specified in this permit, any notice, report, or other submissions required by this permit shall be timely if:
- (i) Postmarked on or before the date it is due; or
  - (ii) Delivered by any other method if it is received and stamped by IDEM, OAM and Anderson Office of Air Management, on or before the date it is due.
- (c) All instances of deviations from any requirements of this permit must be clearly identified in such reports.
- (d) Any corrective actions taken as a result of an exceedance of a limit, an excursion from the parametric values, or a malfunction that may have caused excess emissions must be clearly identified in such reports.
- (e) The first report shall cover the period commencing the postmarked submission date of the Affidavit of Construction.

18. Emergency Reduction Plans

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.
- (b) These ERPs shall be submitted for approval to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Management  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Anderson Office of Air Management  
P.O. Box 2100  
120 East 8<sup>th</sup> Street  
Anderson, IN 46011

within ninety (90) calendar days from the date on which this source commences operation.

- (c) If the ERP is disapproved by IDEM, OAM and Anderson Office of Air Management, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, IDEM, OAM and Anderson Office of Air Management, shall supply such a plan.
- (d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.
- (e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.
- (f) Upon direct notification by IDEM, OAM and Anderson Office of Air Management, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate level. [326 IAC 1-5-3]

**MALFUNCTION REPORT**

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR MANAGEMENT  
FAX NUMBER - 317 233-5967**

**This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6  
and to qualify for the exemption under 326 IAC 1-6-4.**

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ? \_\_\_\_\_, 100 LBS/HR VOC ? \_\_\_\_\_, 100 LBS/HR SULFUR DIOXIDE ? \_\_\_\_\_ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ? \_\_\_\_\_ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION \_\_\_\_\_.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC \_\_\_\_\_ OR, PERMIT CONDITION # \_\_\_\_\_ AND/OR PERMIT LIMIT OF \_\_\_\_\_

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ?    Y        N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ?    Y        N

COMPANY: \_\_\_\_\_ PHONE NO. (    ) \_\_\_\_\_

LOCATION: (CITY AND COUNTY) \_\_\_\_\_

PERMIT NO. \_\_\_\_\_ AFS PLANT ID: \_\_\_\_\_ AFS POINT ID: \_\_\_\_\_ INSP: \_\_\_\_\_

CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: \_\_\_\_\_

DATE/TIME MALFUNCTION STARTED: \_\_\_\_/\_\_\_\_/19\_\_\_\_        AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION:

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE \_\_\_\_/\_\_\_\_/19\_\_\_\_        AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO<sub>2</sub>, VOC, OTHER: \_\_\_\_\_

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: \_\_\_\_\_

MEASURES TAKEN TO MINIMIZE EMISSIONS: \_\_\_\_\_

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL\* SERVICES: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: \_\_\_\_\_

INTERIM CONTROL MEASURES: (IF APPLICABLE) \_\_\_\_\_

MALFUNCTION REPORTED BY:

\_\_\_\_\_  
TITLE: \_\_\_\_\_  
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

FAX NUMBER - 317 233-5967

**Please note - This form should only be used to report malfunctions  
applicable to Rule 326 IAC 1-6 and to qualify for  
the exemption under 326 IAC 1-6-4.**

**326 IAC 1-6-1                    Applicability of rule**

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO<sub>2</sub>, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

**326 IAC 1-2-39                    “Malfunction” definition**

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

**\*Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

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**and  
 Anderson Office of Air Management**

**Quarterly Report**

Company Name: Owens-Brockway Glass Container Inc.  
 Location: 2481 Brookside, Lapel, IN 46051  
 Permit No.: CP 095-8204-00012  
 Facility: Glass Melt Furnace No. 32

Production and Emission Limitations		
Type of Glass	Amber	Flint (clear ) & Green
Max Production	361 tons per day	412 tons per day
PM emissions	55 tons per year	55 tons per year
SO <sub>x</sub> emissions	193.4 tons per year	112 tons per year
NO <sub>x</sub> emissions	443 tons per year	443 tons per year

Quarter Covers Months \_\_\_\_\_ thru \_\_\_\_\_ Year: \_\_\_\_\_

Type of Glass Produced \_\_\_\_\_  
 Bridgwall Temperature \_\_\_\_\_

	Current Quarter Total Tons	Prior 3 Quarters Total Tons	Annual Limit Tons
PM			
NO <sub>x</sub>			
SO <sub>x</sub>			

Submitted by: \_\_\_\_\_ Title/Position  
 \_\_\_\_\_

Signature: \_\_\_\_\_ Phone #:  
 \_\_\_\_\_

Date : \_\_\_\_\_

## Indiana Department of Environmental Management Office of Air Management

### Technical Support Document (TSD) for New Construction and Operation

#### Source Background and Description

Source Name:	Owens-Brockway Glass Container Inc.
Source Location:	2481 Brookside, Lapel, Indiana 46051
County:	Madison
Construction Permit No.:	CP 095-8204-00012
SIC Code:	3221
Permit Reviewer:	M. Sims

The Office of Air Management (OAM) has reviewed an application from Owens-Brockway Glass Container Inc. relating to the construction and operation of Furnace No. 32 previously permitted under construction permit PC (48) 1633 issued on January 19, 1987 and operation permit 48-02-91-0087 issued on February 1, 1991. Furnace No. 32 is a 84.7 MMBtu/hr natural gas fired regenerative glass furnace with a maximum melt rate of 30,094 pounds per hour. This permit is for an increase in the current SO<sub>x</sub> limit from 112 tons per year to 193.4 tons per year. The attached proposed construction permit CP 095-8204-00012 shall supersede construction permit PC (48) 1633 issued on January 19, 1987 and operation permit 48-02-91-0087 issued on February 1, 1991 and all requirements pertaining to pollutants not considered by this permit review will be incorporated into the permit.

#### Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
B Furnace	Furnace No. 32	160	6	63300	945

#### Recommendation

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

Information, unless otherwise stated, 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 February 14, 1997, with additional information received on March 27, 1997, April 24, 1997, June 27, 1997 and October 31, 1997.

#### Emissions Calculations

See Appendix A (Emission Calculations) for detailed calculations (4 pages).

### Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	55*	55*
Particulate Matter (PM <sub>10</sub> )	55*	55*
Sulfur Dioxide (SO <sub>2</sub> )	330.8	330.8
Volatile Organic Compounds (VOC)	20.49	20.49
Carbon Monoxide (CO)	32.43	32.43
Nitrogen Oxides (NO <sub>x</sub> )	443*	443*
Single Hazardous Air Pollutant (HAP)	2.50	2.50
Combination of HAPs	2.67	2.67

\* This review is for consideration of raising the SO<sub>x</sub> limit for this furnace. The limit for these pollutants will remain at their current levels and are shown for incorporation into this permit.

Allowable emissions (as defined in the Indiana Rule) of SO<sub>x</sub> and CO are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

### County Attainment Status

Madison County has been classified as attainment or unclassifiable for SO<sub>x</sub> and CO. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

### Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	131
PM <sub>10</sub>	102
SO <sub>2</sub>	242
VOC	20
CO	20
NO <sub>x</sub>	443

- (a) This existing source is a major stationary source because at least one attainment regulated pollutant (NO<sub>x</sub>) is emitted at a rate of 250 tons per year or more.
- (b) These emissions were based on Facility Quick Look Report, dated September 18, 1996.

**Proposed Modification**

PTE for the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control and production limit, where applicable):

Pollutant	PM (ton/yr)	PM <sub>10</sub> (ton/yr)	SO <sub>2</sub> (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO <sub>x</sub> (ton/yr)
Proposed Modification	55*	55*	193.4	20.49	32.43	443*
Contemporaneous Increases	0	0	0	0	0	0
Contemporaneous Decreases	55**	55**	112**	0	0	443**
Net Emissions	0	0	81.4	20.49	32.43	0
PSD or Offset Significant Level	25	15	40	40	100	40

\*Incorporated from previously issued permit, not part of this review.  
 \*\*The original Furnace No. 32 limits are being treated as a contemporaneous decreases.

This modification to an existing major stationary source is major because the emissions increase of SO<sub>x</sub> is greater than the PSD significant level. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements are applicable.

**Part 70 Permit Determination**

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-095-5995-00012) application on May 31, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

**Federal Rule Applicability**

40 CFR Part 60, Subpart CC

This glass melting furnace is subject to the New Source Performance Standard 326 IAC 12 and 40 CFR 60.290 through 60.296, Subpart CC, "Standards of Performance for Glass Manufacturing Plants". This rule places the following requirements on furnace operation:

- (a) PM emissions shall not exceed 0.5 grams per kilogram of glass produced,
  - (b) a stack test for PM shall be conducted within 180 days of startup, and
  - (c) a system to continuously monitor opacity shall be installed.
- (enclosed is a copy of this federal rule)

**State Rule Applicability**

326 IAC 1-6 (Malfunctions)

This rule is subject to any owner or operator of any source that is required to obtain a permit under 326 IAC 21-12 (State Construction and Operation Permit: Registration) and 326 IAC 2-1-4 (State Construction and Operating Permits: Operating Permits).

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

This facility is subject to 326 IAC 2-2 (Prevention of Significant Deterioration (PSD) Requirements) because Owens-Brockway Glass Container Inc. is an existing major stationary source and the increase in SO<sub>x</sub> emissions for this modification exceed the PSD significant level.

326 IAC 2-6 (Emission Reporting)

This facility is subject to 326 IAC 2-6 (Emission Reporting), because the source emits more than 100 tons/yr of SO<sub>x</sub> and NO<sub>x</sub>. Pursuant to this rule, the owner/operator of this facility must annually submit an emission statement of the facility. The annual statement must be received by July 1 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 5-1 (Opacity Limitations)

The glass melting furnace is subject to 326 IAC 5-1-2 (Visible Emission Limitations). Pursuant to 326 IAC 5-1-2 except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.

326 IAC 6-3 (Process Operations)

Particulate matter emissions from the glass melting furnace are limited to no more than 12.56 lbs/hr. This satisfies the requirements of 326 IAC 6-3-2(c).

**SO<sub>x</sub> BACT Analysis**

This change in operation of the natural gas fired regenerative glass melting furnace resulting in an increase of SO<sub>x</sub> emissions from 112 tons per year to 193.4 tons per year makes this modification subject to the requirements of 326 IAC 2-2 and 40 CFR 52.21, Prevention of Significant Deterioration. Pursuant to the requirements of 326 IAC 2-2-3, Owens-Brockway Glass Container Inc. shall apply best available control technology (BACT) for SO<sub>x</sub> emissions. The following is a review of that analysis and the rationale for the choice of BACT.

There are two approaches to controlling SO<sub>x</sub> emissions. These are (1) remove the SO<sub>x</sub> from the exhaust gases using add-on control equipment or (2) remove or limit the SO<sub>x</sub> from the input to the process.

A search of the BACT/LAER Clearinghouse databases (permanent, transient and historical) for process id 90.016 - glass manufacturing provided the following BACT determinations for SO<sub>x</sub> emissions from glass melting furnaces:

BACT/LAER Determinations For Glass Melting Furnaces				
Company Name		Location	Process	Control
1	Guardian Industries	Iowa	flat glass furnace	limit saltcake to 10 lbs/1000 lbs sand per maximize cullet
2	AFG Industries, Inc.	Wisconsin	glass manufacturing line	dry scrubber and electrostatic precipitator (ESP)
3	Cardinal Flat Glass	Wisconsin	flat glass furnace	dry scrubber and electrostatic precipitator (ESP)
4	Guardian Industries Corp.	California	glass melt furnace #2	limit saltcake to 15 lbs/1000 lbs sand
5	PPG Industries, Inc.	Illinois	float glass plant	limit SO <sub>x</sub> to 1.6 lbs/ton glass
6	PPG Industries, Inc.	Maryland	glass furnace	limit SO <sub>x</sub> to 8.0 lbs/hr
7	Guardian Industries Corp.	Texas	glass melting furnace	limit SO <sub>x</sub> to 0.13 lbs/ton glass
8	Libbey-Owens-Ford Co.	California	glass melting furnace	batch gypsum limit of 19.3 lbs/1000 lbs sand
9	AFG Industries, Inc.	California	glass furnace	ESP, spray chamber
10	Latchford Glass Co.	California	glass melt furnace #3	wet scrubber
11	U.S. Glass, Inc.	Pennsylvania	side port glass furnace	limit saltcake to 10 lbs/1000 lbs sand

As shown in the table above, by almost 2:1 BACT for SO<sub>x</sub> from glass melting furnaces is not add-on control equipment but is accomplished by limiting the SO<sub>x</sub> input to the process (furnace). No cost data was included with any of the determinations.

For the Owens-Brockway glass melt furnace the following control options were considered: wet scrubber systems (3), a dry scrubber and ESP system and limiting the SO<sub>x</sub> input to the furnace (no add-on controls).

The following table summarizes the control options considered.

Owens-Brockway SO <sub>x</sub> BACT Control Options
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Rank	Control	Capital Cost	Annual O & M Cost	\$ per Ton SO <sub>x</sub> Removed	SO <sub>x</sub> Removed (Tons)
1	Met-Pro wet scrubber	\$866,019	\$412,134	\$4579	90
2	Tri-Mer wet scrubber	\$1,296,228	\$472,818	\$5254	90
3	Sly wet scrubber	\$1,153,708	\$496,588	\$5518	90
4	dry scrubber/ESP	\$6,516,160	\$1,497,965	\$16,844	90
5	limiting SO <sub>x</sub> input to process	0	0	0	0

In a wet scrubber system the exhaust gas is dissolved in a liquid. The pollutant contacts the liquid and diffuses from a gas phase to a liquid phase for disposal. The wet scrubber systems all have a cost effectiveness ratios that are reasonable however, these systems were ruled out as not being feasible for technical reasons. The town of Lapel's water plant is currently at maximum. It will take at a minimum four to five years before the water needed to operate a wet scrubber can be supplied. This has been documented by a letter from the Town of Lapel Municipal Utilities. No alternative water supply was investigated because the Municipal Utilities would not be able to handle the runoff if a supplier were available.

In a dry scrubber and electrostatic precipitator (ESP) system the exhaust gas is contacted with an alkaline material to produce a dry waste product (particulate matter) which is collected by the ESP for disposal. The cost effectiveness ratio for the dry scrubber/ESP system is excessive and thus this option was determined to be not feasible due to excessive cost. Owens-Brockway based their cost effectiveness on removing the incremental SO<sub>x</sub> increase due to the switch to amber glass. Assuming a control efficiency of about 70% for a dry scrubber/ESP system the amount of SO<sub>x</sub> removed would be 135 tons and the cost effectiveness would be approximately \$11,100.00. Again this amount makes this option cost prohibitive

The only remaining option for Owens-Brockway to control the SO<sub>x</sub> is to limit the SO<sub>x</sub> input to the process (no add-on controls). This can be accomplished by requiring that the furnace combust only natural gas and limiting the SO<sub>x</sub> input per amber glass batch to no more than 0.3% by weight. This will insure that the SO<sub>x</sub> emissions do not exceed 44.15 pounds per hour (193.4 tons per year).

In determining whether BACT for a pollutant should be based on a particular control technology, the economic, energy and environmental impacts of the control technology are considered. The two (2) add-on control technologies considered to control SO<sub>x</sub> from the glass melting furnace are not feasible. The other control option of limiting the SO<sub>x</sub> input to the process has no economic or energy impact. Modeling results indicate that there will be no significant air quality impact resulting from the proposed increased SO<sub>x</sub> limit and thus no further modeling of the SO<sub>x</sub> limit was required. Additionally, impact analysis showed no significant impact on soils, vegetation or visibility in the area surrounding the manufacturing facility. Therefore, there is minimal environmental impact resulting from limiting the SO<sub>x</sub> input to the process.

There is a New Source Performance Standard (NSPS) applicable for this facility (40 CFR 60 Subpart CC - Standards of Performance for Glass Manufacturing Plants) which regulates particulate matter emissions. Because it was not practically possible to test glass manufacturing plants melting all types of

batch formulations (SIC list in excess of 80 final glass products) the NSPS covers four (4) major categories of production. It is believed that for this same reason the NSPS does not address SO<sub>x</sub>. Each glass product can have several formulations depending upon the final use of the product, the color of the final product or the manufacturer of the product. This is evident in the case of Owens-Brockway because the need for the higher SO<sub>x</sub> limit was due to a switch to production of amber glass.

One of the goals of the PSD program is to ensure that economic growth will occur in harmony with the preservation of existing clean air resources. Owens-Brockway has submitted data showing that this plant is less competitive and operates at an annual disadvantage when compared to averages for beer and food operations as well as other divisional operations. Given that the add-on control technologies have been ruled out as not being feasible, BACT shall be considered as:

- (1) natural gas fired only,
- (2) SO<sub>x</sub> input per amber glass batch limited to no more than 0.3% by weight and ,
- (3) SO<sub>x</sub> emissions to not exceed 44.15 pounds per hour.

### **Air Toxic Emissions**

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

This glass melting furnace will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.

The concentrations of these air toxics were compared to the Permissible Exposure Limits (PEL) developed by the Occupational Safety and Health Administration (OSHA). The Office of Air Management (OAM) does not have at this time any specific statutory or regulatory authority over these substances.

See Attached "Air Quality Analysis" (4 pages).

### **Conclusion**

The construction of this glass melt furnace will be subject to the conditions of the attached proposed **Construction Permit No. CP 095-8204-00012**.

# APPENDIX A EMISSION CALCULATIONS

Owens-Brockway Glass Container Inc.  
2481 Brookside  
Lapel, Indiana 46051  
CP 095-8204-00012  
Madison County

## Overview

Owens-Brockway glass melting Furnace No. 32 is currently operated under the conditions specified in IDEM Operation Permit 48-02-91-0087 issued on February 1, 1991. The operation conditions in this permit are taken from IDEM Construction Permit PC (48) 1633 issued on January 19, 1987. In this construction permit, an older existing Furnace No.32 was razed and a newer larger Furnace No.32 was constructed. The actual emissions from the older furnace were used as creditable PSD contemporaneous emission decreases to offset the emission increases for the newer furnace. To avoid the requirements of 325 IAC 2-2 (now 326 IAC 2-2) Prevention of Significant Deterioration Requirements, particulate matter (PM) emissions were limited to 55 tons per year, sulfur oxide (SO<sub>x</sub>) emissions were limited to 112 tons per year and nitrogen oxide (NO<sub>x</sub>) emissions were limited to 443 tons per year for the new furnace. This made the net emission increase for these pollutants less than the PSD significant level and thus no PSD review was required. Owens-Brockway now seeks a relaxation of the 112 ton per year synthetic minor SO<sub>x</sub> limit (CP 095-8204-00012) and this will require a PSD review of Furnace No. 32 for SO<sub>x</sub> and issuance of a new construction/operation permit. (all other emission for the furnace limits will remain the same)

Emissions for glass melting furnace NO. 32 will occur due to the natural gas combusted within the furnace and the melting of the glass itself. In addition to the criteria pollutants given off during these processes, hazardous air pollutants (HAPs) will be emitted during melting.

## Potential Emissions from Natural Gas Combustion

Heat input rate = 84.7 MMBtu/hr (from Title V Application, Form PI-26, Page 2 of 3)  
Heating Value = 1000 Btu/scf

Emissions = (emission factor)(throughput)(1 ton/2000 lbs) = tons per year (tpy)

Emission factors taken from AP-42 Chapter 1.4 "Natural gas combustion" Tables 1.4-1, 1.4-2 and 1.4.3 for commercial boiler SCC 1-03-006-02.

Potential Natural Gas Combustion Emissions				
Pollutant	Emission Factor (lbs/MMCF)	Throughput (MMCF/yr)	Emissions (Lbs per Hour)	Emissions (Tons per Year)
PM	13.7	741.972	1.16	5.08
PM <sub>10</sub>	13.7	741.972	1.16	5.08
SO <sub>x</sub>	0.6	741.972	0.051	0.22
NO <sub>x</sub>	140	741.972	11.86	51.94
VOC	2.8	741.972	0.24	1.04
CO	35	741.972	2.96	12.98

## Potential Melting Emissions

Maximum raw material usage = 22.2 tons/hr = 194472 tons/yr (from Title V Application, Form GSD-06)  
Emissions = (emission factor)(throughput)(1 ton/2000 lbs) = tons per yer (tpy)

Emissions factor taken from AP-42 Compilation of Air Pollution Emission Factors Volume 1 : Stationary Point and Area Sources; Chapter 11.15 "Glass Manufacturing", Tables 11.15-1 and 11.15-2, Container Glass, SCC 3-05-014-02.

Potential Melting Emissions				
Pollutant	Emission Factor (lbs/ton)	Throughput (tons/yr)	Emissions (lbs/hr)	Emissions (tons/yr)
PM	1.4	194472	31.08	136.13
PM <sub>10</sub>	1.32	194472	29.30	128.35
SO <sub>x</sub>	3.4	194472	75.48	330.60
NO <sub>x</sub>	6.2	194472	137.64	602.86
VOC	0.2	194472	4.44	19.45
CO	0.2	194472	4.44	19.45

**Potential Hazardous Air Pollutants**

Emission factors taken from revised Form Y1-Y5

Potential Hazardous Air Pollutants		
HAP	Lbs per Hour	Tons per Year
Benzene	0.571	2.50
Formaldehyde	0.000059	0.000258
Arsenic Compounds	0.0042	0.018
Beryllium Compounds	0.000014	0.000062
Cadmium Compounds	0.0029	0.0128
Chromium Compounds	0.000054	0.00024
Lead Compounds	0.025	0.11
Manganese Compounds	0.0038	0.0165
Mercury Compounds	0.000058	0.00025
Nickel Compounds	0.0013	0.0055
Selenium Compounds	0.000083	0.00036
Total HAPs		2.67

**Summary of Potential Emissions**

Potential Emissions (Tons per Year)						
PM	PM <sub>10</sub>	SO <sub>x</sub>	NO <sub>x</sub>	VOC	CO	HAPs
141.21	133.43	330.83	654.80	20.49	32.43	2.67

**Allowable Emissions**

Since the only pollutant that this review is considering is SO<sub>x</sub>, and there are no applicable rules that would make the allowable emissions for SO<sub>x</sub> more stringent than the calculated potential emissions, allowable emissions will equal potential emissions for this pollutant.

**Potential to Emit and Limited Emissions**

PM/PM<sub>10</sub> annual emissions shall remain at the current limit of 55 tons per year as established by Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991. All conditions pertaining to these pollutants will be incorporated into this permit.

NO<sub>x</sub> annual emissions shall remain at the current limit of 443 tons per year as established by Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991. All conditions pertaining to this pollutant will be incorporated into this permit.

Owens-Brockway Glass Container Inc. is requesting a SO<sub>x</sub> limit of 193.4 tons per year for Furnace No. 32.

This is a 81.4 ton per year increase over the current SO<sub>x</sub> limit. Furnace No. 32 is PSD for SO<sub>x</sub> as this new limit now exceeds the increase allowed for the PSD significant level of 40 tons for this pollutant. A BACT determination is thus required for SO<sub>x</sub>.

Potential to Emit and Limited Emissions (Tons per Year)						
PM	PM <sub>10</sub>	SO <sub>x</sub>	NO <sub>x</sub>	VOC	CO	HAPs
55*	55*	193.4**	443*	20.49	32.43	2.67

\*Established by Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991

\*\*Limited by an Operation Condition in this Construction Permit (CP 095-8204-00012)

**Hazardous Air Pollutants**

Furnace No. 32 is not major for HAPs.

## Indiana Department of Environmental Management Office of Air Management

### Addendum to the Technical Support Document for New Construction and Operation

Source Name: Owens-Brockway Glass Container Inc.  
 Source Location: 2481 Brookside, Lapel, Indiana 46051  
 County: Madison  
 Construction Permit No.: CP 095-8204-00012  
 SIC Code: 3221  
 Permit Reviewer: M. Sims

On December 4<sup>th</sup>, 1997, the Office of Air Management (OAM) had a notice published in the Anderson Herald, Anderson, Indiana, stating that Owens-Brockway Glass Container Inc. had applied for a construction permit to construct and operate a natural gas fired regenerative glass melting furnace. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On December 22, 1997, Owens-Brockway Glass Container Inc. submitted comments on the proposed construction permit. Comments were also received from US EPA Region 5 via email. The summary of the comments and corresponding responses is as follows:

#### Owens-Brockway Glass Container Inc.:

##### Comment #1

Our February 11, 1997 permit application indicated the maximum production would be 30,094 lbs/hr (361 TPD). We wish to clarify that this peak load was entered to define the amber glass production. The present peak load limit of 412 TPD should be retained for the flint (clear) and green glasses, as they will continue to comply with the defined annual emission limits.

##### Response to Comment #1

While this permit will allow this furnace to be used to produce amber glass, it retains the capability of producing clear and green glass. The PM and NO<sub>x</sub> emission limitations will stay the same even with the addition of the clear and green glass throughput limitations. Production limits will be added to the permit based on the color of glass being produced. Also, the color of glass being produced will be added as a reporting criteria. Operation Conditions 15, 16, 17 shall be replaced with a new Operation Condition 15 as follows:

##### Old Operations Conditions:

15. Particulate Matter Synthetic Minor Limit  
 Pursuant to Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991, PM emissions from Furnace No. 32 shall not exceed 12.56 pounds per hour, 55 tons per year. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply and the requirements of 326 IAC 6-3-2(c), Particulate Emission Limitations: Process Operations are satisfied.

16. Nitrogen Oxide Synthetic Minor Limit  
 Pursuant to Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991, NO<sub>x</sub> emissions from Furnace No. 32 shall not exceed 101.14 pounds per hour, 443 tons per year. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.
17. PSD Sulfur Oxide Limit  
 SO<sub>x</sub> emissions from Furnace No. 32 shall not exceed 44.16 pounds per hour, 193.4 tons per year. This emission rate shall be considered BACT for this furnace and satisfies the requirements of the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21 provided that the sulfur content of the amber glass batch shall not exceed 0.3% by weight.

New Operation Condition 15

15. Production and Emission Limitations  
 Furnace No. 32 shall have the following production and emission limitations on a twelve (12) month rolling average, based on the type of glass produced:

Production and Emission Limitations		
Type of Glass	Amber	Flint (clear) & Green
Maximum Production	361 tons per day	412 tons per day
PM emissions*	55 tons per year***	55 tons per year***
SO <sub>x</sub> emissions	193.4 tons per year**	112 tons per year
NO <sub>x</sub> emissions*	443 tons per year	443 tons per year

\* Minor Limits: the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21 does not apply.

\*\* PSD Limit: satisfies the requirements of the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21 provided that the sulfur content of the amber glass batch shall not exceed 0.3% by weight.

\*\*\* Satisfies the requirements of 326 IAC 6-3-2(c), Particulate Emission Limitations: Process Operations

Flint (clear) and green glass emission limitations are pursuant to Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991.

The quarterly reporting form has also been revised to include the type of glass produced. The remaining operation conditions have been re-numbered due to the deletion of the proposed conditions.

Comment #2

Reference is made to conducting the performance tests at maximum production. It is nearly impossible to schedule production that will exactly match peak permitted load. Tests conducted at 90% of peak load or higher should be allowed, as representative. Extrapolation of the data to peak operating load could be easily made.

OAM agrees with this comment, therefore Operation Condition #7 shall be revised to read as follows:

Old Operation Condition:

7. Performance Testing  
That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for Furnace B stack, SO<sub>x</sub>, NO<sub>x</sub> and PM emissions within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. These tests shall be performed according to 326 IAC 3-2.1 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (a) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.
  - (b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
  - (c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
  - (d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.
  - (e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

Revised Operation Condition:(revised text shown in bold)

7. Performance Testing  
That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for Furnace B stack, SO<sub>x</sub>, NO<sub>x</sub> and PM emissions within 60 days, but no later than 180 days after initial start-up. **Test shall be performed at a minimum of ninety percent (90%) production rate for amber glass and data shall be extrapolated for peak load operation.** These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (a) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.
  - (b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
  - (c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
  - (d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.
  - (e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility

Comment #3

Reference to comply with 40 CFR 60.293 (c)(3) through (c)(5) is not applicable. EPA approved an alternate procedure of using a maximum bridgewall furnace temperature as demonstration of continued particulate compliance as part of our 1987 Permit to Construct application. It is our intention to continue using this procedure. The present maximum bridgewall temperature of 2820 °F will be maintained until the new temperature is established during the performance test.

Response to Comment #3

Furnace No. 32 satisfies the definition of modified process under 40 CFR 60.291 and therefore the requirements of 40 CFR 60.293 (c)(3) through (c)(5) are not applicable due to the approval of an alternative continuous monitoring system. As such Operation Condition 10(c) will be revised.

Old Operation Condition #10

10. Opacity Limitations  
That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:
- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
  - (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.
  - (c) Pursuant to 40 CFR 60.293 (c)(3) through (c) (5), determine the 97.5 percent upper confidence level of a normal distribution of average opacity values and report as excess emissions all 6 minute periods during which the average opacity exceeds the 97.5 percent upper confidence level.

Revised Operation Condition #10 (revised text in bold)

10. Opacity Limitations  
That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:
- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
  - (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.
  - (c) **The EPA approved alternative method of using a maximum bridgewall furnace temperature of 2820 °F as demonstration of particulate compliance shall be accepted and the requirements of 40 CFR 60.293(c)(3) through (c)(5) are not applicable. This temperature shall be used until a new temperature is established from the performance test.**

Comment #4

Natural gas is the only fossil fuel listed for the furnace. The standby fossil fuel, propane, should also be identified.

Response to Comment #4

Furnace No. 32 was previously permitted to use an alternate fuel so long as the alternate fuel had an SO<sub>x</sub> emission rate less than or equal to the SO<sub>x</sub> emission rate of natural gas. This condition will be added to the permit. Operation condition # 11 will be revised as follows:

Old Operation Condition

11. Fuel Usage Limitation  
That Furnace No. 32 shall use natural gas only as fuel.

Revised Operation Condition

11. Fuel Usage Limitation  
That the fuel used in Furnace No. 32 shall be limited to natural gas or an alternate fuel with a pounds SO<sub>x</sub>/MMBtu emission rate less than or equal to that of natural gas (0.0006 lbs SO<sub>x</sub>/MMBtu).

Comment #5

We consider the reference to using a continuous opacity monitor, pursuant to 326 IAC 12.1-32 (40 CFR 60.293(c)), is not applicable. It is our intention to continue using the EPA approved alternate procedure of maximum furnace bridgewall temperature to demonstrate particulate compliance. The presently permitted maximum bridgewall of 2820 °F will be maintained until the new temperature is established from the performance test.

Response to Comment #5

Operation condition #14 will be revised as follows:

Old Operation Condition:

14. 40 CFR Subpart CC Monitoring Requirements  
That pursuant to 326 IAC 12.1-32 (40 CFR 60.293(c)) a system to continuously monitor the opacity of the emissions from Furnace No. 32 shall be installed, calibrated, operated, and maintained.

Revised Operation Condition:

14. 40 CFR Part 60 Subpart CC Monitoring Requirements  
In lieu of installing a continuous opacity monitor, the alternate procedure approved by EPA of using maximum bridgewall furnace temperature as demonstration of particulate compliance shall be accepted. The present maximum bridgewall temperature of 2820 °F shall be maintained until a new bridgewall temperature is established during the performance test.

Comment #6 through #8

Comment #6

We do not believe there should be a specific hourly particulate emission limit defined in the permit. The furnace has been classified as a modified source, and is subject to the NSPS particulate emission limit of 0.5g per kg (1.0 lbs per ton) of glass made, as set forth in 40 CFR Subpart CC. An hourly particulate emission limit of 12.56 lbs/hr could seriously restrict

production well below the peak permit production limit.

Comment #7

We do not believe there should be a new requirement for an hourly emission rate limit. The annual NO<sub>x</sub> limit of 443 TPY was established for this furnace on January 19, 1987 pursuant to Construction Permit PC (48) 1633 and it represents the annual average of all the high and low production throughout the year. Arbitrarily setting a new hour limit, and basing it on the annual permitted limit would make it impossible for the plant to meet the variable production schedules over the year.

Comment #8

We do not believe there should be a new requirement for an hourly emission rate limit. Setting a maximum hourly limit based on the permitted annual emission limit would make it impossible for the plant to meet variable production schedules throughout the year.

Response to Comments #6 through #8

Hourly emission limits (previously stated in proposed Operation Conditions 15, 16, and 17 and on the reporting form) will be removed from the permit. Annual emissions limits will be revised to a 12 month rolling average. The emission reporting form will be changed to reflect the new reporting procedure.

Comment #9

The information necessary to document compliance with Operating Permit Condition No.'s 12, 13, 15, 16, and 17 will be maintained at the plant for the required 3 years.

Section (a) of PC No. 18 requires the plant to submit quarterly reports summarizing the furnace's past three month of PM, SO<sub>2</sub> and NO<sub>x</sub> emissions. In the previous Operating Permit 48-02-91-0087, a series of mathematical formulas have been used to estimate the daily emissions. The plant will continue using these formulas to track daily emissions until the source tests are completed and pollutant emission factors (in Lbs/ton) are approved for use by the State. These factors will then replace the formulas in tracking daily emissions.

Response to Comment #9

OAM agrees that the previous formulas used to calculate PM, SO<sub>x</sub> and NO<sub>x</sub> are applicable until data from the stack test is available. This method can be used until that time. A new Operation Condition #16 shall be added to the permit.

New Operation Condition

16. Determination of Compliance with Emission Limitations

Pursuant to Construction Permit PC (48) 1633 issued on January 19, 1987 and Operation Permit 48-02-91-0087 issued on February 1, 1991, compliance with the emission limitations contained in Operation Condition 15 shall be determined based on the following equations used to calculate daily emissions. These equations shall be used for amber glass production until emission factors (in lbs pollutant per ton of glass produced) have been established from the performance test.

$$PM = 0.64 \times 969 \times C \times 10^{((-35000)/(D + 460) + 5.44)} \times 24/2000 \text{ (tons per day)}$$

$$SO_2 = (C/2000) \times (B - (A/100)) \times 2000 \times 64/80 - PM \times 64/142 \text{ (tons per day)}$$

$$NO_x = 0.28 \times ((0.159 \times D - 387) \times (E^2 - 8 \times E - 9) \times 10^{-3}/2000 \times F \times G \times 10^{-3} \text{ (tons per day)}$$

where:

A = retained SO<sub>3</sub> in glass made (%)  
B = batch input SO<sub>2</sub> (lbs/ton of glass made)  
C = glass melted (tons per day)  
D = maximum bridgewall optical temp. (°F)  
E = air : fuel ratio (A:F)  
F = fuel usage (MCF/day)  
G = fuel heat content (BTU/ft<sup>3</sup>)

Comment #10

The quarterly report form list hourly emission limits for PM, SO<sub>x</sub> and NO<sub>x</sub>. We do not believe these rates should be specified, for reasons previously outlined under our comments related to PC No.'s 15, 16, and 17.

Response to Comment #10

The quarterly reporting form will be revised to reflect changes due to Comment #6, #7, and #8.

EPA Region 5 Comments (Alvin Choi):

Comment #1

PM and NO<sub>x</sub> emissions are restricted to its original limits. Will this be enforced through stack testing only? Can anything else be used to insure compliance like hours of operation or production limits?

Response to Comment #1

Production limits have been added to the operation conditions (see Owens-Brockway comment #1. Additionally, mathematical equations are listed in the permit to calculate PM, SO<sub>x</sub> and NO<sub>x</sub> emissions until emissions factors can be established following the performance test.

Comment #2

Is there a condition in the permit which states that the old furnace will be shutdown permanently?

Response to Comment #2

There is no old furnace being shutdown. This permit adds the capability of producing amber glass for the existing furnace (see response to Owens-Brockway comment # 1). The only emission limit required to be raised to accomplish the new production is the SO<sub>x</sub> limit. All other limits are carried over from the existing permit. The permit does contain a condition which this permit supercedes the current permit.

Comment #3

The 0.3% sulfur limit correlated to the 193.4 TPY SO<sub>2</sub> limit. Are there any calculations to confirm this?

Response to Comment #3

Yes, this number was confirmed. Owens-Brockway submitted confidential information containing

their amber glass batch recipe with weight percent sulfur content and emission estimate.

Comment #4

In the TSD, why weren't past actuals used for the contemporaneous decreases instead of the allowables?

Response to Comment #4

There is no actual netting taking place with this permit. The table in the TSD is being used to carry forward the emission limits in the existing permit which were not changed in this permit.

Comment #5

Will there be other emissions besides SO<sub>x</sub> which will be emitted due to this change?

Response to Comment #5

The production of amber glass will result in emission increases of VOC's and CO in addition to the SO<sub>x</sub> increase. Only SO<sub>x</sub> emission will exceed the PSD significant levels.

Comment #6

Were retrofit cost considered as part of the cost analysis?

Response to Comment #6

Yes, retrofit cost were taken into account in the cost analysis submitted by the source.

Comment #7

How was the 193.4 TPY BACT limit determined? The 0.3% sulfur limit?

Response to Comment #7

See Response to EPA Comment #3.

Comment #8

How will the 0.3% sulfur content be practically enforced?

Response to Comment #8

The source samples the sulfur content of each batch. Record keeping of this sampling will be added to the record keeping requirement of Operation Condition 18 and to the Quarterly Reporting Form.

IDEM Internal Comments

The Anderson Local Agency now reviews all construction permits issued for Madison County. The following construction/operation conditions have been revised to make reference to this fact.