Public Notice

DEQ Requests Comments on Owens-Brockway's Proposed Air Quality Permit

DEQ invites the public to submit comments on the conditions of Owens-Brockway's proposed air quality permit, known officially as a Title V (five) permit.

Summary

The proposed permit is a renewal of an existing Title V permit that is currently in effect. Owens-Brockway has not made any major modifications or process changes. The proposed permit incorporates new regulatory requirements and reduces the amount of pollution the facility is allowed to emit.

How do I participate?

Attend the public hearing to learn about the permit application, ask questions, and provide verbal or written comments on the proposed permit. You may also submit written comments by mail, fax or email.

Public hearing details

When: Wednesday, Sept. 19, 2018, 6:30 p.m.

Where: NAYA Family Center
5135 NE Columbia Blvd.
Portland, OR, 97218

Send written comments by mail, fax or email:

Mail: Edith McMorrine
AQ Permit Coordinator
700 NE Multnomah St.
Portland, OR 97232

Fax: 503-229-6945
Email: nwraqpermits@deq.state.or.us

Written comments due by 5 p.m. Oct. 26, 2018.

About the facility

The Owens-Brockway facility produces beverage bottles by recycling post-consumer glass and using other raw materials such as sand and limestone. Owens-Brockway operates two glass melting furnaces that are the main source of air pollution at the facility. The furnace burns natural gas as the primary source of energy.

What air pollutants would the permit regulate?

This permit regulates emissions of the pollutants listed in the table at the end of this document.

How does DEQ determine permit requirements?

DEQ evaluates types and amounts of pollutants emitted and the facility's operations and determines permit requirements according to state and federal regulations.

What special conditions are in this permit?

In addition to federal and state regulations, the permit also contains a Corrective Action Plan that is designed to prevent visible emissions from exceeding the 20 percent opacity standard.

How does DEQ monitor compliance with the permit requirements?

This permit would require the facility to monitor pollutants using federally-approved monitoring practices and standards.

Owens-Brockway operates a Continuous Opacity Monitoring System to measure the visible emissions discharging from its furnaces around the clock.

The proposed permit also requires comprehensive source testing to assess the facility's emissions.

What happens after the public comment period ends?

DEQ will consider and respond to all comments received and may modify the proposed permit based on comments. DEQ will then send a proposed permit to the U.S. Environmental Protection Agency for review.

DEQ will issue the permit following EPA approval. The public may appeal the permit issuance within 105 days from the date DEQ sent the proposed permit to EPA for review.

Where can I get more information?

Find more information and view the permit application at http://bit.ly/DEQPublicNotices or contact Edith McMorrine at 503-229-5582.

Alternative Formats

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email deqinfo@deq.state.or.us.

State of Oregon
Department of Environmental Quality

Air Quality Program
Northwest Region
700 NE Multnomah St.
Ste 600 Portland, OR 97232

Phone: 503-229-6093
800-452-4011
Fax: 503-229-6945

Contact: George Yun

www.oregon.gov/DEQ

DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

Notice issued: 8/15/18
By: George Yun
Permit number: 26-1876-TV-01

Emissions limits

Criteria Pollutants:
Table 1 below presents maximum allowable emissions of criteria pollutants for the facility. The current emission limit reflects maximum emissions the facility can emit under the existing permit. The proposed emission limit reflects maximum emissions the facility would be able to emit under the proposed permit. Typically, a facility's actual emissions are less than maximum limits established in a permit; however, actual emissions can increase up to the permitted limit.

Table 1

Criteria Pollutant	Current Limit (tons/yr)	Proposed Limit (tons/yr)
Particulate matter, PM	132	109
Small particulate matter, PM_{10}	132	109
Fine particulate matter, $PM_{2.5}$	--	100
Nitrogen oxides	711	382
Sulfur dioxide	313	184
Carbon monoxide	99	99
Volatile organic compounds	39	39
GHG (CO_2e)	--	100,521
Lead (Pb)	--	0.5

For more information about criteria pollutants, visit: www.epa.gov/criteria-air-pollutants

Hazardous air pollutants:
Owens-Brockway's total estimated emissions of hazardous air pollutants is less than two tons per year, so it's regulated as a minor source of hazardous air pollutants under federal law.

Table 2

Chemical Name	Estimate (tons/yr)
Arsenic Compounds	0.01
Benzene	0.0015
Beryllium Compounds	0.000025
Cadmium Compounds	0.014
Dichlorobenzenes (mixed isomers)	0.00087
Cobalt Compounds	0.000061
Ethylbenzene	0.0018
Formaldehyde	0.054
Hexane	1.3
Hydrochloric Acid	0.024
Lead Compounds	0.285
Manganese Compounds	0.011
Mercury Compounds	0.00038
Nickel Compounds	0.0046
Naphthalene	0.00044
Xylenes (isomers)	0.0088
Selenium Compounds	0.031
Chromium Compounds	0.17
Hex-Chromium	0.0002
Total (tons/yr)	Less than 2 tons/yr

For more information about hazardous air pollutants, visit: https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants

Aviso Público

El Departamento de Calidad Ambiental (DEQ) Solicita Comentarios sobre el Permiso de Calidad del Aire Propuesto por Owens-Brockway

Departamento de Calidad Ambiental
del Estado De Oregón

Región del noroeste de la calidad del aire

700 NE Multnomah St.
Portland, OR 97232
Teléfono 503-229-6093
800-452-4011
Fax: 503-229-6945
Contacto: George Yun

www.oregon.gov/DEQ

DEQ es un líder en la restauración, el mantenimiento y la mejora de la calidad del aire, la tierra y el agua de Oregón.

El DEQ invita al público en general a enviar comentarios sobre las condiciones del permiso de calidad del aire propuesto por Owens-Brockway, conocido oficialmente como un permiso de Title V (cinco).

Resumen

El permiso propuesto es una renovación de un permiso Title V existente que está en vigencia. Owens-Brockway no ha efectuado modificaciones o cambios en sus procesos. El permiso propuesto incorpora nuevos requisitos y reduce la cantidad de contaminación que la instalación puede emitir.

¿Cómo puedo participar?

Asiste a la audiencia pública para escuchar sobre la solicitud del permiso, haz preguntas y proporciona comentarios verbales o escritos sobre el permiso propuesto. También puedes enviar comentarios por escrito por correo, fax o correo electrónico.

Información de las audiencias públicas

Cuando: miércoles 19 de septiembre del 2018, 6:30 pm
Donde: NAYA Centro Familiar
5135 NE Columbia Blvd.
Portland, OR, 97218

Envíe comentarios por escrito por correo, fax o correo electrónico a:

Edith McMorrine
Coordinador de permisos de calidad del Aire, del DEQ
700 NE Multnomah St.
Portland, OR 97232

Fax: 503-229-6945
Correo electrónico:
nwraqpermits@deq.state.or.us

Comentarios por escrito a más tardar a las 5 p.m. el 26 de septiembre de 2018.

Sobre la compañía

La compañía Owens-Brockway produce botellas para bebidas.. Utiliza en la manufacturavidrio reciclado y otras materias primas como arena y piedra caliza. Owens-Brockway utiliza dos hornos de fusión de vidrio que son la principal fuente de contaminación del aire de la compañía. El horno quema gas natural como la fuente de energía.

¿Qué contaminantes del aire regula el permiso?

El permiso regula los contaminantes anotados en la tabla al final de este documento.

¿Cómo determina el DEQ los requisitos del permiso?

EL DEQ evalúa el tipo y la cantidad de contaminante emitido, a la vez que las operaciones de la compañía, y entonces determina los requisitos a incluir en el permiso. Este permiso debe cumplir con las normas estatales y federales..

¿Qué condiciones especiales hay en este permiso?

Además de las normas estatales y federales, el permiso también incluye un Plan de Acción Correctiva, que está diseñado para prevenir que las emisiones visibles excedan el estándar de aire opaco del 20 por ciento.

¿Cómo es que el DEQ supervisa el cumplimiento de los requisitos del permiso?

El permiso requiere que la compañía monitoree los contaminantes utilizando prácticas y estándares de monitoreo aprobados por el gobierno federal.

Owens-Brockway opera un Sistema de Monitoreo de Aire Opaco de una manera continua para medir las emisiones visibles que salen de sus hornos a toda hora.

El permiso propuesto también requiere de pruebas exhaustivas de las fuentespara evaluar las emisiones al medio ambiente de la compañía.

¿Qué sucede cuando finaliza el período de comentarios públicos?

DEQ tomará en cuenta y responderá a cada comentario recibido y podrá modificar el permiso propuesto de acuerdo a los comentarios. El DEQ entonces enviará un permiso propuesto a

Aviso expedido el 15/08/18
Por: George Yun
Permiso Número: 26-1876-TV-01

la Agencia Federal de Protección Ambiental (EPA) de los EUA. para su revisión.

DEQ emitirá el permiso después de recibir la aprobación de la EPA. El público puede apelar la expedición del permiso dentro de los 105 días a partir de la fecha en que DEQ envíe el permiso propuesto a la EPA para su revisión.

¿Dónde puedo obtener más información?

Encuentre más información y vea la solicitud de permiso en http://bit.ly/DEQPublicNotices o comuníquese con Edith McMorrine al 503-229-5582.

Formatos Alternativos

Estos documentos pueden proveerse a pedido en un formato alternativo para personas con discapacidad ó en un idioma que no sea inglés. Para solicitar un documento en otro formato ó idioma, llame al DEQ en Portland al 503-229-5696, o al número gratuito en Oregón al 1-800-452-4011, ext. 5696; o envíe un correo electrónico a deqinfo@deq.state.or.us

Límites de Emisiones

Criterio de Contaminantes:
La Tabla 1 a continuación presenta las emisiones máximas permitidas del criterio de contaminantes para la compañía. El límite de emisión actual refleja las emisiones máximas que la compañía puede emitir bajo el permiso existente. El límite de emisión propuesto refleja las emisiones máximas que la compañía podría emitir de acuerdo al permiso propuesto. Típicamente, las emisiones reales de una compañía son menores a los límites máximos establecidos en un permiso; sin embargo, las emisiones reales pueden aumentar hasta el límite permitido.

Table 1

Criterio de Contaminantes	Límite Actual (toneladas/año)	Límite Propuesto (toneladas/año)
Partículas de Material , PM	132	109
Partículas de Material pequeñas, PM_{10}	132	109
Partículas de Material fino, $PM_{2.5}$	--	100
Óxido de Nitrógeno	711	382
Dióxido de Azufre	313	184
Monóxido de Carbono	99	99
Compuestos orgánicos volátiles	39	39
GEI (CO_2e)	--	100,521
Plomo (Pb)	--	0.5

Para más información sobre contaminantes criterio visite: www.epa.gov/criteria-air-pollutants

Contaminantes peligrosos en el aire: Una estimación de emisiones totales de Owens-Brockway de contaminantes peligrosos en el aire es de menos de dos toneladas por año, por lo que se considera esta la emisión como una fuente menor de contaminantes peligrosos en el aire según la ley federal.

Tabla 2

Nombre de la sustancia química	Cantidad Estimada (toneladas/año)
Compuestos de Arsénico	0.01
Benceno	0.0015
Compuestos de Berilio	0.000025
Compuestos de Cadmio	0.014
Diclorobencenos (isómeros mixtos)	0.00087
Compuestos de Cobalto	0.000061
Etilbenceno	0.0018
Formaldehído	0.054

DEQ-DC1

Hexano	1.3
Ácido Clorhídrico	0.024
Compuestos de Plomo	0.285
Compuestos de Manganeso	0.011
Compuestos de Mercurio	0.00038
Compuestos de Níquel	0.0046
Naftalina	0.00044
Xilenos (isómeros)	0.0088
Compuestos de Selenio	0.031
Compuestos de Cromo	0.17
Hexa Cromo	0.0002
Total (toneladas/año)	Menos de 2 toneladas/año

Para más información sobre contaminantes peligrosos en el aire visite y revise:
https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants

State of Oregon
Department of
Environmental
Quality

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
OREGON TITLE V OPERATING PERMIT

Northwest Region
700 N.E. Multnomah St., Suite 600
Portland, OR 97232
503-229-5263

Issued in accordance with the provisions of
ORS 468A.040 and based on the land use compatibility findings included in the permit record.

ISSUED TO:

Owens-Brockway Glass Container Inc.
9710 NE Glass Plant Rd
Portland, OR 97220

INFORMATION RELIED UPON:

Application Number: 025752
Received: 12/28/2010

PLANT SITE LOCATION:

9710 NE Glass Plant Road
Portland, OR 97220

LAND USE COMPATIBILITY STATEMENT:

From: City of Portland
Dated: 03/14/1995

ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY

_____ _____
Matt Hoffman, Northwest Region Air Quality Manager Date

Nature of Business	**SIC**	**NAICS**
Container Glass Manufacturing	3221	327213

RESPONSIBLE OFFICIAL:

Title: Plant Manager

FACILITY CONTACT PERSON:

Name: Ashleigh Henry
Title: EHS Manager
Phone: (567) 336-3429

TABLE OF CONTENTS

LIST OF ABBREVIATIONS USED IN THIS PERMIT 3

PERMITTED ACTIVITIES 4

EMISSIONS UNIT (EU) AND POLLUTION CONTROL DEVICE (PCD) IDENTIFICATION 4

EMISSION LIMITS AND STANDARDS 5

PLANT SITE EMISSION LIMITS 16

TEST METHODS AND PROCEDURES 18

GENERAL MONITORING AND RECORDKEEPING REQUIREMENTS 19

RECORDKEEPING REQUIREMENTS 19

REPORTING REQUIREMENTS 20

NON-APPLICABLE REQUIREMENTS 23

GENERAL CONDITIONS 24

LIST OF ABBREVIATIONS THAT MAYBE USED IN THIS PERMIT

ACDP	Air Contaminant Discharge Permit
acfm	actual cubic foot per minute
Act	Federal Clean Air Act
AQMA	Air quality management area
As	Arsenic
ASTM	American Society of Testing and Materials
Be	Beryllium
Btu	British thermal unit
Cd	Cadmium
CFR	Code of Federal Regulations (§)
CO	Carbon Monoxide
CO_2	Carbon dioxide
CO_2e	carbon dioxide equivalent
COMS	Continuous opacity monitoring system
CPMS	Continuous parameter monitoring system
Cr	Chromium
Cr^{+6}	Hexavalent Chromium
Cu	Copper
DEQ	Department of Environmental Quality
dscf	Dry standard cubic feet
EF	Emission factor
EPA	US Environmental Protection Agency
EU	Emissions Unit
FCAA	Federal Clean Air Act
FSA	Fuel sampling and analysis
GHG	greenhouse gas
gr/dscf	Grain per dry standard cubic feet (1 pound = 7000 grains)
HAP	Hazardous Air Pollutant as defined by OAR 340-244-0040
HCFC	Halogenated Chloro-Fluoro-Carbons
Hg	Mercury
H_2S	Hydrogen Sulfide
ID	Identification number or label
I&M	Inspection and maintenance
NA	Not applicable
ID	Identification number
I&M	Inspection and maintenance
LPG	Liquefied petroleum gas
MB	Material balance
mg/l	milligrams per liter
Mn	Manganese
mvac	Motor vehicle air conditioner
NG	Natural gas
Ni	Nickel
NO_x	Nitrogen oxides
O_2	Oxygen
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ORS	Oregon Revised Statutes
O&M	Operation and maintenance
Pb	Lead
PCD	Pollution Control Device
PM	Particulate matter
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
ppm	Parts per million
PSD	Prevention of Significant Deterioration
PSEL	Plant Site Emission Limit
psia	pounds per square inch, actual
RACT	Reasonably Available Control Technology
scf	Standard cubic foot
SER	Significant Emissions Rate
SERP	Source emissions reduction plan
SIP	State Implementation Plan
SNAP	Significant New Alternative Policy
SO_2	Sulfur dioxide
ST	Source test
VE	Visible emissions
VMT	Vehicle miles traveled
VOC	Volatile organic compounds

PERMITTED ACTIVITIES

1. Until such time as this permit expires or is modified or revoked, the permittee is allowed to discharge air contaminants from those processes and activities directly related to or associated with air contaminant source(s) in accordance with the requirements, limitations, and conditions of this permit. [OAR 340-218-0010 and 340-218-0120(2)]

2. All conditions in this permit are federally enforceable, meaning that they are enforceable by DEQ, EPA, and citizens under the Clean Air Act, except Conditions 8, 9, G5, and G9 (OAR 340-248-0005 through 340-248-0180) are only enforceable by the state. [OAR 340-218-0060]

EMISSIONS UNIT (EU) AND POLLUTION CONTROL DEVICE (PCD) IDENTIFICATION

3. The emissions units and pollution control devices regulated by this permit are the following [OAR 340-218-0040(3)]:

EU ID	EMISSIONS UNIT (EU) Description	EU Device ID	PCD	PCD ID
EU1	Raw material (excluding cullet) handling activities including unloading conveyor/elevator & storage silos	RMU1 to RMU3	Raw material baghouse Batch baghouse	RMBH-1 RMBH-2 RMBH-3
EU2	Cullet crusher (in-house)	CC5	None	--
EU3	Raw material blending equipment including conveyors/elevators, weigh bin hopper & surge bin, mixers/chargers.	RMB1 to RMB3	Batch baghouse	RMBH-2
EU4	Glass melting furnaces A and D	GM1 & GM4	None	--
EU5	Hot end surface treatment units Mold swabbers	HEST1 - 4 MS1 to MS4	HEST Abatement (NH_3 injected baghouse)	HEST-A --
EU6	Natural gas combustion sources: Refiners Forehearths Lehrs Mold burnout/curing oven Mold heat oven Quick fire oven	 R1 to R4 FH1 to FH4 LH1 to LH4 MO-1 MH-1 QF-1	None	--
EU7	Boiler	B1	None	--
EU10	Machine repair dust collector at the machine repair area. Mold bench dust collector at the mold repair bench area.		Baghouse Baghouse	MRD-1 MBD-1

EMISSION LIMITS AND STANDARDS

The following tables and conditions contain the applicable requirements along with testing, monitoring, and recordkeeping requirements for the emissions units to which those requirements apply.

Table-I. Summary of Facility-wide Emission Limits and Standards

Applicable Requirements		Pollutant/	Limit/	Monitoring Requirements	
OAR/CFR	Condition No.	Parameter	Standard	Method	Cond No.
340-206-0050	4	Pollutants specified	SERP	Recordkeeping	5
340-208-0210	6	Fugitive dust	Preventive maintenance	I&M Recordkeeping	7
340-208-0450	8	PM >250µ	no fallout	I&M Recordkeeping	10
340-208-0300	9	Nuisance	no nuisance		
40 CFR Part 68	11	Risk Management	Risk Management Plan	NA	11

4. **SOURCE EMISSION REDUCTION PLAN:** In the event an Air Pollution Alert, Warning, or Emergency Episode for the pollutant specified below is declared in the Portland area by the Department, the permittee must take the action appropriate to the episode condition as described below. The permittee must take such action when the permittee first becomes aware of such a declaration whether through news media, direct contact with the Department, or from other sources. [OAR 340-206-0050]

Episode Level	Pollutant	Action to be taken
Alert:	Any pollutant	1. Review SERP to prepare for possible further action. 2. Postpone any scheduled increase in production. 3. Actively promote and organize car pools for employees.
Warning:	PM_{10}	1. Reduce production wherever feasible. 2. Postpone any maintenance on furnace or boiler firing system.
	CO	1. Organize carpooling to achieve at least 3 passengers per vehicle
	Ozone	1. Prohibit spray painting operations.
Emergency:	Any pollutant	1. Cease production and place glass furnaces on a shutdown status, except maintain the minimum temperature to prevent glass solidification. 2. Reduce the number of employees at the plant to a skeleton crew to prevent damage to process equipment and to provide security.

5. **MONITOR AND RECORD:** The permittee must maintain a log summarizing actions taken during an applicable air pollution episode pursuant to Condition 4.

6. **FUGITIVE DUST CONTROL REQUIREMENT:** The permittee must not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished; or any equipment to be operated, without taking reasonable precautions to prevent particulate matter from becoming airborne in accordance with OAR 340-208-0210.

7. **MONITOR AND RECORD:** The permittee must inspect the area where fugitive visible emissions could occur, including but not limited to material transport and storage equipment, raw material unloading and handling area, cullet crushers, etc.

   7.a. The visible emissions survey must be conducted daily during periods when the potential for visible emissions exists such as when materials are being unloaded or when waste bins are being emptied, and during dry high-wind days.

   7.b. If visible fugitive emissions are present, check the equipment/operations for malfunction and correct the problem as needed.

   7.c. Inspect the material loading and unloading activities and improve the housekeeping activities and practices to help minimize fugitive emissions.

   7.d. Record in a log, the date, weather conditions, inspection results and any clean-up and/or corrective actions taken.

---

8. **PARTICLE FALLOUT LIMIT:** The permittee must not cause or permit the emission of any particulate matter larger than 250 microns in size at sufficient duration or quantity as to create an observable deposition upon the real property of another person, as required in OAR 340-208-0450. [State-only enforceable]

9. **NO NUISANCE REQUIREMENT:** The permittee must not cause or allow air contaminants from any source to cause a nuisance. Nuisance conditions will be verified by DEQ personnel. [OAR 340-208-0300] [State only enforceable]

10. **MONITOR AND RECORD:** The permittee must maintain a log of each nuisance complaint received by the permittee during the operation of the facility. Documentation must include date of contact, time of observed nuisance condition, description of nuisance condition, location of receptor, status of plant operation during the observed period, and time of response to complainant. A plant representative must immediately investigate the condition following the receipt of the nuisance complaint and a plant representative must provide a response to the complainant within 24 hours, if possible. [OAR 340-218-0050(3)(a)]

---

11. **ACCIDENTAL RELEASE PREVENTION:** Should this stationary source become subject to the accidental release prevention regulations in 40 CFR Part 68, then the permittee must submit a risk management plan (RMP) by the date specified in 40 CFR 68.10 and comply with the plan and all other applicable Part 68 requirements. [40 CFR Part 68]

Table-II. Requirements for GM1 and GM4 Furnaces

Applicable Requirement	Condition Number	Pollutant/ Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition
40 CFR 60.293(b)	12	PM/PM_{10}	1 lb PM/ton glass	Source Testing	13
340-228-0210(2)(a)	14	PM/PM_{10}	0.10 gr/scf	Source Testing	13
40 CFR 60.293(c)	15 & 16	Opacity	See Condition 15	COMS	15 & 16
340-208-0110	17	Opacity	< 20%, 6 min block avg.	COMS	18
AQ/V-NWR-11-092	19	Opacity	Corrective Action Plan	I&M Recordkeeping	19
40 CFR 63.11451	20	Metal HAPs	0.02 lb HAPs/ton glass (glass manufacturing metal HAPs)	Source Testing I&M Recordkeeping	21 22

12. **PARTICULATE MATTER NSPS EMISSIONS STANDARD FOR GM1 & GM4 FURNACES:** The emissions of particulate matter from glass melting furnaces GM1 or GM4 must not exceed 0.5 grams per kilogram of glass produced (1 lb PM/ton glass), as measure in accordance with methods and procedures specified in Condition 13. [40 CFR 60.293 (b)(1)]

13. **TESTING REQUIREMENT FOR GM1 & GM4:** At least once during the permit term, within 12 months from the date of this permit issuance, the permittee must determine the PM emissions from glass melting furnaces GM1 and GM4 in accordance with the following methods and procedures:

13.a. Compute the PM emission rate from each furnace using the following equation:

$$E = ((c_s Q_{sd}) - A) / P$$

where:
- E = emission rate of particulate matter, g/kg
- c_s = concentration of particulate matter, g/dscm
- Q_{sd} = volumetric flow rate, dscm/hr
- A = zero production rate correction, 227 g/hr
- P = glass production rate, kg/hr

13.b. Use EPA method 5 to determine the PM concentration (c_s) and volumetric flow rate (Q_{sd}) of the effluent gas. The sampling time and sample volume for each run must be at least 60 minutes and 0.90 dscm (31.8 dscf).

13.c. Use direct measurement or material balance using good engineering practice to determine the amount of glass pulled during the performance test.

---

14. **PARTICULATE MATTER EMISSIONS STANDARD FOR GM1 & GM4 FURNACES:** The permittee must not cause or allow the emissions of particulate matter in excess of 0.10 grain per dry standard cubic foot, from glass melting furnaces GM1 and GM4 that were modified after June 1, 1970. Particulate matter emissions can be calculated from the source test results obtained from Condition 35. [OAR 340-228-0210]

---

15. **NSPS - CONTINUOUS OPACITY MONITORING REQUIREMENT FOR GM1 & GM4 FURNACES:** The permittee must use continuous opacity monitoring system (COMS) to measure the opacity value of visible emissions discharged into the atmosphere from the glass-melting furnaces GM1 and GM4. [40 CFR 60.293 (c)]

15.a. The opacity value must be measured based on 6-minute averaging.

15.b. On a daily basis, calibrate the COMS according to the manufacturer's specifications.

15.c. On an annual basis, calibrate the COMS according to the procedures specified in 40 CFR 60, Appendix B, Performance Specification 1 (PS-1). The alternative procedures must be approved by the Department in writing.

15.d. All opacity readings including the records of "excess emissions" must be compiled and readily accessible for inspection by the Department staff.

15.e. **Opacity Value:** During the source testing conducted per Condition 13, permittee may calculate 6-minute opacity average from 24 or more data points equally spaced over each 6-minute period during the test runs using COMS. For each furnace A and D, determine the Opacity Value corresponding to the 99 percent upper confidence level of a normal distribution of 6-minute average opacity values.

15.f. **Opacity Value:** The permittee may reset the Opacity Value for either furnace A or D determined in Condition 15.e by subsequent source testing in accordance with 40 CFR 60.293 (e).

15.g. **Report** the Opacity Value determined through source testing conducted per either Condition 15.e or 15.f within 45-days of testing as specified in Condition 34.e.

16. **NSPS - REPORTING REQUIREMENT FOR GM1 & GM4:** The permittee must report to DEQ and EPA of all "excess emissions" determined from COMS readings of Condition 15 in accordance with the procedures specified in this condition. [40 CFR 60.7 (d) & (e)]

16.a. For the purpose of the notification required under this condition (but not for purpose of Condition 43), "excess emissions" are all of the opacity values based on a 6-minute average that exceed the Opacity Value corresponding to the 99 percent upper confidence level determined in Condition **15.e** or **15.f**.

16.b. For the first year after source testing of Condition 13, submit quarterly summary reports (i.e., every 3-month; 1st quarter is January through March) that include a summary of excess emissions, if any, for the preceding quarter, including the following information:

16.b.i. Title-V reporting form **R1002-A** signed by responsible official;
16.b.ii. Duration of excess emissions (minutes) and corresponding date and time;
16.b.iii. explanation of the cause of excess emissions such as startup/shutdown, process problems, and/or other known and unknown causes;
16.b.iv. total duration of excess emissions during the reporting period;
16.b.v. total operating time of each corresponding furnace GM1 or GM4;
16.b.vi. the percentage (%) of excess emissions in comparison to total furnace operating time;
16.b.vii. the percentage (%) of COMS downtime, if any, in comparison to total furnace operating time.
16.b.viii. Submit the quarterly report by no later than 30 days after the end of preceding quarter.

16.c. Reduce the frequency of excess emission reporting to semi-annually, and submit the report no later than 30 days after the end of preceding 6-month period, if the following conditions are met: [40 CFR 60.7 (e)(1)]

16.c.i. The total duration of excess emissions determined in Condition **16.b.vi** is less than 1% of the total furnace operating time for the entire year; and

16.c.ii. COMS downtime determined in Condition **16.b.vii** for the same period is less than 5% of the total furnace operating time.

16.d. If total duration of excess emissions or COMS downtime determined in Condition **16.b.vi** or **16.b.vii** is equal to or greater than their respective percentage limit shown in Condition **16.c.i** or **16.c.ii**, increase the frequency of excess emission reporting to quarterly. In addition, the excess emission reporting must conform to requirements specified in 40 CFR 60.7(c), in lieu of quarterly summary report described in Condition **16.b**.

---

17. **VISIBLE EMISSIONS LIMIT FOR GM1 & GM4 FURNACES:** The permittee must not cause or allow the emissions of any air contaminant into the atmosphere that is equal to or greater than 20% opacity based on 6-minute average, excluding uncombined water, from glass melting furnaces GM1 and GM4. Opacity must be measured in accordance with Condition 18. [OAR 340-208-0110]

18. **MONITOR AND RECORD:** The permittee must monitor visible emissions from the glass-melting furnaces GM1 and GM4 in accordance with the procedures, test methods, and frequencies specified in this condition:

18.a. The opacity reading obtained from the continuous opacity monitoring system (COMS) must be used to demonstrate compliance with the applicable 20% opacity limit specified in Condition 17.

18.b. The visible emissions must be measured based on the average of 24 consecutive observations recorded at 15-second interval, or more frequently, which comprise a six-minute block. Six-minute blocks need not be consecutive in time and in no case may two blocks overlap.

18.c. The COMS must be calibrated for daily instrument zero and upscale drift checks in accordance with Procedure-3 established in 40 CFR part 60, Appendix F.

18.d. The quarterly performance audits must be performed on COMS in accordance with Procedure-3 established in 40 CFR part 60, Appendix F.

18.e. All COMS data including the records of exceedances of the 20% opacity limit must be kept at the plant site for inspection. Monitor and record all date(s) corresponding to the exceedance period(s), if any.

---

19. To prevent visible emissions from exceeding the 20% opacity limit set forth in Condition 17, the permittee must comply with the corrective action plan approved by DEQ by letter dated April 17, 2012, as amended by DEQ letters dated July 10, 2013, October 29, 2013, May 28, 2015, and September 2, 2015, and any further amendments approved by DEQ in writing. [AQ/V-NWR-11-092]

---

20. **NESHAP- METAL HAPS EMISSIONS LIMIT:** The permittee must limit the mass emission rate of production-based metal HAP (i.e., glass manufacturing metal HAPs) based on a 3-hour block average to less than 0.02 pounds per ton of glass produced (0.02 lbs HAP/ton glass). [§63.11451]

20.a. Production based metal HAP includes an oxide or other compound of any of the following metals intentionally added as raw materials; arsenic, cadmium, chromium, lead, manganese, and nickel. Production based metal HAP do not include metals that are naturally present in the raw materials as trace constituents or contaminants of other substances, as defined in §63.11459. Cullet and materials that are recovered from the process stream and recycled into the glass formulation are not considered to be raw materials.

20.b. Furnace-D is the affected furnace subject to the requirements specified in Conditions 20 through 22. The permittee shall notify DEQ in writing prior to introducing any production-based metal HAP into furnace-A.

21. **TESTING REQUIREMENTS:** Within 6 months from the date of this permit issuance, the permittee must determine the production based metal HAP emissions from glass melting furnace D (GM4) in accordance with the following methods and procedures:

21.a. Perform Source testing while the furnace is operating at the maximum production rate; and while producing glass that has the highest potential to emit the production based metal HAP.

21.b. Conduct at least three separate test runs. For each test run lasting at least one hour, compute the production based metal HAP emission rate at the furnace stack using Method 29 of 40 CFR part 60, appendix A-8.

21.c. Compute the 3-hour block average production-based metal HAP mass emission rate as the average of the production-based metal HAP mass emission rates for each test run:

$$MPM = ERM / P$$ [Equation 2, [§63.11452(b)(14)(iv)]

where:
MPM = Production based metal HAP emission rate, lbs HAP/ton glass
ERM = Sum of the metal HAP emission rate as measured per Condition 21.b, lbs/hr
P = glass production rate, tons/hr

22. **MONITOR AND RECORD:** The permittee must perform all required monitoring from the time the affected furnace is charged with any one of the production-based metal HAP and continue until the end of transition period. [§63.11455 (e)]

22.a. The transition period begins when the furnace is charged with raw materials that do not contain any of the production based metal HAP and ends when the furnace begins producing salable non-affected glass (i.e., amber colored glass).

22.b. Monitor and record the rate of production-based metal HAP added to the glass batch formulation as a percentage (%), for each batch formulation used.

22.c. Compare the production-based metal HAP raw material feed rate (%) to the highest feed rate used during source testing in Condition 21.a.

22.d. Until the source test results of Condition 21 becomes available, compare the production-based metal HAP raw material feed rate to the feed rate used during the 12/08/2008 source test, which was used for the initial notification.

22.e. Use the equation below to determine compliance with the metal HAP emission rate standard (0.02 lbs HAP/ton glass) specified in Condition 20:

$$E_{HAP} = \frac{E_{HAP\text{-}ST} * FEED_{HAP}}{FEED_{HAP\text{-}ST}} \quad \text{(lbs HAP/ton glass)}$$

where
E_{HAP} = Metal HAP emission rate
$E_{HAP\text{-}ST}$ = Metal HAP emission rate from applicable source test of Condition 21 or 22.d
$FEED_{HAP}$ = Production based metal HAP raw material feed rate
$FEED_{HAP\text{-}ST}$ = Metal HAP raw material feed rate during applicable source test of Condition 21 or 22.d

22.f. All records of this condition must be kept on site and available for review by DEQ.

22.g. Report the highest E_{HAP} noted each month with the annual report submitted per Condition 47.b.

---

23. RESERVED

Table-III. Requirements for EU6 & EU7 Fuel-burning Equipment/Boiler

Applicable Requirement	Condition Number	Pollutant/ Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition
340-228-0210	24	PM/PM_{10}	0.10 gr/scf	VE Recordkeeping	30
340-208-0110	25	Opacity	< 20%, 6 min avg.	VE Recordkeeping	
340-228-0110	26	Distillate oil sulfur content	0.3% by weight 0.5% by weight	%S Analysis / Recordkeeping	27

24. **PARTICULATE MATTER EMISSIONS STANDARD FOR EU6 & EU7:** The permittee may not emit particulate matter emissions from the EU6 and EU7 fuel burning equipment in excess of the following limits. [OAR 340-228-0210(2)(a)]

24.a. 0.10 grains per dry standard cubic foot provided that all representative compliance source test results collected prior to April 16, 2015 demonstrate emissions no greater than 0.080 grains per dry standard cubic foot;

24.b. If any representative compliance source test results collected prior to April 16, 2015 demonstrate emissions greater than 0.080 grains per dry standard cubic foot, or if there are no representative compliance source test results, then:
24.b.i. 0.24 grains per dry standard cubic foot until Dec. 31, 2019; and
24.b.ii. 0.15 grains per dry standard cubic foot on and after Jan. 1, 2020.

24.c. For equipment or a mode of operation (e.g., backup fuel) that is used less than 876 hours per calendar year, 0.24 grains per dry standard cubic foot from April 16, 2015 through December 31, 2019, and 0.20 grains per dry standard cubic foot on and after Jan. 1, 2020.

24.d. Compliance with the emissions standards in this condition is determined using Oregon Method 5, or an alternative method approved by DEQ.
24.d.i. For fuel burning equipment that burns wood fuel by itself or in combination with any other fuel, the emission results are corrected to 12% CO_2.
24.d.ii. For fuel burning equipment that burns fuels other than wood, the emission results are corrected to 50% excess air.
24.d.iii. For purposes of this condition, representative compliance source test results are data that was obtained;
1.a.i.A. No more than ten years before April 16, 2015; and
1.a.i.B. When a source is operating and maintaining air pollution control devices and emission reduction processes at the highest reasonable efficiency and effectiveness to minimize emissions based on the current configuration of the fuel burning equipment and pollution control equipment.

25. **VISIBLE EMISSIONS LIMIT FOR EU6 & EU7:** The permittee must not cause or allow the emissions of any air contaminant into the atmosphere that is equal to or greater than 20% opacity based on 6-minute average, excluding uncombined water, from EU6 and EU7 fuel burning equipment and/or boiler when operated. Visible emissions must be monitored in accordance with methods and frequencies specified in Condition 30, except as noted in Condition 30.g. [OAR 340-208-0110]

26. **FUEL OIL SULFUR CONTENT REQUIREMENTS FOR EU7 BOILER:** The permittee must not burn any fuel other than natural gas, propane, butane, or the following ASTM grade fuel oils:

26.a. ASTM Grade-1 distillate fuel oil containing less than 0.3 percent sulfur by weight; and

26.b. ASTM Grade-2 distillate fuel oil containing less than 0.5 percent sulfur by weight. [OAR 340-228-0110]

27. **MONITOR AND RECORD:** The permittee must monitor the sulfur content of each batch of ASTM grade distillate fuel oil used (e.g., EU7 Boiler), in accordance with the following methods or procedures:

27.a. Obtaining a sulfur analysis certificate from the vendor for each batch; or

27.b. analyzing or having analyzed by a contract laboratory a composite of representative samples taken by the permittee from each batch of fuel oil received. Liquid fuels must be analyzed using ASTM D129-64, D1552-83, or D4057-81 Method, or other equivalent method approved by the Department.

Table-IV. Requirements for Baghouses

	Applicable Requirements		Pollutant/	Limit/	Monitoring Requirements	
PCD ID	OAR /40CFR	Cond No.	Parameter	Standard	Method	Cond No.
RMBH-1 to 3, HEST-A, MBD-1 MRD-1	340-226-0210	28	PM/PM_{10}	0.10 gr/scf	VE Recordkeeping	30
RMBH-1 to 3, HEST-A, MBD-1 MRD-1	340-208-0110	29	Opacity	< 20%, 6-min average	VE Recordkeeping	

28. **PARTICULATE MATTER EMISSIONS STANDARD FOR ALL BAGHOUSE:** The permittee may not emit particulate matter emissions from any non-fuel burning equipment installed, constructed, or modified before June 1, 1970 in excess of the following limits. Non-fuel burning equipment include baghouses **RMBH-2**, RMBH-1, RMBH-3, MBD-1, MRD-1, and HEST-A. [OAR 340-226-0210(2)(a)]

28.a. 0.10 grains per dry standard cubic foot provided that all representative compliance source test results collected prior to April 16, 2015 demonstrate emissions no greater than 0.080 grains per dry standard cubic foot;

28.b. If any representative compliance source test results collected prior to April 16, 2015 demonstrate emissions greater than 0.080 grains per dry standard cubic foot, or if there are no representative compliance source test results, then:
1.a.i. 0.24 grains per dry standard cubic foot until Dec. 31, 2019; and
1.a.ii. 0.15 grains per dry standard cubic foot on and after Jan. 1, 2020.

28.c. For equipment or a mode of operation that is used less than 876 hours per calendar year, 0.24 grains per dry standard cubic foot from April 16, 2015 through December 31, 2019, and 0.20 grains per dry standard cubic foot on and after Jan. 1, 2020.

28.d. Compliance with the emissions standards in this condition is determined using:
- 28.d.i. Oregon Method 5;
- 28.d.ii. DEQ Method 8, as approved by DEQ for sources with exhaust gases at or near ambient conditions;
- 28.d.iii. DEQ Method 7 for direct heat transfer sources; or
- 28.d.iv. An alternative method approved by DEQ.
- 28.d.v. For purposes of this condition, representative compliance source test results are data that was obtained:
  - 1.a.i.C. No more than ten years before April 16, 2015; and
  - 1.a.i.D. When a source is operating and maintaining air pollution control devices and emission reduction processes at the highest reasonable efficiency and effectiveness to minimize emissions based on the current configuration of the fuel burning equipment and pollution control equipment.

29. **VISIBLE EMISSIONS LIMIT FOR BAGHOUSES:** The permittee must not cause or allow the emissions of any air contaminant into the atmosphere that is equal to or greater than 20% opacity based on 6-minute average from baghouses RMBH-2, RMBH-1, RMBH-3, MBD-1, MRD-1, and HEST-A, when operated. Visible emissions must be monitored in accordance with methods and frequencies specified in Condition 30. [OAR 340-208-0110]

30. **MONITOR AND RECORD:** The permittee must monitor visible emissions from each discharge stack of EU6 fuel burning equipment, EU7 boiler, and all identified baghouses (e.g., RMBH-2) in accordance with the procedures, test methods, and frequencies specified in this condition:

30.a. The permittee must conduct a six (6) minute visible emission survey at each monitoring point using the procedures outlined in EPA Method 22, starting with a frequency of once per calendar week. The minimum monitoring frequency specified is also the required interval between two consecutive monitoring periods, except as noted in conditions 30.f and 30.g

30.b. All visible emissions observations must be conducted during operating conditions that have the potential to create visible emissions (e.g. during loading/unloading for RMBH, etc.).

30.c. If visible emissions, from an individual monitoring point, are detected for more than 5% (18 seconds) of the survey time, check the equipment for malfunction and correct the problem: Then re-check for visible emissions within four hours. If visible emissions persist for more than 5% of the time, an EPA Method 9 test must be conducted on that monitoring point for a six (6) minute period in accordance with the Department's Source Sampling Manual. If any of the observations during the specified 6-minute period exceed the applicable 20% opacity limit, the observation period shall continue until 60 minutes of observations have been completed or until an exceedance of the opacity limit has been documented.

30.d. If the observer is unable to conduct the visible emission survey per EPA Method 22 and/or modified EPA Method 9 tests due to visual interference caused by other visible emissions sources (e.g., fugitive emissions during high wind conditions) or due to weather conditions such as fog, heavy rain, or snow, the observer shall note such conditions on the data observation sheet and make at least three attempts in same day to conduct the surveys and/or tests at approximately 2 hours intervals throughout the day. If no observations are made for that day, the observer shall continue to attempt to conduct the visible emission survey and/or modified EPA Method 9 daily until a valid observation is made.

30.e. Maintenance Requirements for All Baghouses: If the opacity exceedance is noted, within 24 hours of the noted exceedance, the permittee must follow up with an investigation and determine the cause of the problem, and take corrective actions as necessary to resolve the problem:

30.e.i. Check the baghouse/cyclone operations for any malfunction, and correct the malfunction if present.

30.e.ii. Perform any needed maintenance and housekeeping activities to minimize and/or prevent fugitive emissions associated with the material handling activities.

30.f. Reduced Monitoring for All Baghouses: If visible emissions surveys conducted during 10 consecutive observation weeks show no visible emissions for a particular source, the permittee may reduce the minimum monitoring frequency to once per month for that source. Anytime the monthly visible emissions survey show any visible emissions, or when requested by the Department inspector, the observations for that source of visible emissions shall start over with weekly surveys, as noted in Condition 30.a.

30.g. Exemptions for EU6 and EU7 when burning natural gas: As long as the EU6 and/or EU7 fuel burning equipment burns natural gas or LPG, visible emissions from that equipment is assumed to be in compliance with the 20% opacity limit; and the visible emissions survey required by this condition is waived for that equipment. For the purpose of fuel-usage verification, the permittee is required to monitor and record the type(s) of fuel used in EU6 and EU7, as specified in condition 33.a.

30.h. Monitoring and Recording requirements for baghouse RMBH2 and HEST-A:

30.h.i. Monitor and record the pressure drops of RMBH2 and HEST-A baghouse on a daily basis.

30.h.ii. Conduct a brief-walkabout inspection of material collection equipment and surrounding area including the RMBH2 ductwork/conveyor gangway for any maintenance and/or repair items; and promptly follow up with necessary maintenance and/or repair works.

30.h.iii. Record in a log the daily pressure drop readings; and any maintenance and/or repair works performed.

Insignificant Activities Requirements

31. DEQ acknowledges that insignificant emissions units (IEUs) identified by rule as either categorically insignificant activities or aggregate insignificant emissions as defined in OAR 340-200-0020 exist at facilities required to obtain an Oregon Title V Operating Permit. IEUs must comply with all applicable requirements. In general, the requirements that could apply to IEUs are incorporated as follows:

31.a. OAR 340-208-0110 (< 20% opacity, 6-minute average)

31.b. OAR 340-228-0210 (0.10 gr/dscf corrected to 12% CO_2 or 50% excess air for fuel burning equipment)

31.c. OAR 340-226-0210 (0.10 gr/dscf for non-fugitive, non-fuel burning equipment)

Unless otherwise specified in this permit or an applicable requirement, DEQ is not requiring any testing, monitoring, recordkeeping, or reporting for the applicable emissions limits and standards that apply to IEUs. However, if testing were performed for compliance purposes, the permittee would be required to use the test methods identified in the definitions of "opacity" and "particulate matter" in OAR 340-200-0020 and perform the testing in accordance with DEQ's Source Sampling Manual.

PLANT SITE EMISSION LIMITS

32. **ANNUAL PSEL REQUIREMENT:** The plant site emissions must not exceed the following limits for any 12 consecutive calendar month period: [OAR 340-222-0035 through OAR 340-222-0041]:

Pollutant:	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	GHG (CO_{2e})	Pb
PSEL: (tons/yr)	109	100	184	382	99	39	100,521	0.5

33. **MONITOR AND RECORD:** The permittee must determine compliance with the Plant Site Emissions Limits specified in Condition 32 in accordance with the procedures, test methods, and frequencies identified in this condition. The permittee must retain records of all parameters used to determine compliance with the PSEL:

33.a. The permittee must monitor and maintain monthly and annual records of the following material and process parameters:

Operating Parameter (P_i)		EU ID	Min. frequency	Method
Raw materials (tons) processed, excluding cullet	P_1	EU1	monthly	Recordkeeping
Cullet (tons) processed	P_2	EU2	monthly	Recordkeeping
Raw materials (tons) processed	P_3	EU3	monthly	Recordkeeping
Glass (tons) melted Natural Gas (10^6 ft^3) burned	P_4	GM1 & GM4	monthly	Production Records, Fuel usage from meter/ gauge readings, etc.
Swab materials (lbs) used (MS1-4). MBTT (tons) used (HEST1-4).	P_5	EU5	monthly	Recordkeeping
Natural Gas (10^6 ft^3) burned	P_6	EU6	monthly	Fuel usage estimates from meter/gauge readings.
Natural Gas (10^6 ft^3) burned Fuel Oil (gallons) burned	P_7	EU7	monthly	
Estimated hours of operations.	P_{10}	EU10	monthly	Recordkeeping

33.b. At the end of each month, calculate the monthly emissions from each of the emissions units identified by applying operating parameter (P_i) identified in Condition 33.a and the emission factors identified for that unit and specific pollutant specified in this Condition 33.b below:

$$E_{MO,i} = P_i \; EF_{i,j} \; K$$

where: $E_{MO,i}$ = monthly pollutant emissions from individual EU_i; lbs/month, or tons/month.
P_i = operating parameters identified in Condition 33.a.
$EF_{i,j}$ = emission factor for the pollutant and EU identified in this condition.
K = Conversion factor; 1 ton/2,000 lbs

Emissions of fine particulate matter, $PM_{2.5}$ is

$$E_{PM2.5} = 0.92 \times E_{PM10}$$

33.b.i. Emission Factors (EF_i) for Process emissions units EU1, EU2, EU3, EU5, EU10

Emissions Unit	PM_{10}	SO_2	VOC	Unit
EU1	18×10^{-4}	--	--	lbs/ton raw materials
EU2	18×10^{-2}	--	--	lbs/ton cullet
EU3	18×10^{-4}	--	--	lbs/ton raw materials
EU5	1 22	-- --	-- 90	lbs/lb swab material lbs/ton MBTT used
EU10	0.2	--	--	lbs/hr operated (-A-)

(-A-) multiply EF to estimated number of hours operated in month or year. Default = 8760 hrs/yr.

33.b.ii. Emission Factors (EF_i) for EU4 Glass Melting Furnaces

EU ID	Parameter	PM_{10} (2)	SO_2 (1)	NO_X	CO	VOC	Pb	UNIT
EU4	Natural Gas	-b-	-b-	-b-	35	5.8	--	lbs/10^6 ft^3
GM1	Glass melted	0.7	2.1	4.7	-a-	-a-	1.65×0^{-3}	lbs/ton glass
GM4	Glass melted	0.6	2.1	3.7	-a-	-a-	1.65×10^{-3}	lbs/ton glass

(1) SO_2 EF for oil is a function of sulfur content (%S), which is obtained per monitoring specified in Condition 27.
(2) **96% of PM/PM_{10}** is consider to be $PM_{2.5}$
-a- The CO & VOC emissions from the furnaces are a function of the NG combustion.
-b- The emissions are reported under emissions from glass melting.

33.b.iii. Emission Factors (EF_i) for Combustion emissions units EU6 & EU7.

EU ID	Fuel	PM_{10}	SO_2	NO_X	CO	VOC	UNIT
EU6	Nat. gas(-3-)	2.5	2.6	100	21	5.8	lbs/10^6 ft^3
EU7	Nat. gas(-3-)	2.5	2.6	140	35	5.8	lbs/10^6 ft^3
	Distillate Oil	2	142 (%S)	20	5	0.56	lbs/10^3 gal

(3) The permittee is allowed to switch from/to NG to/from Propane (LPG) at any time.

33.c. The compliance with the annual PSELs set forth in Condition 32 is determined 12 times per year. At the end of each month, add up the monthly emissions for each criteria pollutant for the previous 12 month period:

$$E_{Annual} = \sum_{Past\ 12\text{-}month} E_{MO,i}$$

33.d. The emissions factors listed in Condition 33.b, by themselves, are not enforceable limits. The operating parameters monitored per Conditions 33.a and emission factors provided in condition 33.b shall only be used to determine compliance with PSELs.

GENERAL TESTING REQUIREMENTS [OAR 340-218-0050(1)]

34. Unless otherwise specified in this permit, the permittee must conduct all testing in accordance with the Department's Source Sampling Manual. [OAR 340-212-0120]

34.a. Unless otherwise specified by a state or federal regulation, the permittee must submit a source test plan to DEQ at least 30 days prior to the date of the test. The test plan must be prepared in accordance with the Source Sampling Manual and address any planned variations or alternatives to prescribed test methods. Permittee should be aware, if significant variations are requested, it may require more than 30 days for DEQ to grant approval and may require EPA approval in addition to approval by DEQ.

34.b. Only regular operating staff may adjust the processes or emission control device parameters during a compliance source test and within two (2) hours prior to the tests. Any operating adjustments made during a compliance source test, which are a result of consultation during the tests with source testing personnel, equipment vendors, or consultants, may render the source test invalid.

34.c. Unless otherwise specified by permit condition or Department approved source test plan, all compliance source tests must be performed as follows:

34.c.i. at least 90% of the design capacity for new or modified equipment;

34.c.ii. at least 90% of the maximum operating rate for existing equipment; or

34.c.iii. at 90 to 110% of the normal maximum operating rate for existing equipment. For purposes of this permit, the normal maximum operating rate is defined as the 90th percentile of the average hourly operating rates during a 12 month period immediately preceding the source test. Data supporting the normal maximum operating rate must be included with the source test report.

34.d. Each source test must consist of at least three (3) test runs and the emissions results must be reported as the arithmetic average of all valid test runs. If for reasons beyond the control of the permittee a test run is invalid, DEQ may accept two (2) test runs for demonstrating compliance with the emission limit or standard.

34.e. Source test reports prepared in accordance with DEQ's Source Sampling Manual must be submitted to DEQ within 45 days of completing any required source test, unless a different time period is approved in the source test plan submitted prior to the source test.

35. EU4 EMISSION FACTOR VERIFICATION TESTING REQUIREMENTS: The permittee must verify the accuracy of the PM_{10}, SO_2, NO_x, CO, and VOC emission factors used to determine compliance with the PSEL by testing, at minimum of once during the permit term but no later than 6 months from the date of the permit issuance, in accordance with the methods specified for the pollutant and devices identified. In addition, determine toxic metals emissions from the EU4 glass melting furnaces.

EU4 Furnaces	Pollutant	Method(s)[-1-]
GM1 (Furnace-A) And GM4 (Furnace-D)	PM_{10} & $PM_{2.5}$	EPA Method 5 & 202 ($PM_{2.5}$ = 96% of PM_{10})
	SO_2	EPA Method 6c
	NO_x	EPA Method 7E
	CO	EPA Method 10
	VOC	EPA Method 25A
	Volumetric Flow Rate	EPA Method 1-4
	Metals including Cr, Pb, As, Cd, Mn, Ni, Hg, Cu, Co, Se, Be	EPA Method 29 [-2-]
	Opacity	EPA Method 9

-1- The Analytical Methods listed in this table may be substituted with another method if deemed necessary by DEQ source test coordinator.

-2- Chromium (Cr) detected using EPA Method 29 shall be considered hexavalent chromium (Cr^{+6}) unless EPA SW-486 Method 0061 or other DEQ approved method is used to isolate Cr^{+6} from total Cr.

GENERAL MONITORING AND RECORDKEEPING REQUIREMENTS [OAR 340-218-0050(3)(b)]

General Monitoring Requirements:

36. The permittee must not knowingly render inaccurate any required monitoring device or method. [OAR 340-218-0050(3)(a)(E)]

37. Methods used to determine actual emissions for fee purposes must also be used for compliance determination and can be no less rigorous than the requirements of OAR 340-218-0080. [OAR 340-218-0050(3)(a)(F)]

38. Monitoring requirements must commence on the date of permit issuance unless otherwise specified in the permit or an applicable requirement. [OAR 340-218-0050(3)(a)(G)]

GENERAL RECORDKEEPING REQUIREMENTS

39. The permittee must maintain the following general records of testing and monitoring required by this permit: [OAR 340-218-0050(3)(b)(A)]

    39.a. the date, place as defined in the permit, and time of sampling or measurements;
    39.b. the date(s) analyses were performed;
    39.c. the company or entity that performed the analyses;
    39.d. the analytical techniques or methods used;
    39.e. the results of such analyses;
    39.f. the operating conditions as existing at the time of sampling or measurement; and
    39.g. the records of quality assurance for continuous monitoring systems (including but not limited to quality control activities, audits, calibration drift checks); and

    39.h. source-specific recordkeeping requirements stated elsewhere throughout the permit that include the following:

        39.h.i. Records of actions taken, if any, per SERP;
        39.h.ii. visual inspection results, and a summary of corrective actions taken, if any;
        39.h.iii. nuisance complaint log and investigation reports, if any;
        39.h.iv. visible emissions observation reports for emissions units identified;
        39.h.v. records of the type and daily and/or monthly records of the product and amount of fuels used, as defined in the permit; and
        39.h.vi. source test summary reports and results.

40. Unless otherwise specified by permit condition, the permittee must make every effort to maintain 100 percent of the records required by the permit. If information is not obtained or recorded for legitimate reasons (e.g., the monitor or data acquisition system malfunctions due to a power outage), the missing record(s) will not be considered a permit deviation provided the amount of data lost does not exceed 10% of the averaging periods in a reporting period or 10% of the total operating hours in a reporting period, if no averaging time is specified. Upon discovering a required record is missing, the permittee must document the reason for the missing record. In addition, any missing record that can be recovered from other available information will not be considered a missing record. [OAR 340-214-0110, 340-214-0114, and 340-218-0050(3)(b)]

41. Recordkeeping requirements must commence on the date of permit issuance unless otherwise specified in the permit or an applicable requirement. [OAR 340-218-0050(3)(b)(C)]

42. Unless otherwise specified, the permittee must retain records of all required monitoring data and support information for a period of at least five (5) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings (or other original data) for continuous monitoring instrumentation, and copies of all reports required by the permit. All existing records required by the previous Air Contaminant Discharge Permit or Oregon Title V Operating Permit must also be retained for five (5) years from the date of the monitoring sample, measurement, report, or application. [OAR 340-218-0050(b)(B)]

GENERAL REPORTING REQUIREMENTS [OAR 340-218-0050(3)(c)]

43. Excess Emissions Reporting The permittee must report all excess emissions as follows: [OAR 340-214-0300 through 340-214-0360]

43.a. Immediately (within 1 hour of the event) notify DEQ of an excess emission event (but not for purpose of Condition 16) by phone, email, or facsimile; and

43.b. Within 15 days of the excess emissions event, submit a written report that contains the following information: [OAR 340-214-0340(1)]

43.b.i. The date and time of the beginning of the excess emissions event and the duration or best estimate of the time until return to normal operation;

43.b.ii. The date and time the owner or operator notified DEQ of the event;

43.b.iii. The equipment involved;

43.b.iv. Whether the event occurred during planned startup, planned shutdown, scheduled maintenance, or as a result of a breakdown, malfunction, or emergency;

43.b.v. Steps taken to mitigate emissions and corrective action taken, including whether the approved procedures for a planned startup, shutdown, or maintenance activity were followed;

43.b.vi. The magnitude and duration of each occurrence of excess emissions during the course of an event and the increase over normal rates or concentrations as determined by continuous monitoring or best estimate (supported by operating data and calculations);

43.b.vii. The final resolution of the cause of the excess emissions; and

43.b.viii. Where applicable, evidence supporting any claim that emissions in excess of technology-based limits were due to any emergency pursuant to OAR 340-214-0360.

43.c. In the event of any excess emissions which are of a nature that could endanger public health and occur during non-business hours, weekends, or holidays, the permittee must immediately notify DEQ by calling the Oregon Accident Response System (OARs). The current number is 1-800-452-0311.

43.d. If startups, shutdowns, or scheduled maintenance may result in excess emissions, the permittee must submit startup, shutdown, or scheduled maintenance procedures used to minimize excess emissions to DEQ for prior authorization, as required in OAR 340-214-0310 and 340-214-0320. New or modified procedures must be received by DEQ in writing at least 72 hours prior to the first occurrence of the excess emission event. The permittee must abide by the approved procedures and have a copy available at all times.

43.e. The permittee must notify DEQ of planned startup/shutdown or scheduled maintenance events.

43.f. The permittee must continue to maintain a log of all excess emissions in accordance with OAR 340-214-0340(3). However, the permittee is not required to submit the detailed log with the semi-annual and annual monitoring reports. The permittee is only required to submit a brief summary listing the date, time, and the affected emissions units for each excess emission that occurred during the reporting period. [OAR 340-218-0050(3)(c)]

44. Permit Deviations Reporting: The permittee must promptly report deviations from permit requirements that do not cause excess emissions, including those attributable to upset conditions, as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. "Prompt" means within 15 days of the deviation. Deviations that cause excess emissions, as specified in OAR 340-214-0300 through 340-214-0360 must be reported in accordance with Condition 43.

45. All required reports must be certified by a responsible official consistent with OAR 340-218-0040(5); [OAR 340-218-0050(3)(c)(D)]

46. Reporting requirements must commence on the date of permit issuance unless otherwise specified in the permit. [OAR 340-218-0050(3)(c)(E)]

Addresses of regulatory agencies are the following, unless otherwise instructed:

DEQ – Northwest Region[1] 700 N.E. Multnomah St., #600 Portland, OR 97232 503-229-5263	DEQ – Air Quality Division[2] 700 NE Multnomah St., #600 Portland, OR 97232 503-229-5359	Air Operating Permits[3] US Environmental Protection Agency Mail Stop OAQ-108 1200 Sixth Avenue Seattle, WA 98101

[1] Submit all Notices and applications that do not include payment to the Northwest Region's Permit Coordinator.
[1] Submit all reports (annual reports, source test plans and reports, etc.) to DEQ's Northwest Region. If you know the name of the Air Quality staff member responsible for your permit, please include it.
[2] Submit payments for invoices, applications to modify the permit, and any other payments to DEQ's Business Office, which will move to the current NWR office location in 2016.
[3] Submit all reports for EPA requirements to EPA Region 10 office in Seattle.

Semi-annual and Annual Reports

47. The permittee must submit three (3) copies of reports of any required monitoring at least every 6 months, completed on forms approved by DEQ. Six month periods are January 1 to June 30, and July 1 to December 31. One copy of the report must be submitted to the EPA and two copies to the DEQ regional office. All instances of deviations from permit requirements must be clearly identified in such reports: [OAR 340-218-0050(3)(c)(A) and 340-218-0080(6)(d)]

47.a. The first semi-annual report is be due on July 30, unless otherwise approved in writing by DEQ, and must include the semi-annual compliance certification, OAR 340-218-0080.

47.b. The annual report is due on February 15, unless otherwise approved in writing by DEQ, and must include the following information:

47.b.i. the emission fee report; [OAR 340-220-0100]
47.b.ii. the NO_x and VOC emission statement, if applicable; [OAR 340-214-0220];
47.b.iii. a summary of the excess emissions upset log; [OAR 340-214-0340]
47.b.iv. the second semi-annual compliance certification; and [OAR 340-218-0080]
47.b.v. the annual certification that the risk management plan is being properly implemented; OAR 340-244-0230. [OAR 340-218-0080(7)]
47.b.vi. Other annual reporting requirements:

EMISSIONS UNIT	PARAMETERS	UNIT
Plant-wide Basis	Monthly summary of emissions of each criteria pollutant	"tons/year" noted at the end of each month

EMISSIONS UNIT	PARAMETERS	UNIT
EU1	Monthly summary of raw material usage	tons/month
EU2	Monthly summary of cullet processed	tons/month
EU3	Monthly summary of material processed	tons/month
EU4	Monthly summary of amber glass produced Monthly summary of green glass produced Monthly summary of NG used Monthly summary of highest E_{HAP}	tons/month tons/month 10^6 ft^3 NG/month Lbs HAP/ton glass
EU5	Monthly summary of swab material usage Monthly summary of MBTT usage, if any	lbs/month tons/month
EU6	Monthly summary of NG usage	10^6 ft^3 NG/month
EU7	Monthly summary of NG usage Monthly summary of fuel oil usage	10^6 ft^3 NG/month gallons/month
EU10	Estimate number of hours operated	hours/month
RMBH2 baghouse HEST-A baghouse	Monthly summary of highest, lowest, and average pressure drop recorded	Inches of water

48. The semi-annual compliance certification must include the following (provided that the identification of applicable information may cross-reference the permit or previous reports, as applicable): [OAR 340-218-0080(6)(c)]

48.a. The identification of each term or condition of the permit that is the basis of the certification;

48.b. The identification of the method(s) or other means used by the owner or operator for determining the compliance status with each term and condition during the certification period, and whether such methods or other means provide continuous or intermittent data. Such methods and other means must include, at a minimum, the methods and means required under OAR 340-218-0050(3). *Note: Certification of compliance with the monitoring conditions in the permit is sufficient to meet this requirement, except when the permittee must certify compliance with new applicable requirements that are incorporated by reference into the permit. When certifying compliance with new applicable requirements that are not yet in the permit, the permittee must provide the information required by this condition.* If necessary, the owner or operator must identify any other material information that must be included in the certification to comply with section 113(c)(2) of the FCAA, which prohibits knowingly making a false certification or omitting material information;

48.c. The status of compliance with terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification must be based on the method or means designated in Condition 48.b of this rule. The certification must identify each deviation and take it into account in the compliance certification. The certification must also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance, as defined under OAR 340-200-0020, occurred; and

48.d. Such other facts as DEQ may require to determine the compliance status of the source.

49. Greenhouse Gas Registration and Reporting: If the calendar year emission rate of greenhouse gases (CO_2e) is greater than or equal to 2,756 tons (2,500 metric tons), the permittee must register and report its greenhouse gas emissions with DEQ in accordance with OAR 340-215. The greenhouse gas report must be certified by the responsible official consistent with OAR 340-218-0040(5).

50. Notwithstanding any other provision contained in any applicable requirement, the owner or operator may use monitoring as required under OAR 340-218-0050(3) and incorporated into the permit, in addition to any specified compliance methods, for the purpose of submitting compliance certifications. [OAR 340-218-0080(6)(e)]

NON-APPLICABLE REQUIREMENTS

51. The following State and Federal air quality requirements are not applicable to this facility for the reasons stated. [OAR 340-218-0110]

51.a. The following OARs are not applicable because the source is not in the source category cited in the rules:

Division	202	All
Division	204	0010 – 0060
Division	210	0100 – 0120, 0200 – 0220
Division	218	0090, 0100
Division	230	All
Division	232	0070 – 0240 except 0180
Division	234	All
Division	236	All
Division	238	All
Division	242	0500 – 0520, 0600 – 0630
Division	244	0200, 0230
Division	256	All except 0010, 0150, 0160
Division	258	0400

51.b. The following OARs are not applicable because the source is outside the special control area, non-attainment area or county cited in the rules:

Division	240	0100 – 0360

51.c. The following OARs are not applicable because the source does not have specific emissions units cited in the rules:

Division	208	0550
Division	228	0200
Division	232	0050

51.d. The following OARs are not applicable because the source does not sell, distribute, use, or make available for use, the fuel type cited in the rules:

Division	204	0090
Division	228	0100, 0120
Division	258	0110 – 0300
Division	260	0030

51.e. The following OARs are not applicable because the method/procedure is not used by the facility:

Division	214	0130
Division	222	0050, 0060
Division	226	0400
Division	244	0100 – 0180

51.f. Pursuant to OAR 340-242-0420 and the voluntary Plant Site Emission Limit Reduction Agreement between the Department and the permittee, as reflected in the NO_x PSEL of Condition 32, the permittee is exempt from the Employee Commute Options (ECO) Program required in OAR 340-242-0010 through 340-242-0290.

52. The following federal regulations are not applicable to the permittee at the time of permit issuance because the source is not in the source category cited in the rules:

40 CFR Parts 55, 57,
40 CFR Part 60 except subpart CC, A, and the Appendices,
40 CFR Part 61except subparts A, M, and the Appendices,
40 CFR Part 62 except subparts A, MM
40 CFR Part 63 except subpart 6S, A, and the Appendices,
40 CFR Parts 68, 72, 73, 75, 76, 77, 78
40 CFR Part 82 (except subpart F),
40 CFR Parts 85 through 89,
Section 129 of the FCAA, Solid Waste,
Section 183(e) of the FCAA, Consumer and commercial products,
Section 183(f) of the FCAA, Tank Vessels.

GENERAL CONDITIONS

G1. General Provision

Terms not otherwise defined in the permit shall have the meaning assigned to such terms in the referenced regulation.

G2. Reference materials

Where referenced in this permit, the versions of the following materials are effective as of the dates noted unless otherwise specified in this permit:

a. Source Sampling Manual; January 23, 1992 - State Implementation Plan Volume 3, Appendix A4;
b. Continuous Monitoring Manual; January 23, 1992 - State Implementation Plan Volume 3, Appendix A6; and
c. All state and federal regulations as in effect on the date of issuance of this permit.

G3. Applicable Requirements [OAR 340-218-0010(3)(b)]

Oregon Title V Operating Permits do not replace requirements in Air Contaminant Discharge Permits (ACDP) issued to the source even if the ACDP(s) have expired. For a source operating under a Title V permit, requirements established in an earlier ACDP remain in effect notwithstanding expiration of the ACDP or Title V permit, unless a provision expires by its terms or unless a provision is modified or terminated following the procedures used to establish the requirement initially. Source specific requirements, including, but not limited to TACT, RACT, BACT, and LAER requirements, established in an ACDP must be incorporated into the Oregon Title V Operating Permit and any revisions to those requirements must follow the procedures used to establish the requirement initially.

G4. Compliance [OAR 340-218-0040(3)(n)(C), 340-218-0050(6), and 340-218-0080(4)]

a. The permittee must comply with all conditions of this permit. Any permit condition noncompliance constitutes a violation of the Federal Clean Air Act and/or state rules and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application. Any noncompliance with a permit condition specifically designated as enforceable only by the state constitutes a violation of state rules only and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application.

b. Any schedule of compliance for applicable requirements with which the source is not in compliance at the time of permit issuance is supplemental to, and does not sanction noncompliance with the applicable requirements on which it is based.
c. For applicable requirements that will become effective during the permit term, the source must meet such requirements on a timely basis unless a more detailed schedule is expressly required by the applicable requirement.

G5. Masking Emissions:

The permittee must not install or use any device or other means designed to mask the emission of an air contaminant that causes or is likely to cause detriment to health, safety, or welfare of any person or otherwise violate any other regulation or requirement. [OAR 340-208-0400] This condition is enforceable only by the State.

G6. Credible Evidence:

Notwithstanding any other provisions contained in any applicable requirement, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any such applicable requirements. [OAR 340-214-0120]

G7. Certification [OAR 340-214-0110, 340-218-0040(5), 340-218-0050(3)(c)(D), and 340-218-0080(2)]

Any document submitted to DEQ or EPA pursuant to this permit must contain certification by a responsible official of truth, accuracy and completeness. All certifications must state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and, complete. The permittee must promptly, upon discovery, report to DEQ a material error or omission in these records, reports, plans, or other documents.

G8. Open Burning [OAR Chapter 340, Division 264]

The permittee is prohibited from conducting open burning, except as may be allowed by OAR 340-264-0020 through 340-264-0200.

G9. Asbestos [40 CFR Part 61, Subpart M (federally enforceable), OAR Chapter 340-248-0005 through 340-248-0180 (state-only enforceable) and 340-248-0205 through 340-248-0280]

The permittee must comply with OAR Chapter 340, Division 248, and 40 CFR Part 61, Subpart M when conducting any renovation or demolition activities at the facility.

G10. Stratospheric Ozone and Climate Protection [40 CFR 82 Subpart F, OAR 340-260-0040]

The permittee must comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F, Recycling and Emissions Reduction.

G11. Permit Shield [OAR 340-218-0110]

a. Compliance with the conditions of the permit is deemed compliance with any applicable requirements as of the date of permit issuance provided that:

i. such applicable requirements are included and are specifically identified in the permit, or
ii. DEQ, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the source, and the permit includes the determination or a concise summary thereof.

b. Nothing in this rule or in any federal operating permit alters or affects the following:

i. the provisions of ORS 468.115 (enforcement in cases of emergency) and ORS 468.035 (function of department);
ii. the liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;
iii. the applicable requirements of the national acid rain program, consistent with section 408(a) of the FCAA; or
iv. the ability of DEQ to obtain information from a source pursuant to ORS 468.095 (investigatory authority, entry on premises, status of records).

c. Sources are not shielded from applicable requirements that are enacted during the permit term, unless such applicable requirements are incorporated into the permit by administrative amendment, as provided in OAR 340-218-0150(1)(h), significant permit modification, or reopening for cause by DEQ.

G12. Inspection and Entry [OAR 340-218-0080(3)]

Upon presentation of credentials and other documents as may be required by law, the permittee must allow DEQ, or an authorized representative (including an authorized contractor acting as a representative of the EPA Administrator), to perform the following:

a. enter upon the permittee's premises where an Oregon Title V Operating Permit program source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
b. have access to and copy, at reasonable times, any records that must be kept under conditions of the permit;
c. inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
d. as authorized by the FCAA or state rules, sample or monitor, at reasonable times, substances or parameters, for the purposes of assuring compliance with the permit or applicable requirements.

G13. Fee Payment [OAR 340-220-0010, and 340-220-0030 through 340-220-0190]

The permittee must pay an annual base fee and an annual emission fee for particulates, sulfur dioxide, nitrogen oxides, and volatile organic compounds. The permittee must submit payment to the Department of Environmental Quality, Financial Services, 811 SW 6th Ave., Portland, OR 97204, within 30 days of date DEQ mails the fee invoice or August 1 of the year following the calendar year for which emission fees are paid, whichever is later. Disputes must be submitted in writing to DEQ. Payment must be made regardless of the dispute. User-based fees will be charged for specific activities (e.g., computer modeling review, ambient monitoring review, etc.) requested by the permittee.

G14. Off-Permit Changes to the Source [OAR 340-218-0140(2)]

a. The permittee must monitor for, and record, any off-permit change to the source that:

i. is not addressed or prohibited by the permit;
ii. is not a Title I modification;
iii. is not subject to any requirements under Title IV of the FCAA;
iv. meets all applicable requirements;
v. does not violate any existing permit term or condition; and
vi. may result in emissions of regulated air pollutants subject to an applicable requirement but not otherwise regulated under this permit or may result in insignificant changes as defined in OAR 340-200-0020.

b. A contemporaneous notification, if required under OAR 340-218-0140(2)(b), must be submitted to DEQ and the EPA.
c. The permittee must keep a record describing off-permit changes made at the facility that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under the permit, and the emissions resulting from those off-permit changes.
d. The permit shield of condition G11 does not extend to off-permit changes.

G15. Section 502(b)(10) Changes to the Source [OAR 340-218-0140(3)]

a. The permittee must monitor for, and record, any section 502(b)(10) change to the source, which is defined as a change that would contravene an express permit term but would not:

i. violate an applicable requirement;
ii. contravene a federally enforceable permit term or condition that is a monitoring, recordkeeping, reporting, or compliance certification requirement; or
iii. be a Title I modification.

b. A minimum 7-day advance notification must be submitted to DEQ and the EPA in accordance with OAR 340-218-0140(3)(b).
c. The permit shield of Condition G11 does not extend to section 502(b)(10) changes.

G16. Administrative Amendment [OAR 340-218-0150]

Administrative amendments to this permit must be requested and granted in accordance with OAR 340-218-0150. The permittee must promptly submit an application for the following types of administrative amendments upon becoming aware of the need for one, but no later than 60 days of such event:

a. legal change of the registered name of the company with the Corporations Division of the State of Oregon, or
b. sale or exchange of the activity or facility.

G17. Minor Permit Modification [OAR 340-218-0170]

The permittee must submit an application for a minor permit modification in accordance with OAR 340-218-0170.

G18. Significant Permit Modification [OAR 340-218-0180]

The permittee must submit an application for a significant permit modification in accordance with OAR 340-218-0180

G19. Staying Permit Conditions [OAR 340-218-0050(6)(c)]

Notwithstanding conditions G16 and G17, the filing of a request by the permittee for a permit modification, revocation and re-issuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

G20. Construction/Operation Modification [OAR 340-218-0190]

The permittee must obtain approval from DEQ prior to construction or modification of any stationary source or air pollution control equipment in accordance with OAR 340-210-0200 through OAR 340-210-0250.

G21. New Source Review Modification [OAR 340-224-0010]

The permittee may not begin construction of a major source or a major modification of any stationary source without having received an air contaminant discharge permit (ACDP) from DEQ and having satisfied the requirements of OAR 340, Division 224.

G22. Need to Halt or Reduce Activity Not a Defense [OAR 340-218-0050(6)(b)]

The need to halt or reduce activity will not be a defense. It will not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

G23. Duty to Provide Information [OAR 340-218-0050(6)(e) and OAR 340-214-0110]

The permittee must furnish to DEQ, within a reasonable time, any information that DEQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the permittee must also furnish to DEQ copies of records required to be retained by the permit or, for information claimed to be confidential, the permittee may furnish such records to DEQ along with a claim of confidentiality.

G24. Reopening for Cause [OAR 340-218-0050(6)(c) and 340-218-0200]

a. The permit may be modified, revoked, reopened and reissued, or terminated for cause as determined by DEQ.
b. A permit must be reopened and revised under any of the circumstances listed in OAR 340-218-0200(1)(a).
c. Proceedings to reopen and reissue a permit must follow the same procedures as apply to initial permit issuance and affect only those parts of the permit for which cause to reopen exists.

G25. Severability Clause [OAR 340-218-0050(5)]

Upon any administrative or judicial challenge, all the emission limits, specific and general conditions, monitoring, recordkeeping, and reporting requirements of this permit, except those being challenged, remain valid and must be complied with.

G26. Permit Renewal and Expiration [OAR 340-218-0040(1)(a)(D) and 340-218-0130]

a. This permit expires at the end of its term, unless a timely and complete renewal application is submitted as described below. Permit expiration terminates the permittee's right to operate.
b. Applications for renewal must be submitted at least 12 months before the expiration of this permit, unless DEQ requests an earlier submittal. If more than 12 months is required to process a permit renewal application, DEQ must provide no less than six (6) months for the owner or operator to prepare an application.
c. Provided the permittee submits a timely and complete renewal application, this permit will remain in effect until final action has been taken on the renewal application to issue or deny the permit.

G27. Permit Transference [OAR 340-218-0150(1)(d)]

The permit is not transferable to any person except as provided in OAR 340-218-0150(1)(d).

G28. Property Rights [OAR 340-200-0020 and 340-218-0050(6)(d)]
The permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations, except as provided in OAR 340-218-0110.

G29. Permit Availability [OAR 340-200-0020 and 340-218-0120(2)]

The permittee must have available at facility at all times a copy of the Oregon Title V Operating Permit and must provide a copy of the permit to DEQ or an authorized representative upon request.

ALL INQUIRIES SHOULD BE DIRECTED TO:

Northwest Region
700 N.E. Multnomah St. Ste 600
Portland, OR 97232
Telephone: (503) 229-5263

State of Oregon
Department of
Environmental
Quality

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

TITLE V PERMIT REVIEW REPORT

Northwest Region
700 NE Multnomah St., Suite 600
Portland, OR 97232
503-229-5263

Source Information:

SIC	3221
NAICS	327213

Source Categories (Part & code)	--

Compliance and Emissions Monitoring Requirements:

Unassigned emissions	No
Emission credits	No
Compliance schedule	No
COMS	Yes

COMS	Yes
Source test [date(s)]	As specified in the Permit
Ambient monitoring	No

Reporting Requirements:

Annual report (due date)	2/15
Emission fee report (due date)	2/15
SACC (due date)	2/15 & 7/31

Quarterly COM report	Yes
Excess emissions report	As specified in the Permit
Other Reports	No

Air Programs

NSPS (list subparts)	CC
NESHAP (list subparts)	6S
CAM	No
Regional Haze (RH)	No

Synthetic Minor (SM)	No
Part 68 Risk Management	No
CFC	No
RACT	No

TACT	No
Title V	Yes
ACDP (SIP)	No
Major HAP source	No

Federal major source	Yes
NSR	No
PSD	No
Acid Rain	No

TABLE OF CONTENTS

INTRODUCTION 4

PERMITTEE IDENTIFICATION 6

FACILITY DESCRIPTION 6

EMISSIONS UNIT AND POLLUTION CONTROL DEVICE IDENTIFICATION 8

EMISSION LIMITS AND STANDARDS 13

PLANT SITE EMISSION LIMITS 16

HAZARDOUS AIR POLLUTANTS 19

MONITORING REQUIREMENTS 22

TEST METHODS AND PROCEDURES 23

RECORDKEEPING REQUIREMENTS 24

REPORTING REQUIREMENTS 24

GENERAL BACKGROUND INFORMATION 24

ATTACHMENT – Emissions Detail Sheets A1 – A12

LIST OF ABBREVIATIONS USED IN THE REVIEW REPORT

AQMA	Air Quality Management Area
ASTM	American Society of Testing and Materials
CAM	compliance assurance monitoring
CEMS	continuous emissions monitoring system
CFR	Code of Federal Regulations
CH_4	methane (greenhouse gas)
CMS	continuous monitoring system
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
COMS	continuous opacity monitoring system
DEQ	Oregon Department of Environmental Quality
dscf	dry standard cubic feet
EF	emission factor
EPA	United State Environmental Protection Agency
EU	emissions unit
FCAA	Federal Clean Air Act
GHG	greenhouse gas
gr/dscf	grains per dry standard cubic feet
HAP	hazardous air pollutant
ID	identification code
I&M	inspection and maintenance
LPG	liquefied petroleum gas
MB	material balance
Mlb	1000 pounds
MM	million
N2O	nitrous oxide (greenhouse gas)
NA	not applicable
NESHAP	National Emission Standard for Hazardous Air Pollutants
NO_x	oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
O_2	oxygen
OAR	Oregon Administrative Rules
ORS	Oregon Revised Statutes
O&M	operation and maintenance
Pb	lead
PCD	pollution control device
PEMS	predictive emissions monitoring system
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in size
$PM_{2.5}$	particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PSEL	Plant Site Emission Limit
SER	Significant emissions rate
SO_2	sulfur dioxide
ST	source test
VE	visible emissions
VMT	vehicle mile traveled
VOC	volatile organic compound

INTRODUCTION

1. PERMIT ACTION SUMMARY: The proposed permit is a renewal of existing Title V Permit 26-1876 that is currently in effect. Owens-Brockway has not made any major modifications or process changes to their facility during the current permit term. The proposed permit renewal incorporates additional regulatory requirements (e.g., GHG PSEL) and updates emission factors to better assess the facility emissions.

   a. The proposed permit incorporates National Emissions Standard for Hazardous Air Pollutants (NESHAP), subpart SSSSSS (6S), and associated testing, monitoring, recordkeeping requirements.

   b. Particulate Matter (PM) that is less than 2.5 microns in diameter is now categorized as $PM_{2.5}$. The proposed permit established the $PM_{2.5}$ netting basis of 91 tons per year, which represents approximately 92% of the PM_{10} Netting Basis of 95 tons/yr.

   c. The proposed permit incorporates the GHG PSEL of 100,521 tons CO_2e per year. The reporting requirements promulgated in Division 215 of Oregon Administrative Rules are also new requirements incorporated in the proposed permit.

   d. In accordance with OAR 340-222-0035(2)(a), the PM_{10}, SO_2, and NO_X emission factors for glass melting furnaces A and D have been updated based on the average of previous source test results and other available EPA data. The PSELs for PM_{10}, SO_2, and NO_X PSELs have been reduced accordingly.

   e. The proposed permit incorporates by reference the requirements of Corrective Action Plan (CAP) from the Mutual Agreement and Final Order (AQ/V-NWR-11-092) that Owens and DEQ entered into on May 11, 2012, as referenced in enforcement history summarized in item 33 of this review report.

   f. Previous permit requirements that limited excessive visible emissions (i.e., $\geq$20%) from non-fuel burning equipment (e.g., baghouse) to no greater than 30 seconds in any one hour period are no longer applicable. Visible emissions standards for all fuel burning and non-fuel burning equipment are now measured based on the EPA method.

   g. Previous permit requirement that limited the SO_2 emissions to 1,000 ppm has been omitted from the permit. Oregon Administrative Rule 340-208-0630 that limited the SO_2 emissions to 1,000 ppm was repealed on 11/08/2007 and it is now defunct. Furthermore the Owens-Brockway facility no longer manufactures medical bottles that utilized the SO_2 treatment processes.

2. In accordance with OAR 340-218-0120(1)(f), this review report is intended to provide the legal and factual basis for the draft permit conditions. In most cases, the legal basis for a permit condition is included in the permit by citing the applicable regulation. The factual basis for the requirement may be the same as the legal basis. However, when the regulation is not specific and only provides general requirements, this review report intends to provide a more thorough explanation of the factual basis for the draft permit conditions.

3. The off-permit changes 502(b)(10) changes, administrative amendments, and/or minor modifications that occurred during the permit term include the following:

DATE	UPGRADES/CHANGES MADE
May 2012	Furnace-A: Installed limit switches to control the "combustion air butterfly valve" to control and direct the combustion air flow.
July 2013	Installed control units on glass melting furnaces to automatically shut off the gas supply into the furnace when the combustion air flow drops below 100,000 cubic feet per hour or when COMS detects elevated opacity (≥18%) for more than 90 seconds.
April 2014	Replaced D-Furnace exhaust fan motor and fan belts. All exhaust fan belts are inspected on a monthly basis and adjusted and/or replaced as needed. Fan belts are replaced at least every two years.
2013	Owens-Brockway has eliminated in-house cullet processing and out-sourced the cullet crushing operations to its subsidiary "e-Cullet."
2016	Re-bricked Furnace-D and replaced the exhaust stack to same height; And dismantled the non-functioning furnace B and C stacks.
August – September 2016	Performed numerous maintenance projects to reduce fugitive dust emissions from raw materials handling processes; replaced broken windows in the materials conveyor system gangway and conveyors, provide covers during raw material unloading, etc.
On-going	Monitors electric boost rate (kwh) of furnace, the amount of caustic used as wetting agent, and batch pattern.
On-going	In accordance with OAR 340-218-0150, there were several changes to the responsible official identified for the permitted activities. Mr. Dwayne Wendler is the plant manager and the current designated responsible official.
On-going	Rental compressors: Owens-Brockway may operate rental compressors in the event the main electric- compressor is down for maintenance and/or repair.

4. The changes made between the previous permit and the proposed permit include the following:

   a. New Conditions #20 – 22: As noted in item 1.a, the proposed permit incorporates NESHAP subpart 6S requirements.
   b. New Condition #11: Risk Management Plan is required if source becomes subject to the accidental release prevention specified in 40 CFR Part 68.
   c. New Condition #19: DEQ Corrective Action Plan required.
   d. The PSEL section incorporates $PM_{2.5}$ and GHG PSEL.
   e. PM_{10}, SO_2, NO_x PSEL are reduced in the proposed permit. The PM_{10}, SO_2, and NO_x emission factors for glass melting furnaces are updated based on previous source test results.
   f. OAR 340-208-0600 governing the opacity limit allowing 30-second exceedance in an hour has been replaced with the opacity standards of OAR 340-208-0110.
   g. All previous permit conditions that applied to furnaces B and C are purged from the permit. Old furnaces B and C are no longer functional and not operable.
   h. OAR 340-208-0630 limiting SO_2 emissions to 1,000 ppm is repealed. Owens-Brockway no longer manufactures medical glass vial that required SO_2 gas treatment.
   i. General Conditions Section has been updated and reorganized.

PERMITTEE IDENTIFICATION

5. Owens-Illinois, Inc., through its subsidiaries, manufactures and sells glass containers to food and beverage manufacturers all over the world. Glass containers are offered in a range of sizes, shapes, and colors. The company sells its products directly to customers or through distributors. Owens-Illinois, Inc. was founded in 1903 and is headquartered in Perrysburg, Ohio. Owens-Brockway Glass Container Inc. in Portland, Oregon is one of the glass container manufacturing plants that O-I operates, and it is the one regulated under Title 5 permit 26-1876. The Owens-Brockway plant occupies approximately 78 acres of property located at 9710 NE Glass Plant Road, adjacent to Interstate-205.

FACILITY/PROCESS DESCRIPTION

6. The Owens-Brockway Glass Plant is capable of producing a variety of glass bottles and jars. At present time the beer bottles are the core products manufactured and wine bottles coming in at distant second.

Batch House – Raw Materials Handling

Railcars and trucks deliver the raw materials (e.g., sand, salt cake, limestone, soda ash) to the plant. Raw materials are gravity fed into an unloading pit and the elevators transport the materials to designated storage silos in the batch house. Individual components are weighed on scale located under each silo and conveyed to the mixer where cullet (i.e., recycled glass) is added last to minimize wear and tear of the mixer. The batch baghouse abates dusts generated during the raw materials transport and mixing operations.

Cullet Process and Storage

Owens currently purchases sorted cullet from another company (eCullet Inc.). Owens no longer accept recycled bottles and process them in-house to make cullet. The cullet Owens receive is already sorted according to the color and type. Owens also uses cullet generated in house as feed for its glass melting furnaces.

Material Blending/Mixing

The raw materials and cullet are placed into a surge bin, and liquid caustic (i.e., wetting agent) is added to the bin as needed along with small quantities of color additives. The final mixture/batch is loaded into the batch charger that feeds the glass-melting furnace.

Glass Melting Furnaces

The Owens-Brockway facility operates two glass-melting furnaces “A” and “D”, which are both continuous regenerative furnaces capable of producing about 98,550 and 82,125 tons/yr of glass respectively. The shells of furnaces “B” and “C” physically occupy the space but they are not functional; furnace-B was shut down after 1978 and furnace-C was last operated in 1990. Furnace-A has dual side-ports with south and north stacks where the combustion gas exhaust through, alternating every 30 minutes. Furnace-D is an end-port furnace with a single stack.

Typically the end-port furnace consumes less energy (i.e., less NG fuel usage leading to lower emissions) than a comparable cross-fired/side-port furnace. However, the side-port furnaces can be built for larger melting capacity and more efficient than several smaller end-port furnaces. Continuous Opacity Monitors (COMs) installed on each of the three furnace exhaust stacks measure visible emissions from furnaces A and D.

The batch-mixture is charged into the furnace at the same rate as molten-glass is pulled out to achieve steady-state operation. As the pre-mixed batch enters the melting furnace through the feeder, it initially floats on the top of molten glass already in the furnace. Raw materials melt and pass through the melter and eventually flow through a "throat" at the bottom of furnace that leads into the refiner. The refiner section of the furnace functions as a holding basin where the glass is allowed to cool to uniform temperature before entering the forehearth – constructed as a long ceramic "bathtub" where molten glass is typically cooled from 2,350 degrees Fahrenheit (°F) at the entrance to 2,150 °F at the exit. Viscosity (measured in "poise") of molten glass varies inversely with temperature. Molten glass in the forehearth at 2,200 °F has a viscosity of about 1,000 poise. For comparison, water at room temperature has about 1/100 poise and honey has about 100 poise.

Bottle Forming

Molten glass[-1-] flows gravitationally from the refiner through the forehearth, where it is cooled to a uniform temperature and desirable viscosity prior to reaching the feeder. The hot glass then flows through the orifice and the shape and size of glass "gob" is carefully controlled. A 7-oz gob is typical for a 12-oz beer bottle. After the gob has been sheared from the feeder it falls through a series of chutes where it is delivered and blown into the blank mold on the Individual Section (I.S.) machine.

Mold Preparation is an inherent part of the bottle-forming process. The mold preparation involves cleaning, lubricating, curing and heating. The operator periodically swabs molds with a graphite/oil solution as needed. A defective mold is purged from the production line for maintenance and repair. A purged-mold is cleaned in the burnout ovens and grit blasters, and then solid film lubricant (1-gallon lasts about a week) is applied in the mold coating spray booth and cured in the mold curing ovens. The repaired mold's temperature is elevated in the mold heat ovens and quick fire ovens prior to re-entering the bottle forming production line (i.e., I.S. machine).

Surface Treatment: Molded glass bottles are further treated in the hot end surface treatment (HEST) process that applies mono-butyl-tin trichloride (MBTT). The HEST process deposits tin (Sn) compounds/radicals into the glass surface. The exhaust from HEST process vents through an abatement device (i.e., HEST-A baghouse). Ammonia (NH_3) is added to the HEST hood exhaust to combine with excess tin (Sn) to form solid particulate matter (PM) that baghouse can collect and filter out. Following the HEST process the bottles are annealed[-2-] in the lehr, which is a long oven that controls the amount of heat supplied to moving bottles.

[-1-] Traditionally glass is defined as super cooled liquid because it does not behave like other solid materials (e.g., metal, ceramic) upon cooling from the molten state. Glass does not undergo structural changes. Glass can be described as being a very viscous liquid. The classic verification of the super-cooled-liquid theory is that if a windowpane of very old house is measured, the bottom will be thicker than the top – indicating very slow flow has occurred over a long period of time.

[-2-] As glass cools it shrinks and uneven cooling causes weak glass due to stress. An even slow cooling process is achieved by annealing over a long period of time depending on the glass thickness.

Inspection: Between the forming machine and the lehr, hot-faulty bottles are purged from the production line and fall into hoppers containing water placed below the production line in the basement. After the lehr, glass containers are inspected and defective bottles are kicked to a belt conveyor that also goes to the basement. The oil/water separator treats and recirculates the catch water used in the dunk-buckets. In addition to rejecting faulty bottles, the inspection process gathers statistical information to trace the faulty containers being produced to the defective-mold. This is accomplished by reading the mold number on the container, which was encoded as a numeral or a binary code of dots on the container by the mold that made it. Operators also perform a range of manual inspections on samples of containers, usually visual and dimensional checks. The I.S. machine allows operator to take one or more sections out of production line for repairs without shutting down the entire production line.

Warehouse Operations

Finally the finished bottles are coded and packaged for shipping. A bottle coder (ink-jet printer) prints tiny identification numbers on the glass containers as they rapidly move through the conveyor. Methyl ethyl ketone (MEK) is used as cleanup solvent and as the ink (carrier) solvent. MEK emissions are grouped under aggregate insignificant activities. Lastly the finished glass containers are packed into cartons or bulk-loaded for shipping.

Boiler

Owens Brockway operates a boiler (10.5×10^6 Btu/hr) and small space heaters strictly for space heating. There are also hot water heaters to heat water for showers and restrooms. Space heaters and water heaters are categorically insignificant activities.

Miscellaneous Activities

Maintenance activities include four "Safety-Kleen" parts cleaners, welding operations, and minor machining and painting activities. The plant has one vertical fixed roof storage tank for storing fuel oil and several horizontal tanks storing propane. There are also storage tanks for used oil, machine lube oil, and ammonia. The Quality and Standards (Q/S) lab uses bench scale laboratory equipment for chemical and physical analysis.

EMISSIONS UNIT (EU) AND POLLUTION CONTROL DEVICE (PCD) IDENTIFICATION

7. Emissions units identified in this permit are grouped primarily with respect to the common applicable requirements and the associated common monitoring protocols as follow:

EU ID		EU Description	SCC	Year Installed	PCD Description	PCD ID	Year Inst.
EU1	RMU1-3	Batch house raw material handling equipment/activities; conveyor, elevator, silos, etc.	30510405 30510499	1956	Raw material baghouse Batch house baghouse	RMBH-1 RMBH-2 RMBH-3	1978 1956 --
EU2	CC5	Cullet crusher	30501413	1956	None	--	--

EU ID		EU Description	SCC	Year Installed	PCD Description	PCD ID	Year Inst.
EU3	RMB1-3	Conveyor, weigh bins, surge bin, mixers, chargers, etc.	30510199 30510299	1956	Batch house baghouse	RMBH-2	1956
EU4	**GM1** **GM4**	Melting Furnace A Melting Furnace D	30501401	1956 1970	None	--	--
EU5	HEST1-4	hot-end surface treatment	30501406	pre-1975	HEST Abatement (NH_3 injected baghouse)	HEST-A	1982
	MS1-4	Mold swabbers	--	1956		--	--
EU6	R1, R4 FH 1-4 LH1-4 MO1-3 MH1-4 QF1-2	2 Refiners 4 Forehearth 4 Lehrs 3 Mold burnout/ cure oven 4 Mold heat oven 2 Quick fire oven	30590003	1956 (some replaced with newer equip. recently)	none	--	--
EU7	B1	Boiler 10.5 MMBtu/hr	10100602 10100501	1956	none	--	--
EU 10	Machine repair dust collector. Mold bench dust collector			Dust collector	MRD-1 MBD-1	1956 1956	--

Emissions Unit 1 (EU1) includes all raw materials unloading and transport equipment and associated activities. A small baghouse RMBH-1 (with 9-bags) located inside the truck-unloading shed operates when truck unloads raw materials. A "batch house" baghouse RMBH-2 (with 240-bags) is the main dust collector that operates continuously to abate particulate-dust generated from raw materials unloading and transport operations.

Emissions Unit 2 (EU2) includes one cullet crusher and the conveyor belt used to transport cullet from the storage pile to the mixing bin. Four of the former cullet crushers (CC1 through CC4) and all four of the former post-consumer cullet processors (CP1 through CP4) have been removed from the site, because in 2013 Owens-Brockway formed “Glass to Glass” joint venture with eCullet Inc. and began outsourcing glass-crushing and cullet-sorting operations.

Emissions Unit 3 (EU3) includes raw-material blenders (RMB1 through RMB3) and other auxiliary equipment such as surge bins, weigh bins, mixers and chargers. Particulate matter emissions from silos, weigh bin, mixers, and chargers are all collected and routed to a "batch" baghouse RMBH-2 (240 bags) for abatement.

Emissions Unit 4 (EU4) consists of two glass melting furnaces A (GM1) and D (GM4). The Portland facility used to operate four furnaces but only two are operated now. Furnace-B (GM2) was shut down permanently in 1979, and furnace-C (GM3) operated until 1990 before being taken out of service. Two active melting furnaces A and D burn natural gas as their primary fuel but they are capable of burning LPG (e.g., propane). Both furnaces also utilize electric boost for an additional energy and to apply this energy to the lower regions of the glass-bath that are difficult to heat by the NG-fired heating system. Furnace-A has two side-ports with “south” and “north” stacks through which the combustion by-product gases are alternatingly exhausted. Furnace D is an end-port furnace with a single stack**.**

Emission Factors for glass melting furnaces are updated in this permit based on multiple source test data and other available information that best correspond to Owens' past and current operations:

Baseline EFs for Pre-renovation Glass Melting Furnace-A		
PM EF	6.3E-01 lbs/ton	Average of all PM and SO_2 source tests performed on furnaces A and D were used for pre-renovation furnace A.
SO_2 EF	2.1E+00 lbs/ton	
NOx EF	6.2E+00 lbs/ton	No source test data available for pre-renovation furnace A. EPA's AP42 EF for NOx was determined to be the best data available for pre-renovation furnace A. The furnace size and type affects NOx emissions unlike PM and SO2 emissions that are more dependent on type of materials used.
Baseline EFs for Glass Melting Furnace-B Furnace-B was shut down permanently in December 1978		
PM EF	6.3E-01 lbs/ton	Averages of all PM and SO2 source tests performed on furnaces A and D were deemed the best available data.
SO_2 EF	2.1E+00 lbs/ton	
NOx EF	6.2E+00 lbs/ton	No NOx source test data available for Furnace-B. EPA's AP42 EF for NOx was determined to be the best available data.
Baseline EFs for Glass Melting Furnace-C Furnace-C was shut down permanently in April 1990		
PM EF	6.8E-01 lbs/ton	1984 source test data for Furnace C used.
SO_2 EF	2.1E+00 lbs/ton	Average of all SO2 source tests performed on furnaces A and D since 1983. SO2 emissions depend on decomposition of sulfates in the batch materials and oxidation of sulfur; and the batch material chemistry remains essentially the same for all furnaces.
NOx EF	5.2E+00 lbs/ton	1984 Source test data for Furnace C used.
Baseline EFs for Electric Glass Melting Furnace-D		
PM EF	2.4E-01 lbs/ton	1983 source test performed on electric furnace-D
SO_2 EF	2.0E-01 lbs/ton	1983 source test performed on electric furnace-D
NOx EF	0 (not detected)	1983 source test performed on electric furnace-D
Current EFs for Glass Melting Furnace-A The modification to Furnace-A completed on 4/07/1983; enlarged the melt area from 566 to 786 ft2 and increased the number of firing ports from 8 to 10		
PM EF	7.0E-01 lbs/ton	Average of all PM source tests performed on Furnace-A since 1983.
SO_2 EF	2.1E+00 lbs/ton	Average of all SO2 source tests performed on furnaces A and D since 1983. SO2 emissions depend on decomposition of sulfates in the batch materials and oxidation of sulfur; and the batch material chemistry remains essentially the same for all furnaces.
NOx EF	4.7E+00 lbs/ton	Average of all NOx source tests performed on Furnace-A since 1983.
Current EFs for Gas-fired Glass Melting Furnace-D In 1986 furnace-D was converted from electric to gas-fired, end-port, regenerative furnace.		
PM EF	6.0E-01 lbs/ton	Average of all PM source tests performed on Furnace-D since 1986.

SO_2 EF	2.1E+00 lbs/ton	Average of all SO2 source tests performed on furnaces A and D since 1983. SO2 emissions depend on decomposition of sulfates in the batch materials and oxidation of sulfur; and the batch material chemistry remains essentially the same for all furnaces.
NOx EF	3.7E+00 lbs/ton	Average of all NOx source tests performed on Furnace-D since 1986.

Emissions Unit 5 (EU5) consists of four hot end surface treatment equipment (HEST1 to HEST4) and the mold swabbing operations. The operators manually apply graphite/oil mixture to molds with hand-held swab sticks on as-needed basis.

EU5 Devices	Material Type	Material usage	Year Installed
HEST1-4	$SnCl_4$	70,000 lbs/yr	Pre-1975
MS1-4	graphite/oil mix.	60,000 lbs/yr	1956

Emissions Unit 6 (EU6) includes natural gas burning equipment; furnace refiners (R1 to R4), forehearth (FH1 to FH4), Lehrs (LH1 to LH3), Mold burnout and curing oven (MO-1), Mold heat oven (MH-1), Quick fire oven (QF-1), and space heaters[-3-]. The fourth lehr (LH4) is an electrical unit.

EU6 Devices:	R1-4	FH1-4	LH1-4	MO1-3	MH1-4	QF1-2
Capacity (10^6 Btu/hr):	2.5	5.0	2.5	2.0	2.0	2.0
Year Installed:	1956	1956	1956	1956	1956	1956

Emissions Unit 7 (EU7) is a "Kewanee, Type-C" boiler with the rated capacity of 10.5 x 10^6 Btu/hr. The Kewanee boiler is primarily fueled by natural gas but it is capable of burning fuel oil as a back-up fuel. The boiler is used for space heating and hot water. The boiler was installed in 1956 and no modification has been made to it since.

Emissions Unit 10 (EU10) consists of machine repair and mold grinding operations that are done sporadically on as-needed basis. Machine repair dust collector (MRD-1) and a mold bench dust collector (MBD-1) are therefore operated infrequently.

Pollution Control Devices (PCD) at the Owens plant include the following baghouses. The HEST-A baghouse control tin-compounds released from the hot end surface treatment process.

PCD ID	Baghouse Type (EU controlled)	Number of bags	Design flow (acfm)	Rated efficiency	Year Installed
RMBH-1	Baghouse (EU1)	9	180	99%	1978
RMBH-2	Baghouse (EU1, EU3)	240	9,000	99%	1956
RMBH-3	Baghouse (EU1)	9	135	99%	--
HEST-A	Baghouse (EU5)	144	3,500	99%	1982
		NH_3 inj.	30 - 35/unit	99%	1982
MRD-1	Baghouse (EU10)	9	1,400	99%	1956
MBD-1	Baghouse (EU10)	18	2,100	99%	1956

[-3-] Space heaters with the capacity less than 2 MMbtu/hr are grouped under categorically insignificant activities.

8. The permittee has identified the following categorically insignificant activities:

- Constituents of a chemical mixture present at less than 1% by weight of any chemical or compound regulated under Divisions 200 through 268 excluding divisions 248 and 262 of this chapter, or less than 0.1% by weight of any carcinogen listed in the US Department of Health and Human Service's Annual Report on Carcinogens when usage of the chemical mixture is less than 100,000 pounds/year
- Evaporative and tailpipe emissions from on-site motor vehicle operation
- Distillate oil, kerosene, gasoline, natural gas or propane burning equipment, provided the aggregate expected actual emissions of the equipment identified as categorically insignificant do not exceed the de minimis level for any regulated pollutant, based on the expected maximum annual operation of the equipment. If a source's expected emissions from all such equipment exceed the de minimis levels, then the source may identify a subgroup of such equipment as categorically insignificant with the remainder not categorically insignificant. The following equipment may never be included as categorically insignificant:
    - Any individual distillate oil, kerosene or gasoline burning equipment with a rating greater than 0.4 million Btu/hour;
    - Any individual natural gas or propane burning equipment with a rating greater than 2.0 million Btu/hour.
- Distillate oil, kerosene, gasoline, natural gas or propane burning equipment brought on site for six months or less for maintenance, construction or similar purposes, such as but not limited to generators, pumps, hot water pressure washers and space heaters, provided that any such equipment that performs the same function as the permanent equipment, must be operated within the source's existing PSEL
- Office activities
- Food service activities
- Janitorial activities
- Personal care activities
- Grounds keeping activities including, but not limited to building painting and road and parking lot maintenance
- On-site recreation facilities
- Instrument calibration
- Maintenance and repair shop
- Air cooling or ventilating equipment not designed to remove air contaminants generated by or released from associated equipment
- Refrigeration systems with less than 50 pounds of charge of ozone depleting substances regulated under Title VI, including pressure tanks used in refrigeration systems but excluding any combustion equipment associated with such systems
- Bench scale laboratory equipment and laboratory equipment used exclusively for chemical and physical analysis, including associated vacuum producing devices but excluding research and development facilities
- Temporary construction activities
- Warehouse activities
- Accidental fires
- Air vents from air compressors
- Demineralized water tanks
- Pre-treatment of municipal water, including use of deionized water purification systems
- Electrical charging stations
- Fire Brigade training

- Instrument air dryers and distribution
- Routine maintenance, repair, and replacement such as anticipated activities most often associated with and performed during regularly scheduled equipment outages to maintain a plant and its equipment in good operating condition, including but not limited to steam cleaning, abrasive use, and woodworking
- Electric motors
- Storage tanks, reservoirs, transfer and lubricating equipment used for ASTM grade distillate or residual fuels, lubricants, and hydraulic fluids
- On-site storage tanks not subject to any New Source Performance Standards (NSPS), including underground storage tanks (UST), storing gasoline or diesel used exclusively for fueling of the facility's fleet of vehicles
- Natural gas, propane, and liquefied petroleum gas (LPG) storage tanks and transfer equipment
- Pressurized tanks containing gaseous compounds
- Emissions from wastewater discharges to publicly owned treatment works (POTW) provided the source is authorized to discharge to the POTW, not including on-site wastewater treatment and/or holding facilities
- Fire suppression and training
- Paved roads and paved parking lots within an urban growth boundary
- Health, safety, and emergency response activities
- Emergency generators and pumps used only during loss of primary equipment or utility service due to circumstances beyond the reasonable control of the owner or operator, or to address a power emergency, provided that the aggregate horsepower rating of all stationary emergency generator and pump engines is not more than 3,000 horsepower. If the aggregate horsepower rating of all stationary emergency generator and pump engines is more than 3,000 horsepower, then no emergency generators and pumps at the source may be considered categorically insignificant
- Non-contact steam vents and leaks and safety and relief valves for boiler steam distribution systems
- Industrial cooling towers that do not use chromium-based water treatment chemicals
- Uncontrolled oil/water separators in effluent treatment systems, excluding systems with a throughput of more than 400,000 gallons per year of effluent located at the following sources:
  - Petroleum refineries;
  - Sources that perform petroleum refining and re-refining of lubricating oils and greases including asphalt production by distillation and the reprocessing of oils and/or solvents for fuels; or
  - Bulk gasoline plants, bulk gasoline terminals, and pipeline facilities
- Combustion source flame safety purging on startup

EMISSION LIMITS AND STANDARDS

9. Facility-wide applicable requirements

a. Source Emission Reduction Plan (SERP) required by OAR 340-206-0050 is applicable to Owens-Brockway since it operates inside the Portland AQMA. Portland is a maintenance area for ozone and carbon monoxide, as designated in OAR 340-204-0040. Owens-Brockway emits over 100 tons of NO_x per year.

b. Fugitive emissions control requirements specified at OAR 340-208-0210 are applicable to any material handling processes/equipment and apply to all fugitive dust emission sources.

c. Nuisance prevention requirements of OAR 340-208-0300, and large particle (i.e., PM > 250 micron in size) fall-out limitations of OAR 340-208-0450 are state-only enforceable requirements that apply to Owens-Brockway.

10. Emissions Unit specific applicable requirements

a. The visible emissions standard of OAR 340-208-0110 applies to EU4 glass melting furnaces and all baghouses and dust collectors (e.g., RMBH-2, HEST-A, etc.) located throughout the plant.

b. The 0.10 gr/scf grain loading limit of OAR 340-228-0210(2)(b) applies to GM1 and GM4 glass melting furnaces, and all the other EU6 and EU7 fuel burning equipment.

c. For Baghouses RMBH-2, RMBH-3, MRD-1, MBD-1 constructed before June 1, 1970, with no available compliance source test results, the following grain loading limits apply. [OAR 340-226-0210 (2)(a)(B)]

0.24 gr/dscf limit is applicable until Dec. 31, 2019; and
0.15 gr/dscf limit applies from Jan 1, 2020 onward.

d. For Baghouses RMBH-1, HEST-A constructed after June 1, 1970, with no available compliance source test results, the 0.14 gr/dscf grain loading limit is applicable pursuant to OAR 340-226-0210 (2)(b)(B).

e. The fuel oil sulfur content limits of OAR 340-228-0110 applies to any distillate fuel-oils used by Owens-Brockway. The EU7 boiler burns natural gas when it is operated but it is also capable of burning fuel oil.

11. 40 CFR Part 60, Subpart CC – Standard of Performance for Glass Manufacturing Plants

The glass melting furnace GM1 was installed in 1956 and it was modified during the year 1983. The GM1 furnace-area was enlarged from 566 square-feet to 786 square-feet and additional gas firing ports were installed. The electric melting furnace GM4 was installed in 1970 and it was converted to gas-fired furnace during the year 1986. A glass melting furnace that commenced construction or modification after June 15, 1979 is subject to the NSPS requirements of 40 CFR, subpart CC – "Standards of Performance for Glass Manufacturing Plants."

a. Both GM1 and GM4 furnaces burn natural gas and utilize the electric-boost. Owens Brockway typically uses post-consumer cullet in excess of 50% of total material input. The GM1 and GM4 furnaces are considered glass melting furnace "with modified processes" subject to the PM emissions limit of 0.5 g/Kg specified at 40 CFR 60.293.(b)(1).

b. The GM1 and GM4 furnaces are required to install, calibrate, maintain, and operate Continuous Opacity Monitoring System (COMS) to measure the visible emissions discharged into the atmosphere. The GM1 furnace with two stacks has optical sensor in each stack.

12. Non-applicability of 40 CFR Part 61, Subpart N; "National Emission Standards for Inorganic Arsenic Emissions From Glass Manufacturing Plants" applies to a facility of any size existing prior to August 4, 1986 that uses commercial arsenic as a raw material. The limit for an uncontrolled source is 2.7 tons of arsenic emissions per year based on mass balance. Owens-Brockway does not use arsenic.

13. 40 CFR Part 63, Subpart SSSSSS; "National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources are applicable to Furnace-D that adds iron chromite to the batch when it produces green glasses. Iron chromite contains chromium. No other metal HAPs listed in subpart 6S are added to the glass batch.

    The metals that are naturally occurring as trace constituents or contaminants of other substances are not considered to be raw materials as defined in §63.11459. Cullet and materials that are recovered from the process stream and recycled/reused into the glass formulation are not considered to be raw materials.

    Emissions from furnace-D must comply with either 0.2 lbs of PM per ton of glass produced, or 0.02 lbs of metal HAP per ton of glass produced. 40 CFR Part 63.11452(b)(14)(ii) insinuates only the metal HAP added to the process (i.e., Cr) is subject to the 0.02 metal HAP (i.e., glass manufacturing metal HAPs) standard.

14. Emissions limits applicable to Insignificant Activities

    As identified earlier in this Review Report, this facility has insignificant emissions units (IEUs) that include categorically insignificant activities and aggregate insignificant emissions, as defined in OAR 340-200-0020. For the most part, the standards that apply to IEUs are opacity (20% limit) and particulate matter (0.1 gr/dscf limit). DEQ does not consider it likely that IEUs could exceed an applicable emissions limit or standard because IEUs are generally equipment or activities that do not have any emission controls (e.g., small natural gas fired space heaters) and do not typically have visible emissions. Since there are no controls, no visible emissions, and the emissions are less than one ton per year, DEQ does not believe routine monitoring, recordkeeping, or reporting is necessary for assuring compliance with the standards.

PLANT SITE EMISSION LIMITS

15. Provided below is a summary of the baseline emissions rate, netting basis, and plant site emission limits.

Pollutant	Baseline Emission Rate (tons/yr)	Netting Basis		Plant Site Emission Limit (PSEL)		
		Previous (tons/yr)	Proposed (tons/yr)	Previous PSEL (tons/yr)	Proposed PSEL (tons/yr)	PSEL Increase (tons/yr)
PM_{10}	95	132	95	132	109	--
$PM_{2.5}$	--	--	91	--	100	--
SO_2	145	313	145	313	184	--
CO	13	17	13	99	99	--
NO_x	343	711	343	711	382	--
VOC	12	12	12	39	39	--
Pb	0.1	0.1	0.1	0.5	0.5	--
GHG (CO_2e)	46,852	--	46,852	--	100,521	--

a. Baseline Emission Rate is the best estimate of actual pollutant emissions that occurred during the baseline period of 1978. Baseline emission rate for each criteria pollutant was calculated based on actual production data from 1978 and the emission factors derived from available source test data and EPA's AP42 emission factors. Emissions Detail Sheets at the end of this review report provide the 1978 production data and emission factors used to estimate the baseline PSEL.

Any 12 consecutive month period between year 2000 through 2010 can be used to establish the baseline period for greenhouse gas (GHG). Owens-Brockway has selected the calendar year 2010 for the GHG baseline period.

b. Netting Basis equals the baseline emission rate adjusted down with respect to any emission reductions required by rules or through voluntary measures, plus any emission increases approved through New Source Review. There have been no regulatory or voluntary reductions of PSEL and there have been no PSEL increases approved through NSR. The netting basis for all pollutants other than $PM_{2.5}$ are the same as their respective baseline emissions rate. Differences between previous and proposed netting basis for PM_{10}, CO, SO_2, and NO_x are largely due to recalculating the baseline emissions using updated emission factors obtained from multiple source tests conducted over the years.

c. Previous PSEL is the PSEL approved in the previous permit.

d. Proposed PSEL is the PSEL proposed for this permit. The decrease in PM_{10}, SO_2, and NO_x PSEL are due to corrections and they do not represent reduction in actual emissions. Emissions Detail Sheets attached to this review report provides the production data, source test results, and all other emission factors used to re-establish the baseline and current PSELs.

e. All PM and PM_{10} currently emitted at the Owens Brockway plant are considered PM_{10}.

f. PSEL for $PM_{2.5}$ is established for the first time in this permit renewal. Refer to emissions detail sheet for $PM_{2.5}/PM_{10}$ fractions used to establish the $PM_{2.5}$ netting basis and PSEL.

g. PSEL for CO, VOC, and Pb are set at their respective generic level in accordance with OAR 340-222-0040. The generic PSEL level for CO and VOC is equal to Significant Emission Rate (SER) for that pollutant minus 1 ton. The generic level for Pb equals its SER minus 0.1 ton at 0.5 tons/yr. The PSEL must be established for all regulated pollutants listed in Table 2 of OAR 340-200-0020 that are emitted above the de-minimis levels defined in 340-200-0020. The de minimis level for Pb is only 0.1 tons/yr, and this permit renewal moves the lead emissions grouped under aggregate insignificant emissions in the previous permit to the PSEL section of the permit.

h. Greenhouse Gas (GHG) emissions are being added to the permit for the first time. Owens-Brockway has selected the calendar year 2010 as the GHG baseline period, and GHG emissions in 2010 were 46,852 tons of carbon dioxide equivalent (CO_2e). The proposed GHG PSEL is 100,521 tons/yr of CO_2e based on the same natural gas usage and glass production rate that were used to set the PSEL for other air pollutants.

i. Potential to Emit & Unassigned emissions: Owens-Brockway has the potential and capacity to utilize all of the netting basis available. The SO_2 and NO_x PSEL limits the production before Owens-Brockway can reach their true maximum production potential. (See Emissions Detail Page A7) Unassigned emissions for all criteria pollutants are zero.

16. Significant Emission Rate

The PSEL increase over the netting basis is less than the Significant Emission Rate (SER) for all pollutants as defined in OAR 340-200-0020. Therefore, no further air quality analysis is required in this permit renewal.

Pollutant	SER	Requested increase Over previous netting basis	Increase due to utilizing capacity that existed in the baseline period	Increase due to physical changes or changes in the method of operation
PM	25	0	0	0
PM_{10}	15	0	0	0
$PM_{2.5}$	10	--	9	0
CO	100	0	0	0
NO_x	40	0	0	0
SO_2	40	0	0	0
VOC	40	0	0	0
Pb	0.6	0	0	0
GHG	75,000	--	53,669	0

17. Aggregate Insignificant Emissions

The aggregate insignificant activities identified by Owens-Brockway include the following:

Aggregate Insignificant Activities	Pollutant	Estimate (tons/yr)
Grit blasting (part of mold cleaning) process	PM_{10}	6.4×10^{-3}
Nickel compounds (spray welding)		3.4×10^{-4}
Unpaved road emissions		0.7
		Total $PM_{10} < 1$
Solid film lubricant (spraying and cleaning)	VOC	3.9×10^{-2}
Image bottle coding (methyl ethyl ketone)		0.32
Safety-Kleen parts cleaners (parts cleaning)		0.3
Used oil storage		1×10^{-5}
		Total VOC < 1
Nickel compounds (spray welding)	HAP	3.25×10^{-4}
Solid film lubricant (spraying and cleaning)		1.1×10^{-2}
		Total HAP < 0.1

This permit does not intend to limit "aggregate insignificant activities" to only those currently identified in the permit application. No groups of activities are identified in this permit just for the purpose of identifying insignificant activities, which tend to be a moving target. Instead, the permit aggregate limits reflect the rule limits, as defined in OAR 340-028-0110 (5). The rules allow the permittee to add more categorical insignificant activities to their existing list, and similarly, the permittee is free to add more insignificant activities to their existing aggregate source list, provided the aggregate emissions of any individual (regulated) pollutant do not exceed the permit (rule) aggregate insignificant limit.

HAZARDOUS AIR POLLUTANTS

18. The Owens-Brockway facility is a minor source of hazardous air pollutants (HAPs) because the estimated emissions of any individual HAP is less than the 10 tons/yr threshold and total aggregate HAPs emission is less than the 25 tons/yr threshold.

CAS Number	Chemical Name	Estimate (tons/yr)
7440382	Arsenic Compounds	1.01×10^{-2}
71432	Benzene	1.51×10^{-3}
7440417	Beryllium Compounds	2.48×10^{-5}
7440439	Cadmium Compounds	1.38×10^{-2}
25321226	Dichlorobenzenes (mixed isomers)	8.69×10^{-4}
7440484	Cobalt Compounds	6.09×10^{-5}
100414	Ethylbenzene	1.84×10^{-3}
50000	Formaldehyde	5.43×10^{-2}
110543	Hexane	1.30
7647010	Hydrochloric Acid	2.43×10^{-2}
7439921	Lead Compounds	2.85×10^{-1}
7439965	Manganese Compounds	1.05×10^{-2}
7439976	Mercury Compounds	3.80×10^{-4}
7440020	Nickel Compounds	4.60×10^{-3}
91203	Naphthalene	4.42×10^{-4}
1330207	Xylenes (isomers)	8.76×10^{-3}
7782492	Selenium Compounds	3.06×10^{-2}
0	Chromium Compounds	1.71×10^{-1}
0	Hex-Chromium	1.97×10^{-4}
	Total Aggregate:	**Less than 2 ton/year**

A review of the AQ source files indicates Owens-Brockway removed “Wrap Shrink Labeler” from their process in 1998 that eliminated 9.78 tons/yr of hydrochloric acid, 0.65 tons/yr of methylene chloride, and 0.4 tons/yr of methyl ethyl ketone (MEK). On December 13, 2005, the Environmental Protection Agency (EPA) issued a final rule that removes MEK from the list of hazardous air pollutants regulated under the Clean Air Act.

19. Toxic and Flammable Substance Usage for Accidental Release Prevention

Other than natural gas fuel (methane & propane) usage, and ammonia (used in HEST process) and nickel, the individual amount of all toxic and flammable substances used at the permitted facility is insignificant:

		ESTIMATED ANNUAL USAGE (lbs)			
CAS No.	**Chemical**	**Insignificant**	**1,001 - 10,000**	**10,001-20,000**	**> 50,000**
7664417	Ammonia		X		
7440382	Arsenic	X			
71432	Benzene	X			
7440439	Cadmium	X			
7440473	Chromium	X			
7440484	Cobalt	X			
7440508	Copper	X			
50000	Formaldehyde	X			
7439921	Lead	X			
7439965	Manganese	X			
74828	Methane (NG)				X
7440020	Nickel		X		
74986	Propane				X
7782492	Selenium	X			
108883	Toluene	X			
71556	Trichloroethane	X			
790106	Trichloroethylene	X			
108054	Vinyl acetate	X			
1330207	Xylene	X			

20. Stratospheric Ozone Depleting Substances

The permittee does not use any of the listed ozone depleting substances, and the permittee is exempt from the federal requirements of 40 CFR Part 82, Subpart E; The Labeling of Products Using Ozone-depleting Products. Service on motor (fleet) vehicles is not performed at the plant site, and the permittee does not handle any refrigerants in the motor vehicle air conditioner (MVAC). Therefore the permit omits the applicable requirements specified in 40 CFR Part 82, Subpart B; Servicing of Motor Vehicle Air Conditioners.

21. Oregon Air Toxics Inventory

Owens Brockway reported the following air toxics emissions data:

CAS Number	Chemical Name	Estimate (tons/yr)
7440382	Arsenic Compounds	1.01×10^{-2}
71432	Benzene	1.51×10^{-3}
7440417	Beryllium Compounds	2.48×10^{-5}
7440439	Cadmium Compounds	1.38×10^{-2}
25321226	Dichlorobenzenes (mixed isomers)	8.69×10^{-4}
7440484	Cobalt Compounds	6.09×10^{-5}
100414	Ethylbenzene	1.84×10^{-3}
50000	Formaldehyde	5.43×10^{-2}
110543	Hexane	1.30
7647010	Hydrochloric Acid	2.43×10^{-2}
7439921	Lead Compounds	2.85×10^{-1}
7439965	Manganese Compounds	1.05×10^{-2}
7439976	Mercury Compounds	3.80×10^{-4}
7440020	Nickel Compounds	4.60×10^{-3}
83329	Acenaphthene	1.30×10^{-6}
120127	Anthracene	1.74×10^{-6}
56553	Benz[a]anthracene	1.30×10^{-6}
50328	Benzo[a]pyrene	8.69×10^{-7}
205992	Benzo[b]fluoranthene	1.30×10^{-6}
191242	Benzo[g,h,i]perylene	8.69×10^{-7}
207089	Benzo[k]fluoranthene	1.30×10^{-6}
71363	n-butyl alcohol	2.72×10^{-2}
218019	Chrysene	1.30×10^{-6}
53703	Dibenz[a,h]anthracene	8.69×10^{-7}
206440	Fluoranthene	2.17×10^{-6}
86737	Fluorene	2.03×10^{-6}
193395	Indeno[1,2,3-cd]pyrene	1.30×10^{-6}

CAS Number	Chemical Name	Estimate (tons/yr)
78933	Methyl Ethyl Ketone	3.16×10^{-1}
91576	2-Methyl naphthalene	1.74×10^{-5}
91203	Naphthalene	4.42×10^{-4}
85018	Phenanthrene	1.23×10^{-5}
129000	Pyrene	3.62×10^{-6}
1310732	Sodium Hydroxide	8.57×10^{-4}
1330207	Xylenes (isomers)	8.76×10^{-3}
56495	3-Methylcholanthrene	1.30×10^{-6}
7782492	Selenium Compounds	3.06×10^{-2}
0	Chromium Compounds	1.71×10^{-1}
0	Hex-Chromium	1.97×10^{-4}
7634869	Crystalline Silica (Respirable)	3.29×10^{-6}
7664417	**Ammonia**	**4.03**
	Total Aggregate:	**6.33**

MONITORING REQUIREMENTS

22. Section 70.6(a)(3)(i) requires that all monitoring and analysis procedures or test methods required under applicable requirements be contained in Title V permits. In addition, where the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit. The requirement to include in a permit testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance does not require the permit to impose the same level of rigor with respect to all emissions units and applicable requirement situations. It does not require extensive testing or monitoring to assure compliance with the applicable requirements for emissions units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. Where compliance with the underlying applicable requirement for an insignificant emission unit is not threatened by a lack of a regular program of monitoring and where periodic testing or monitoring is not otherwise required by the applicable requirement, then in this instance, the status quo (i.e., no monitoring) will meet section 70.6(a)(3)(i).

23. Facility-wide monitoring associated with the facility-wide applicable requirements include investigation of public complaints and taking corrective action as need arises. Owens-Brockway staff also need to conduct periodic visual inspections to ensure there are no excessive fugitive emissions from materials handling operations. The Owens-Brockway facility currently uses natural gas only and the fuel monitoring for sulfur contents are not triggered until they start to use fuel oils.

24. Visible emissions monitoring for Glass Melting Furnaces GM1 & GM4: This section contains continuous opacity monitoring requirements to ensure the visible emissions from glass melting furnaces meet the opacity standards set forth in the permit.

25. Visible emissions monitoring related to opacity standards and grain loading limit applicable to other emissions units (e.g., boiler, baghouse) are established in a progressive manner. Periodic monitoring requirements start with frequent (i.e., weekly) periodic opacity readings, and accumulated results are used to establish the next level (frequency) of monitoring for each individual source of emissions. Visible emission monitoring is waved for miscellaneous fuel burning equipment that burn natural gas only.

26. Monitoring for Insignificant Activities: As identified earlier in this Review Report, this facility has insignificant emissions units (IEUs) that include categorically insignificant activities and aggregate insignificant emissions - as defined in OAR 340-200-0020. For the most part, the standards that apply to IEUs are for opacity (20% limit) and particulate matter (0.1 gr/dscf limit). The Department does not consider it likely that IEUs could exceed an applicable emissions limit or standard because IEUs are generally equipment or activities that do not have any emission controls (e.g., small natural gas fired space heaters) and do not typically have visible emissions. Since there are no controls, no visible emissions, and the emissions are less than one ton per year, the Department does not believe that monitoring, recordkeeping, or reporting is necessary for assuring compliance with the standards.

TEST METHODS AND PROCEDURES

27. This section, titled "Test Methods and Procedures", is provided so that the permittee and Department will know what test methods should be used to measure pollutant emissions in the event that testing is conducted for any reason. This section does not by itself require the permittee to conduct any more testing than those included in the permit. Although the permit may not require testing because other routine monitoring is used to determine compliance, the Department and EPA always have the authority to require testing if deemed necessary to determine compliance with an emission limit or standard. In addition, the permittee may elect to voluntary conduct testing to confirm the compliance status. In either case, the methods to be used for testing in the event that testing is conducted are included in the permit. This is true for SIP as well as NSPS emission limits and standards.

RECORDKEEPING REQUIREMENTS

28. Recordkeeping requirements in this permit are drafted pursuant to OAR 340-028-2130(3)(b). The records of all monitoring specified in the Oregon Title-V Operating Permit 26-1876 must be kept at the plant site for at least 5 years, unless different timeframe is specified for particular emissions data. All records necessary to determine compliance with any permit condition shall be made available to the DEQ/EPA inspectors upon request.

REPORTING REQUIREMENTS

29. Reporting requirements in this permit are drafted pursuant to OAR 340-028-2130(3)(c). The permittee is required to submit semi-annual compliance certification to the Department twice per year. The annual report consists of the second semi-annual compliance certification, in addition to products throughput and other relevant emissions data needed to determine compliance with the annual PSEL.

GENERAL BACKGROUND INFORMATION

30. Other permits issued or required by the Department of Environmental Quality for this source include the following:

    - NPDES Permit 1200-COLS for stormwater discharge; and
    - Registered small quantity (i.e., 220 – 1,200 lbs/month) HW Generator, #ORD009026618

31. A Land Use Compatibility Statement signed by the City of Portland on March 14, 1995 granted approval of the facility operations.

32. The source is located in a maintenance area for ozone and Carbon Monoxide (CO). The area is in attainment for all other criteria pollutants. The facility is a minor (< 100 tons/yr) source of Volatile Organic Compounds (ozone precursor) and CO.

COMPLIANCE HISTORY

33. Table below summarizes DEQ enforcement activities associated with permittee's air quality permit in chronological order:

Date	Case Number	Enforcement Activity
11/20/2009	PE-POR-AQ-2009-0087	Pre-enforcement Notice for opacity violations
04/05/2010	AQ/V-NWR-09-201	DEQ Order & Civil Penalty $6,000
06/09/2011	WL-POR-AQ-2011-0047	Warning Letter for Monitoring deficiency
02/23/2010	PE-POR-AQ-2010-0008	Pre-enforcement Notice for opacity violations
06/15/2011	PE-POR-AQ-2011-0048	Pre-enforcement Notice for opacity violations
08/31/2011	AQ/V-NWR-11-092	DEQ Order & Civil Penalty $10,000 Required Corrective Action Plan
10/28/2011	Owens-Brockway submitted a feasibility study on PM-Control Equipment (e.g., baghouse)	

Date	Case Number	Enforcement Activity
05/14/2012	Mutual Agreement & Final Order	DEQ accepted OB's Supplemental Environmental Project (SEP) and reduced CPA to $2,000.
04/05/2012	PE-POR-AQ-2012-0032	Pre-enforcement Notice for opacity violations
08/24/2012	PE-POR-AQ-2012-0094	Pre-enforcement Notice for opacity violations
10/01/2012	AQ/V-NWR-12-046	DEQ Order & Civil Penalty $26,400
05/08/2013	PE-POR-AQ-2013-0058	Pre-enforcement Notice for opacity violations
07/22/2013	AQ/V-NWR-13-068	The Civil Penalty of $26,400 in AQ/V-NWR-12-046 Reduced to $25,200 and combined with additional Penalty of $8,000 for a total amount of $33,200.
05/16/2014	WL-AQ-2014-0053	Warning Letter for an excess opacity event in 2013
07/15/2016	2016-WLOTC-1748	Warning Letter with Opportunity to Correct issued for work practice deficiencies. Corrective actions taken and issues resolved.
03/17/2017	2017-WL-2307	Warning Letter for an excess opacity event in 2016.

SUMMARY/PUBLIC NOTICE

34. This permit will be placed on public notice from August 15, 2018 through September 26, 2018. Any interested public may submit written comments during the comment period. In addition DEQ will hold a public hearing on September 19, 2018. After the hearing and when the comment period ends on Setember 19, DEQ will review all comments received and revise the permit if deemed appropriate. A proposed permit will then be sent to EPA for a 45-day review period. The Department may request and EPA may agree to expedite review of 5 days if there were no substantive or adverse comments during the comment period.

    If the EPA does not object in writing, any person may petition the EPA within 60 days after the expiration of EPA's 45-day review period to make such objection. Any such petition must be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided for in OAR 340-218-0210, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period.

ATTACHMENT

EMISSIONS DETAIL SHEETS A1 – A12

08/08/2018 DRAFT			Review Report 26-1876-TV-01						
PSEL Detail Sheet			Application Number: 025752						
Page A1									
Plant Site Emissions Limit Summary									
	$PM_{2.5}$	PM/PM_{10}	SO_2		NO_x	CO	VOC	GHG	
EU4 "A" Furnace	--	1.8E+01	6.1E+01		1.8E+02	5.8E+00	5.8E+00	35141	tons/yr
EU4 "B" Furnace	--	7.3E+00	2.4E+01		7.2E+01	2.3E+00	2.3E+00	--	tons/yr
EU4 "C" Furnace	--B28	1.1E+01	3.5E+01		8.6E+01	3.3E+00	3.3E+00	--	tons/yr
EU4 "D" Furnace	--	4.9E+00	4.1E+00		0.0E+00	0.0E+00	0.0E+00	29297	tons/yr
EU1& EU3 (Batch Baghouse)	--	8.5E-02	--		--	--	--	--	tons/yr
EU2: Inhouse Cullet Process	--	2.1E+00	--		--	--	--	--	tons/yr
Cullet Processor	--	3.4E+00	--		--	--	--	--	tons/yr
EU5 - Forming Ventilator	--	1.8E+01	2.1E+01		--	--	--	--	tons/yr
Mold Swab Operation	--	2.7E+01	--		--	--	--	--	tons/yr
EU6 - Misc. Fuel burning	--	1.3E-01	1.3E-01		5.2E+00	1.1E+00	3.0E-01	30551	tons/yr
EU7 (Boiler) Nat. Gas	--	6.0E-03	6.2E-03		3.4E-01	8.4E-02	1.4E-02	5533	tons/yr
EU10 - Machine Repair	--	8.8E-01	--		--	--	--	--	tons/yr
EU10 - Mold Bench	--	8.8E-01	--		--	--	--	--	tons/yr
1978 Baseline Emissions	**--**	**95**	**145**		**343**	**13**	**12**	**--**	**tons/yr**
Netting Basis	**91**	**95**	**145**		**343**	**13**	**12**	**46852**	***tons/yr**
Plant Site Emissions Limit	**100**	**109**	**184**		**382**	**99**	**39**	**100521**	**tons/yr**
Increase	**9**	**14**	**39**		**39**	**86**	**27**	**53669**	**tons/yr**
SER	**10**	**15**	**40**		**40**	**100**	**40**	**75000**	**tons/yr**
* **GHG PSEL** is being added to the permit for the first time. The calendar year 2010 was selected as the baseline period for GHG emissions.									
$PM_{2.5}$ PSEL is being added to the permit for the first time.									

DEQ
State of Oregon Department of Environmental Quality

1978 Baseline PM & PM_{10} Emissions

Page A2

Emissions Unit	1978 Baseline Production		Emission Factor		Ref.	PM/PM_{10} Emissions	
EU1& EU3 (Batch Baghouse)	94098	tons sand+	*1.8E-03*	lbs/ton	AP42	0.08	tons/yr
EU2: Inhouse Cullet Process	23276	tons cullet	1.8E-01	lbs/ton	AP42	2.09	tons/yr
Cullet Processor	37800	tons cullet	1.8E-01	lbs/ton	AP42	3.40	tons/yr
EU4: Furnace-A, pre-renovation	57630	tons glass	6.30E-01	lbs/ton	ST Avg.[-A-]	18.15	tons/yr
Furnace-B	23284	tons glass	6.30E-01	lbs/ton	ST Avg.[-A-]	7.33	tons/yr
Furnace-C	33161	tons glass	6.8E-01	lbs/ton	1984 ST	11.27	tons/yr
Furnace-D, electric	41096	tons glass	2.4E-01	lbs/ton	1983 ST	4.93	tons/yr
EU5 - Forming Ventilator[-B-]	340	days/yr	4.5E+00	lb/hr	OB	18.36	tons/yr
Mold Swab Operation[-C-]	54320	lbs swab mat.	1.0E+00	lb/lb	OB	27.16	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	2.5E+00	lb/10^6 ft^3	AP42	0.13	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	2.5E+00	lb/10^6 ft^3	AP42	0.01	tons/yr
EU10 - Machine Repair	365	days/yr	2.0E-01	lb/hr	OB/Mfg.	0.88	tons/yr
EU10 - Mold Bench	365	days/yr	2.0E-01	lb/hr	OB/Mfg.	0.88	tons/yr
						94.7	**PM_{10}**[**]
EU9 Corrugated board shreder[##]							

Note: Raw materials (e.g., sand, soda ash, etc.) usage in 1978 obtained from OB's annual report dated 03/21/1979.

1978 glass production data submitted by OB on 02/23/2010: Furnaces A, B & C mostly produced "Flint" glass, and Furnace-D produced ~90% Amber & ~10% green.

ALL other process throughputs (e.g., cullet, swabbing lubricant/material, NG usage) and operating schedule came from OB's original Title-5 application.

[-A-] *Average of all PM source tests performed on Furnaces A & D from 1983 to 2007; see page A12. [Note: AP42 PM EF of 1.3 lbs/ton is too high for "modified-process."]*

See 40 CFR 60.291 (subpart CC) for definition of "modified-process." O-B is subject to PM limit of 1 lb/ton applicable to modified process.

[-B-] *Emissions in 1978 from "Forming Ventilator" before "HEST-A" baghouse was installed in 1982 to abate $SnCl_4$ used in bottle surface treatment process. Currently the sulface treatment process applies mono-butyl-tin trichloride (MBTT) in lieu of $SnCl_4$ then injects NH_3 to combine excess Sn to form solid PM that baghouse can collect.*

[-C-] *Mold Swab operations manually apply oil-graphite mixture onto heated molds.*

[**] *All PM/PM10 emissions from baseline are considered PM10. The PM-only emissions from EU9 are excluded from the baseline PM10 calculations.*

[##] *EU9 corrugated board sheredder that Owens operated in 1978 has been dismantled and removed from the site.*

The EU9 sheredder operated about 2500 hours in 1978. Estimated hourly rate from EU9 was 2.5 lbs PM/hr.

1978 Baseline SO_2 & NO_x Emissions

Page A3

Emissions Unit	Baseline Production		Emission Factor		Ref.	SO_2 Emissions	
EU4: Furnace-A, pre-renovation	57630	tons Flint	2.1E+00	lbs/ton	ST Avg.[-D-]	6.05E+01	tons/yr
Furnace-B	23284	tons Flint	2.1E+00	lbs/ton	ST Avg.[-D-]	2.44E+01	tons/yr
Furnace-C	30115	tons Flint	2.1E+00	lbs/ton	ST Avg.[-D-]	3.48E+01	tons/yr
	3046	tons Amber					
Furnace-D, electric	41096	tons Amber	2.0E-01	lbs/ton	1983 ST	4.11E+00	tons/yr
		and Green					
EU5 - Forming Ventilator[-B-]	41400	lbs SO_2	1.0E+00	lb/lb	OB	2.07E+01	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	2.6E+00	lb/10^6 ft^3	AP42	1.34E-01	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	2.6E+00	lb/10^6 ft^3	DEQ	6.24E-03	tons/yr
						145	**tons/yr**

Emissions Unit	Baseline Production		Emission Factor		Ref.	NO_x Emissions	
**EU4: Furnace-A, pre-renovation	57630	tons glass	6.2E+00	lbs/ton	AP42	1.79E+02	tons/yr
Furnace-B	23284	tons glass	6.2E+00	lbs/ton	AP42	7.22E+01	tons/yr
Furnace-C	33161	tons glass	5.2E+00	lbs/ton	1984 ST	8.62E+01	tons/yr
Furnace-D, electric	41096	tons glass	*-ND-*	lbs/ton	1983 ST	0.00E+00	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	1.0E+02	lb/10^6 ft^3	AP42	5.15E+00	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	1.4E+02	lb/10^6 ft^3	AP42	3.36E-01	tons/yr
						343	**tons/yr**

[-B-] *Sulfur dioxide emissions in 1978 from "Forming Ventilator" before "HEST-A" baghouse was installed.*

Owens Brockway used to manufacture small quantity of glass containers used in medical field that received the SO_2 gas treatment process.

[-D-] *Average of all SO_2 source tests performed on Furnaces A & D from 1983 to 2007; see page A12. [Note: AP42 SO_2 EF of 3.4 lbs/ton is too high.]*

** *Furnace-A modification completed on 4/07/1983 - enlarged the regenerative system/melt area from 566 to 786 ft^2 and increased the number of firing ports from 8 to 10;*

Furnace-B shutdown permanently in Dec.1978; Furnace-C shutdown permanently on April 2, 1990; and Electric Furnace-D converted to NG fired furnace in 1986.

No NOx source test data exist for furnaces A & B before their conversion/shutdown.

1978 Baseline CO & VOC Emissions

Page A4

Emissions Unit	Baseline Production		Emission Factor		Ref.	CO Emissions	
EU4: Furnace-A, pre-renovation	57630	tons glass	2.0E-01	lbs/ton	AP42	5.76E+00	tons/yr
Furnace-B	23284	tons glass	2.0E-01	lbs/ton	AP42	2.33E+00	tons/yr
Furnace-C	33161	tons glass	2.0E-01	lbs/ton	AP42	3.32E+00	tons/yr
Furnace-D, electric	41096	tons glass	--	$lb/10^6\ ft^3$	--	0.00E+00	tons/yr
EU6 - Misc. Fuel burning	103	$10^6\ ft^3$ NG	2.1E+01	$lb/10^6\ ft^3$	AP42	1.08E+00	tons/yr
EU7 (Boiler) Nat. Gas	4.8	$10^6\ ft^3$ NG	3.5E+01	$lb/10^6\ ft^3$	AP42	8.40E-02	tons/yr
Fuel Oil	0	10^3 gal oil	5.0E+00	$lb/10^3$ gal	AP42	0.00E+00	tons/yr
						13	**tons/yr**

Emissions Unit	Baseline Production		Emission Factor		Ref.	VOC Emissions	
EU4: Furnace-A, pre-renovation	57630	tons glass	2.0E-01	lbs/ton	AP42	5.76E+00	tons/yr
Furnace-B	23284	tons glass	2.0E-01	lbs/ton	AP42	2.33E+00	tons/yr
Furnace-C	33161	tons glass	2.0E-01	lbs/ton	AP42	3.32E+00	tons/yr
Furnace-D, electric	41096	tons glass	--	$lb/10^6\ ft^3$	--	0.00E+00	tons/yr
EU6 - Misc. Fuel burning	103	$10^6\ ft^3$ NG	5.8E+00	$lb/10^6\ ft^3$	AP42	2.99E-01	tons/yr
EU7 (Boiler) Nat. Gas	4.8	$10^6\ ft^3$ NG	5.8E+00	$lb/10^6\ ft^3$	AP42	1.39E-02	tons/yr
Fuel Oil	0	10^3 gal oil	5.6E-01	$lb/10^3$ gal	AP42	0.00E+00	tons/yr
						12	**tons/yr**

Current PM_{10} Emissions									
Page A5									
Emissions Unit	**SCC .**	**Annual Production**		**Emission Factor**		**Ref.**		**PM_{10} Emissions**	
EU1& EU3 (Batch Baghouse)	30510405/499	94098	tons mat.	1.8E-03	lbs/ton	AP42		0.08	tons/yr
Blending & mixing process	30510199/299								
EU2 - Inhouse Cullet Process	30501413	23276	tons cullet	1.8E-01	lbs/ton	AP42		2.09	tons/yr
Cullet Processor		37800	tons cullet	1.8E-01	lbs/ton	AP42		3.40	tons/yr
EU4: Furnace-A	30501401	86458	tons glass	7.0E-01	lbs/ton	ST Avg.-F-		30.26	tons/yr
Furnace-D	30501401	66562	tons glass	6.0E-01	lbs/ton	ST Avg.-G-		19.97	tons/yr
EU5 - HEST-A Baghouse	30501406	35	tons MBTT	2.2E+01	lbs/ton	OB		0.39	tons/yr
Mold Swab Operations		54320	lbs swab	1.0E+00	lb/lb	OB		27.16	tons/yr
EU6 - Misc. Fuel burning	30590003	100	10^6 ft^3 NG-MAX-	2.5E+00	lb/10^6 ft^3	AP42		0.13	tons/yr
EU7 (Boiler) Nat. Gas	10100602	50	10^6 ft^3 NG-MAX-	2.5E+00	lb/10^6 ft^3	AP42		0.06	tons/yr
EU10 - Machine Repair		4380	hrs/yr	2.0E-01	lb/hr	OB/Mfg.		0.44	tons/yr
EU10 - Mold Bench		4380	hrs/yr	2.0E-01	lb/hr	OB/Mfg.		0.44	tons/yr
								84	**tons/yr**

-F- Average of all PM source tests performed on Furnace A from 1983 to 2007; see page A12.

-G- Average of all PM source tests performed on Furnace D from 1993 to 2007; see page A12.

-MAX- Annual (maximum) production data provided in the March 15, 1995 Title V permit application.

Current $PM_{2.5}$ Emissions

Page A6

Emissions Unit	PM_{10} PSEL effective 2011	$PM_{2.5}$ % in PM_{10}	Ref.	$PM_{2.5}$ PSEL	
EU1& EU3 (Batch Baghouse)	0.08	*100%*	estimate[-1-]	0.08	tons/yr
EU2: Cullet Processing	5.50	*6%*	estimate[-2-]	0.33	tons/yr
EU4: Furnaces A & D	50.23	*96%*	AP42	48.22	tons/yr
EU5: Mold Swabbing (i.e., lubricant)	27.16	*100%*	estimate[-3-]	27.16	tons/yr
HEST-A Baghouse	0.39	*100%*	estimate[-1-]	0.39	
EU6 - Misc. Fuel burning	0.13	*100%*	AP42	0.13	tons/yr
EU7 (Boiler) Nat. Gas	0.06	*100%*	AP42	0.06	tons/yr
EU10 - Machine Repair	0.44	*100%*	estimate[-1-]	0.44	tons/yr
EU10 - Mold Bench	0.44	*100%*	estimate[-1-]	0.44	tons/yr
	84.42	**tons/yr**		**77.24**	
			$PM_{2.5}/PM_{10}$ Ratio:	0.92	
			PM_{10} Netting Basis:	95	tons/yr
			$PM_{2.5}$ Netting Basis:	91 [-4-]	tons/yr

[-1-] *All baghouse controlled PM/PM_{10} emissions are considered $PM_{2.5}$*

[-2-] *AP42's $PM_{2.5}$ fraction (Table 11.19.2-2) for crushed stone is used for cullet crushing/processing.*

[-3-] *Particle size distribution data published by www.engineeringtoolbox.com used for oil (i.e., swab lubricants) smoke; 0.3 - 1 micron.*

[-4-] *Pursuant to OAR 340-222-0046(2)(b), the initial PM2.5 netting basis was adjusted up by 4 tons (<5tons).*

Current SO_2 & NO_x Emissions

Page A7

Emissions Unit		Annual Production		Emission Factor		Ref.	SO_2 Emissions	
EU4: Furnace-A		86458	tons glass	2.1E+00	lbs/ton	ST Avg.[-H, I-]	90.78	tons/yr
Furnace-D		66562	tons glass	2.1E+00	lbs/ton	ST Avg.[-H, I-]	69.89	tons/yr
EU6 - Misc. Fuel burning	*est. NG usage*	*100*	10^6 ft^3 NG	2.6E+00	lb/10^6 ft^3	AP42	0.13	tons/yr
EU7 (Boiler) Nat. Gas	*est. NG usage*	*50*	10^6 ft^3 NG	2.6E+00	lb/10^6 ft^3	AP42	0.07	tons/yr
							161	**tons/yr**

Emissions Unit		Annual Production		Emission Factor		Ref.	NO_x Emissions	
EU4: Furnace-A		86458	tons glass	4.7E+00	lbs/ton	ST Avg.[-J-]	203.18	tons/yr
Furnace-D		66562	tons glass	3.7E+00	lbs/ton	ST Avg.[-K-]	123.14	tons/yr
EU6 - Misc. Fuel burning		*100*	10^6 ft^3 NG	1.0E+02	lb/10^6 ft^3	AP42	5.00	tons/yr
EU7 (Boiler) Nat. Gas		*50*	10^6 ft^3 NG	1.4E+02	lb/10^6 ft^3	AP42	3.50	tons/yr
							335	**tons/yr**

Emissions Unit	Capacity tons/yr	Potential Production		Potential SO_2 Emissions		Potential NO_x Emissions	
EU6 & EU7 NG Combustion	--	--		0.2	tons/yr	8.5	tons/yr
EU4: Furnace-A	98550	98550	tons glass	103.5	tons/yr	231.6	tons/yr
Furnace-D	82125 >	76500	tons glass	80.3	tons/yr	141.5	tons/yr
		175050		**184**	**= SO_2 PSEL**	**382**	**= NO_x PSEL**

[-H-] *Average (not furnace specific) of all SO_2 source tests performed on Furnaces A & D from 1983 to 2007; see page A12.*

[-I-] *The SO_2 emissions partly depend on the decomposition of sulfates in the batch material and from the oxidation of sulfur in the fuel used. The Owens furnaces burn essentially sulfur-free NG, and the chemistry of batch materials remained fairly constant since baseline.*

[-J-] *Average of all NOx source tests performed on Furnace A from 1983 to 2007; see page A11.*

[-K-] *Average of all NOx source tests performed on Furnace D from 1986 to 2007; see page A11.*

Current CO & VOC Emissions

Page A8

Emissions Unit	Annual Production			Emission Factor		Ref.	CO Emissions	
EU4: Furnace-A	86458	tons glass		2.0E-01	lbs/ton	AP42	8.65	tons/yr
Furnace-D	66562	tons glass		2.0E-01	lbs/ton	AP42	6.66	tons/yr
EU6 - Misc. Fuel burning	*100*	10^6 ft^3 NG		2.1E+01	lb/10^6 ft^3	AP42	1.05	tons/yr
EU7 (Boiler) Nat. Gas	*50*	10^6 ft^3 NG		3.5E+01	lb/10^6 ft^3	AP42	0.88	tons/yr
Fuel Oil	--	10^3 gal oil	-N-	5.0E+00	lb/10^3 gal	AP42	0.00	tons/yr
							17	**tons/yr**

Emissions Unit	Annual Production			Emission Factor		Ref.	VOC Emissions	
EU4: Furnace-A	86458	tons glass		2.0E-01	lbs/ton	AP42	8.65	tons/yr
Furnace-D	66562	tons glass		2.0E-01	lbs/ton	AP42	6.66	tons/yr
EU5 - Hot end Surface Treat.	35	tons MBTT		9.0E+01	lbs/ton	OB	1.58	tons/yr
EU6 - Misc. Fuel burning	*100*	10^6 ft^3 NG		5.8E+00	lb/10^6 ft^3	AP42	0.29	tons/yr
EU7 (Boiler) Nat. Gas	*50*	10^6 ft^3 NG		5.8E+00	lb/10^6 ft^3	AP42	0.15	tons/yr
Fuel Oil	--	10^3 gal oil	-N-	5.6E-01	lb/10^3 gal	AP42	0.00	tons/yr
							17	**tons/yr**

-N- *Although EU7 Boiler is capable of burning fuel oil, its oil usage is limited by the SO_2 PSEL since using high sulfur fuel can result in PSEL excursion.*

2010 Baseline Green House Gas (GHG) Emissions

Page A9

Emissions Unit	Annual Production			EPA's GHG Emission Factor			CO_2,e Emissions	
EU4 Furnaces A & D								
Limestone Addition:	11766	tons			**0.44**	ton CO_2,e/ton	**5177**	**tons/yr**
Soda Ash Addition:	12252	tons			**0.415**	ton CO_2,e/ton	**5085**	**tons/yr**
EU4: Furnace-A	308.28	10^6 ft^3 NG						
Furnace-D	207	10^6 ft^3 NG						
EU6 - Misc. Fuel burning	93	10^6 ft^3 NG		CO_2	5.302E+01	Kg/MMBtu		
EU7 (Boiler) Nat. Gas	0	10^6 ft^3 NG		CH_4 as CO_2,e	2.100E-02	Kg/MMBtu		
Total NG Usage:	608	10^6 ft^3 NG		N_2O as CO_2,e	3.100E-02	Kg/MMBtu		
NG conversion (1028 Btu/ft^3)	625466	MMBtu NG		**Total CO_2,e**	**53.0720**	**Kg/MMBtu**	33194734	Kg/yr
							36591	**tons/yr**
				Total 2010 Baseline GHG emissions:			**46852**	**tons/yr**

Limestone usage calculated as 8.49% of total glass pull from the A & D furnaces.

Soda Ash usage calculated as 8.84% of total glass pull from the A & D furnaces.

Requested Green House Gas (GHG) Emissions

Page A 10

Emissions Unit	Annual Production			EPA's GHG Emission Factor			CO_2,e Emissions	
EU4 Furnaces A & D								
Limestone Addition:	15340	tons			**0.44**	ton CO_2,e/ton	**6750**	**tons/yr**
Soda Ash Addition:	15973	tons			**0.415**	ton CO_2,e/ton	**6629**	**tons/yr**
					NG EF	CO_2,e Emissions		
				MMBtu**	Kg/MMBtu	Kg/yr	tons/yr	
EU4: Furnace-A	463	10^6 ft^3 NG	-MAX-	475964	5.3072E+01	2.53E+07	27845	
Furnace-D	386	10^6 ft^3 NG	-MAX-	396808	5.3072E+01	2.11E+07	23214	
EU6 - Misc. Fuel burning	508	10^6 ft^3 NG	-MAX-	522224	5.3072E+01	2.77E+07	30551	
EU7 (Boiler) Nat. Gas	92	10^6 ft^3 NG	-MAX-	94576	5.3072E+01	5.02E+06	5533	
Total NG Usage:	1449	10^6 ft^3 NG				7.91E+07	**87143**	**tons/yr**
NG conversion** (1028 Btu/ft^3)	1489572	MMBtu NG						
						Requested GHG emissions:	**100521**	**tons/yr**

** Any one of the over-all EF listed below can also be used to calculate the CO_2e emissions from NG combustion.

GHG Emission Factor for Natural Gas Combustion					
CO_2	5.302E+01	Kg/MMBtu	5.3072E-02	Metric tons/MMBtu	
CH_4 as CO_2,e	2.100E-02	Kg/MMBtu	5.8502E-02	tons/MMBtu	
N_2O as CO_2,e	3.100E-02	Kg/MMBtu	5.3072E-03	Metric tons/Therms	
Total CO_2,e	**53.0720**	**Kg/MMBtu** **	5.8502E-03	tons/Therms	

-MAX- *Annual (maximum) natural gas usage data provided in the March 15, 1995 Title V permit application.*

It is highly unlikely the actual natural gas usage will ever reach the capacity of fuel burning equipment.

Furnace Source Test Results for NO_x										
Page A11										
Furnace & Year Tested	NO_x (lb/hr)	**lb/ton glass**	lb/10^{6}ft^3 gas		cullet (%)	boost (kW-hr)	temp (F)		gas (mcf/hr)	boost/gas
Furnace-A, 1983	45.2	**5.3**	1.51		32	1250	2813		29.9	41.8
Furnace-C, 1984	19.5	**5.2**	1.16		43	425	2800		16.8	25.3
Furnace-D, 1986	29.5	**5.6**	1.18		24		2770		25.1	0.0
Furnace-D, 1993	18.9	**2.5**	0.68		61	820	2810		27.6	29.7
Furnace-A, 1993	44.1	**5.3**	1.29		40	355	2810		34.1	10.4
Furnace-D, 1998	24.0	**3.0**	0.95		56	1113	2771		25.2	44.2
Furnace-A, 1998	69.5	**7.4**	4.43		66	733	2861		15.7	46.7
Furnace-A, 2003	28.1	**3.1**	0.88		65	592	2848		32.1	18.4
Furnace-D, 2003	28.6	**4.4**	1.19		75	1249	2840		24.0	52.0
Furnace-A, 2007	21.7	**2.2**	0.68		47	1048	2780		32.0	32.8
Furnace-D, 2007	20.0	**2.9**	0.85		46	942	2780		23.5	40.1
Average (All Furnaces)	31.7	4.3	1.3		50	853	2808		26.0	31.0
Furnace-A Average:		**4.7**								
Furnace-D Average:		**3.7**								

Furnace Source Test Results for PM & SO_2

Page 12

Furnace & Year Tested	lb PM/ton glass	lb SO_2/ton glass	Glass Color	%SO_3 in Batch
Furnace-A, 05/16/1983	0.66	1.5	NA	NA
Furnace-A, 06/15/1993	0.82	1.3	Flint	0.242%
Furnace-A, 09/30/1998	0.76	1.9	Amber	0.240%
Furnace-A, 04/16/2003	--	2.0	Amber	0.301%
Furnace-A, 09/03/2003	0.56	--	--	--
Furnace-A, 11/16/2006	0.58	--	Amber	--
Furnace-A, 11/13/2007		3.1	Amber	0.260%
Furnace-A Average:	0.7	2.0		
Furnace-C, 1984 ST	0.68	0.7**	Amber/Green	--
Furnace-$D_{elec.}$ 1983 ST	0.24	0.2	--	--
Furnace-D, 06/14/1993	0.7	2.1	Amber	0.261%
Furnace-D, 10/01/1998	0.5	1.7	Green	NA
Furnace-D, 04/15/2003	--	2.6	Amber	0.269%
Furnace-D, 09/04/2003	0.4	--	--	--
Furnace-D, 09/18/2006	0.7	--	Amber	--
Furnace-D, 11/12/2007	--	2.4	Amber	0.258%
Furnace-D Average:	0.6	2.2		
Furnaces A & D Average:	0.63	2.1		

*** Furnace-C's 1984 SO_2 source test result of 0.74 lbs/ton is out of line with the rest of NG-combustion (forced air) furnaces; especially when compared to AP42 SO2 EF of 3.4 lbs/ton.*