

RULE 1117 – EMISSIONS OF OXIDES OF NITROGEN FROM CONTAINER GLASS MELTING AND SODIUM SILICATE FURNACES

(a) Purpose

The purpose of this rule is to limit emissions of Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) from facilities producing container glass and sodium silicate.

(b) Applicability

The provisions of this rule shall apply to the owner or operator of a RECLAIM facility or Former RECLAIM facility that operates a container glass melting furnace and associated auxiliary combustion equipment or that operates a sodium silicate furnace.

~~(a)~~(c) Definitions

~~For the purpose of this rule the following definitions shall apply:~~

- (1) AUXILIARY COMBUSTION EQUIPMENT means, for the purposes of this rule, any combustion equipment associated with the conveyance system or annealing equipment used in the container glass production process.
- ~~(1)~~ Container Glass includes CONTAINER GLASS MELTING FURNACE means
 - 2) any furnace used to melt material in the production of food and beverage type containers manufactured by pressing, blowing in molds, drawing, rolling, or casting glass. Container glass does not include glass tableware or flat glass that is used in windows, windshields, plate glass, etc., which is produced by the float, sheet, rolled, or plate glass process.
- (3) CULLET means recycled and scrap glass which is added to the formulation being charged to a container glass melting furnace.
- (4) DAY means the continuous 24-hour period from 12:00 am through 11:59 pm.
- ~~(2)~~ Flat Glass means glass that is used in windows, windshields, plate glass, etc., and which is produced by the float, sheet, rolled, or plate glass process.
- ~~(3)~~ Pull is the term applied to the removal of glass from a glass melting furnace, generally expressed in tons.
- ~~(4)~~ Cullet is scrap glass which is added to the formulation being charged to a furnace.
- (5) FORMER RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as

- (c) established in Regulation XX, that has received a final determination notification, and is no longer in the RECLAIM program.
- ~~(5)~~ Furnace-FURNACE is means, for the purpose of this rule, either any fossil fuel
~~6) fired a container glass melting furnace or sodium silicate furnace.~~
- ~~(6)~~ Furnace Rebuild is any change in furnace design configuration which requires a change in the Permit to Operate.
- ~~(7)~~ Idling-IDLING is means the operation of a furnace at less than 25 percent of the production capacity as stated on the Permit to Operate and where the furnace is not undergoing startup or shutdown.
- ~~(8)~~ NOx EMISSIONS means the sum of nitric oxides and nitrogen dioxides emitted, calculated as nitrogen dioxide.
- ~~(9)~~ PRODUCTION CAPACITY means a container glass or sodium silicate pull limit found in a Permit to Operate for the applicable furnace.
- ~~(10)~~ PULL or PULLED means the amount of product produced by a furnace, expressed in short tons per day.
- ~~(11)~~ RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX.
- ~~(9)~~ SHUTDOWN means that period of time during which a furnace is allowed to cool
~~12) from operating temperatures to a furnace temperature below 200°F.~~
- ~~(13)~~ SODIUM SILICATE FURNACE means any furnace used to melt material in the production of various water-soluble substances obtained in the form of crystals, glasses, powders, or aqueous solutions, used in a variety of industrial and consumer products.
- ~~(14)~~ SOx EMISSIONS means sulfur dioxides emitted.
- ~~(8)~~ Start-up-STARTUP is means that period of time during which a furnace is heated
~~15) to operating temperatures from a lower furnace temperature below 200°F.~~
- ~~(9)~~ Shutdown is that period of time during which a furnace is allowed to cool from operating temperature to a lower temperature.

- (c) (10) ~~Energy Recovery is the use of waste heat from a permit unit in another permit unit on the same premises so that at least five percent of the total waste heat is recovered for useful purposes at the first stage of heat transfer.~~

~~(b)~~(d) Requirements

~~2~~

- (1) ~~After December 31, 1987, no person shall operate a furnace capable of discharging nitrogen oxides into the atmosphere unless such discharge of nitrogen oxides into the atmosphere is limited to no more than 5.5 pounds of nitrogen oxides per ton of glass pulled.~~
- (2) ~~After December 31, 1992, no person shall operate a furnace capable of discharging nitrogen oxides into the atmosphere unless such discharge of nitrogen oxides into the atmosphere is limited to no more than 4.0 pounds of nitrogen oxides per ton of glass pulled.~~
- (3) ~~The requirements of paragraphs (b)(1) and (b)(2) shall not apply to furnaces which comply with an alternative emissions control plan which satisfies all of the following requirements:~~
- (A) ~~The maximum emission of any air contaminant in any 24 hour period shall not exceed the emission of such air contaminant if the furnaces complied with (b)(1) and (b)(2).~~
- (B) ~~The furnaces are located within the same premises.~~
- (C) ~~Prior to its implementation, the control plan shall be approved, in writing, by the Executive Officer.~~
- (D) ~~The control plan shall be enforceable by the District and shall include methods acceptable to the Executive Officer for demonstrating compliance with the control plan on a daily basis.~~
- (E) ~~Continuous NOx monitors shall be required for each furnace included in a control plan.~~
- (F) ~~A modified alternative emission control plan shall be required prior to modification of any permit units subject to alternative emission control, or upon amendment of this rule. Such plan shall not include credit for those reductions required by amendments to this rule.~~

(d) ~~(G) The Permits to Operate for the equipment described in the control plan shall be surrendered and cancelled at the time new Permits to Construct or Operate are issued. Such new permits shall not be effective unless surrender of such existing permits has been made. If such new permits are denied, the existing permits surrendered pursuant to this section shall be reissued and restored to the same conditions which were applicable to the original permits prior to their surrender. The Executive Officer shall impose written conditions on any permits specifying emissions limits or other conditions as necessary.~~

~~(H) The person submitting the control plan shall maintain such records (for a period of two years) and submit such information on furnace operation, source tests, monitoring data, and other information as required by the Executive Officer to determine compliance with the control plan.~~

~~(4) For installations using energy recovery, the NO_x emission limit shall be based on the following equation:~~

$$\text{Energy Recovery Based NO}_x \text{ Emission Limit} = \text{Emission Limit} \times A$$

~~Where: Emission Limit = lbs NO_x/ton of glass pulled per paragraphs (b)(1) and (b)(2)~~

$$A = 1 + \frac{\text{Energy Recovered (BTU/hr)}}{\text{Furnace Heat Input (BTU/hr)}}$$

~~(5) The energy recovered shall not be required for compliance with any other District Rule, used as an offset pursuant to Regulation XIII, banked as an emission reduction credit, nor used for alternative emission control pursuant to paragraph (b)(3).~~

~~(6) Furnace heat input shall be based on the higher heating value of the fossil fuel fired and shall include the heat input due to electric boost.~~

(1) Except during periods of idling, startup, or shutdown, the owner or operator of a container glass melting furnace shall not operate a furnace in a manner that exceeds:

- (d)
 - (A) 0.75 pound of NO_x per ton of glass pulled, averaged over a rolling 30-day period; and
 - (B) 1.1 pounds of SO_x per ton of glass pulled, averaged over a rolling 30-day period.
- (2) Except during periods of idling, startup, or shutdown, the owner or operator of a sodium silicate furnace shall not operate a furnace in a manner that exceeds:
 - (A) 0.50 pound of NO_x per ton of product pulled, averaged over a rolling 30-day period; and
 - (B) 1.1 pounds of SO_x per ton of product pulled, averaged over a rolling 30-day period, if not fired on 100% natural gas.
- (3) Except when the exhaust emission control is in operation, the owner or operator shall not operate a furnace for more than:
 - (A) 240 consecutive hours per event and 960 cumulative hours in any rolling 365-day period during periods of idling;
 - (B) 720 hours per startup period; and
 - (C) 240 hours per shutdown period.
- (4) During operation of a furnace including periods of idling, startup, or shutdown, the owner or operator of a furnace shall maintain in operation any exhaust emission control systems, including the injection of any associated chemical reagent into the exhaust stream to control NO_x, if the temperature of the gas to the inlet of the emission control system is greater than or equal to 450° F.
- (5) On or before May 1, 2035, the owner or operator of a container glass facility shall not operate the auxiliary combustion equipment used in the manufacture of container glass, that exceeds a NO_x emission limit of 30 ppmvd at 3% O₂, dry or 0.036 lb/MMBTU heat input.

~~(e)~~(e) Compliance Determination

The owner or operator of a container glass melting furnace or sodium silicate furnace shall:

- (1) ~~For the purposes of this rule, nitrogen oxides shall be calculated as NO₂ on a dry basis, or by an alternative method requested by the operator and approved by the Executive Officer.~~

~~(e) (2) All emission determinations shall be made in the as found operating condition, except no compliance determination shall be made during, startup, or shutdown, or under breakdown conditions.~~

(1) Excluding emissions during periods of idling, startup or shutdowns, determine compliance with the emission limits in paragraphs (d)(1) and (d)(2) on a rolling 30-day average using a Continuous Emissions Monitoring System (CEMS), except if a furnace operates for fewer than 30 days, then compliance with the emission limits in paragraphs (d)(1) and (d)(2) will be determined based on the average for the actual days of operation. A facility owner or operator shall comply with the applicable monitoring, reporting, and recordkeeping requirements specified in:

(A) Rules 2011 and 2012 for RECLAIM facilities; or

(B) Rules 218 and 218.1 for former RECLAIM facilities.

(2) Determine compliance with the NOx emission limits in paragraph (d)(5) for auxiliary combustion equipment by:

(A) Conducting a source test of the equipment per South Coast AQMD Method 100.1; or

(B) Providing certification from the original equipment manufacturer that the equipment is designed to meet the NOx emission limit.

~~(3) The averaging time for measurement of nitrogen oxides for compliance determination shall be 3 hours, except if an operator installs and maintains a continuous NOx monitor in accordance with conditions set forth by the Executive Officer, the averaging time may be extended to 24 hours.~~

~~(4) The following expression shall be used to convert uncorrected observed volume in parts per million of NOx to pounds of NOx per ton of glass pulled at standard conditions of 68 degrees F and 29.92 inches of mercury:~~

$$\frac{(\text{PPMv NOx})(46 \text{ grams/mole})(1.56 \times 10^{-7})(\text{SDCFM})}{\text{Ton/hour of Glass Pulled}} = \frac{\text{Lbs NOx}}{\text{Ton of glass pulled}}$$

(f) Recordkeeping

- (f) The owner or operator of a container glass melting furnace or sodium silicate furnace shall:
- (1) Maintain daily records of:
 - (A) Total hours of operation;
 - (B) The quantity of product pulled from each furnace; and
 - (C) Pollutant emission rate in units of pound of pollutant per ton of product pulled, as applicable, on a rolling 30-day average.
 - (2) Maintain all data, records, and other information required by this rule for at least five years and make available for inspection by the Executive Officer.
 - (3) For RECLAIM facilities, continue to report, pursuant to the requirements of Regulation XX, until such time that the facility becomes a Former RECLAIM facility.

~~(d)~~(g) Exemptions
 2

The provisions of this rule shall not apply to:

- (1) ~~Furnaces which are limited by Permit to Operate to 15 lbs/hour of NO_x or less~~ less than 100 tons of product pulled per calendar year as specified in a South Coast AQMD permit.
 - (2) Glass remelt facilities using exclusively glass cullet, marbles, chips, or similar feedstock in lieu of basic glass-making raw materials.
 - ~~(3) Furnaces used in the melting of glass for the production of glass tableware exclusively.~~
 - ~~(4) Flat glass melting furnaces.~~
 - ~~(5)~~ Furnaces used in the melting of glass for the production of fiberglass, which means material consisting of fine filaments of glass that are combined in yarn and woven or spun into fabrics, or that are used as reinforcement in other materials or in masses as thermal or as acoustical insulating products for the construction industry exclusively.
 - ~~(6) Idling furnaces.~~
- (e) ~~Effective Date~~

(e) ~~Any furnace rebuilt after July 1, 1983 shall comply with the provisions of paragraph (b)(1) of this rule upon commencement of operation. All other furnaces shall comply by December 31, 1987.~~

~~Any furnace rebuilt after December 31, 1987 shall comply with the provisions of paragraph (b)(2) of this rule upon commencement of operation. All other furnaces shall comply by December 31, 1992.~~