



PPG Industries, Inc.
Guys Run Road
Pittsburgh, Pennsylvania 15238 USA
Telephone (412) 820-4917
Fax (412) 820-8681
orcutt@ppg.com

Mark J. Orcutt
Vice President, Performance Glazings

June 2, 2006

Mr. J. Wick Havens, Chief
Division of Air Resource Management
Bureau of Air Quality
Pennsylvania Department of Environmental Protection
Rachel Carson State Office Building
400 Market Street, 12th floor
Harrisburg, PA 17105-8468

Via Federal Express and email (jhavens@state.pa.us)

Subject: PPG Industries, Inc. -- Comments on Proposed Control Measures for
Glass/Fiber Glass Furnaces

Dear Mr. Havens:

Comments on the Ozone Transport Commission's ("OTC's") March 7, 2006 proposed Control Measures for Glass/Fiber Glass Furnaces are submitted to you via this letter on behalf of the glass manufacturing businesses of PPG Industries, Inc. ("PPG"). PPG was established in 1883 and has been in the glass business for over 100 years. PPG is a Pennsylvania-based manufacturer of glass, chemicals and coatings with annual sales in excess of \$10 billion. PPG manufactures both float glass and fiber glass products and is the largest flat glass manufacturer in North America. In the Northeast Ozone Transport Region (OTR), PPG operates two facilities in Pennsylvania that would be impacted by the proposed control measures.ⁱ At these two facilities, three furnaces currently operate on air-firing.

ⁱ PPG float glass facilities in Pennsylvania are located in Carlisle and Meadville, each equipped with two furnaces. One furnace at Meadville converted to total oxygen firing, "Oxy-Fuel", in 2004. The other three regenerative furnaces in Pennsylvania operate on air firing.

Based on the OTC's proposed Control Measure, it appears that upon rebuild (a routine event involving the replacement of furnace refractories), PPG's three regenerative air-fired furnaces in Pennsylvania would be required to convert to oxygen firing technology by 2009, or to purchase equivalent emission reduction credits until conversion. PPG is a leader in the use of Oxy-Fuel technology, now operating two of only three Oxy-Fuel float glass furnaces in the world.ⁱⁱ These comments are based upon PPG's extensive experience with Oxy-Fuel technology and PPG respectfully requests that the Pennsylvania Department of Environmental Protection consider the information contained in this letter. PPG is also willing to meet with the Department to discuss these comments and the feasibility of implementing Oxy-Fuel technology in the float glass industry.

Application of Oxy-Fuel Technology to the Float Glass Industry

The conversion to oxygen firing from a conventional regenerative air-fired furnace involves design and refractory changes that can only be implemented at the time of rebuild or cold repair. Rebuilds typically occur only once every 10-15 years. Furnaces cannot be halted mid-campaign for installation of oxygen technology. In addition, the cost of Oxy-Fuel conversion on any given furnace adds several million dollars to the cost of a typical rebuild. Construction of an on-site oxygen generating facility further adds roughly \$12-15 million to the cost.

Unlike some container glass and fiber glass furnaces that have converted to oxygen firing in recent years, the conversion to oxygen firing to produce float glass for automotive and architectural use has been quite limited. Significant technical and economic challenges account for this slow rate of conversion. Strict quality requirements for optical properties, uniformity, and defect inclusions are unique to float glass products. Oxygen firing affects the finished glass optical and fabricating properties and in-process compatibility with the float process tin bath. Resolving these complex issues requires unique technology and demands time and resources. A facility must manage unique process issues while also sustaining quality, productivity, and profitability critical to a viable operation.

Other practical considerations for conversion to oxygen firing include available electrical supply and long-lead items. Generating enough oxygen to sustain a 500-600 ton/day float glass operation requires approximately 5 MW of electricity.

ⁱⁱ PPG currently operates two Oxy-Fuel float furnaces: one in Fresno, California and one in Meadville, Pennsylvania. In addition, all PPG Fiber Glass furnaces in the U.S. are operated on Oxy-Fuel.

Therefore cost and availability of electricity are significant issues in the conversion to Oxy-Fuel. The need for specialized refractory brick for a total oxygen fired float furnace is greater than for other types of glass melting furnaces. Lead times on these specialized refractories can be quite long. In addition, the lead-time needed to construct an on-site oxygen generating plant can be as long as 2 years.

Specific Concerns with the OTC's Control Measures

Based on PPG's experience in oxy-fuel technology and the technical considerations previously discussed, PPG has significant concerns with the proposed Control Measure. These concerns include the following:

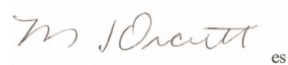
- It is not possible to achieve a conversion of multiple PPG furnaces in Pennsylvania by 2009, due to the scheduling issues, furnace campaign status, long lead items, and other factors discussed above.
- If furnaces cannot convert to oxy-fuel by 2009, the Control Measure indicates that reduction credits could be purchased. However, no details are yet provided as to the anticipated costs or mechanism of procurement for these credits. For furnaces that have recently renewed campaigns on air firing, the ongoing cost of credits is likely to be significant over the life of the campaign.
- It is unclear what specific details the OTC included in evaluating the cost/ton for oxy-firing. It is probable that OTC's cost projections are underestimated.
- Proposed Control Measures for glass manufacturing must consider the unique technical concerns discussed above for float glass processes that may differ significantly from other glass manufacturing sectors.
- The proposed Control Measures for glass should acknowledge that furnaces presently equipped with oxygen firing would be relieved from further 2009 NOx reduction requirements.
- Although oxygen firing decreases the demand for natural gas fuel, it substantially increases the need for electrical energy. Cost and availability of that energy have not been considered in the Control Measure proposal. In addition, the ability of industry to supply new oxygen generating capacity within the desired 2009 timeline is questionable.
- In many instances, glass industry initiatives involving the voluntarily implementation of oxy-firing have unfortunately met with regulatory

disincentives, hampering the industry's desire to consider future oxy-fuel installations (e.g., difficult permitting and triggers for other costly pollution controls)).

Summary

In summary, conversion of a float glass furnace to Oxy-Fuel represents a major technical undertaking along with a substantial capital investment. Although PPG values the benefits associated with oxy-firing and has broad expertise with this technology, it is technically and economically infeasible to achieve oxy-fuel implementation by the 2009 timeline set forth in the proposed OTC Control Measure. PPG hopes that PA DEP and the OTC are sensitive to the technical and economic realities causing concern for the glass industry, an industry that is already struggling with rising energy costs and global competition. PPG welcomes further opportunity to discuss our concerns with either you and/or Mr. Terry Black on this matter. Thank you for your consideration and review of our comments.

Sincerely,

Handwritten signature of Mark Orcutt in cursive script, with a small 'es' at the end.

Mark Orcutt
Vice President, Performance Glazings