



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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**COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Southwest Regional Office**

STATEMENT OF LEGAL AND FACTUAL BASIS

Consolidated Glass & Mirror Corporation
Plant No. 1
305 Lineberry Road, Galax, Virginia
Permit No. SWRO11015

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Consolidated Glass & Mirror Corporation has applied for a renewal to the Title V Operating Permit for its Plant No. 1 facility located at 305 Lineberry Road in Galax, Virginia. The Department has reviewed the application and has prepared a draft renewal of the Title V Operating Permit.

Permit Contact:

Robert A. Lowe
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Date:

3/14/17

Air Permit Manager:

Rob Feagins

Date:

3/14/17

Regional Director:

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Date:

3/15/17

FACILITY INFORMATION

Permittee

Consolidated Glass & Mirror Corporation
Plant No. 1
305 Lineberry Road
Galax, VA, 24333
NET Facility ID No. 51-640-00060

SOURCE DESCRIPTION

NAICS 327215 – Glass Product Manufacturing Made of Purchased Glass (SIC 3231)

Consolidated Glass & Mirror Corporation (CG&M) manufactures mirrors and laminated glass products at their Plant No. 1 facility located at 305 Lineberry Road, in Galax, Virginia. The facility has two mirror manufacturing lines – one that produces mirrors with multiple layers of protective coatings on the back, and a former single-coat production line.

In the mirror manufacturing process, large sheets of glass (typically 7.5' × 10') are loaded onto the silver line where they are transformed into mirrors on a continuous conveyor system. The glass sheets are first cleaned by automated rotating brushes and tap water. The surface of the glass is lightly etched with cerium oxide and rinsed with deionized water. The cerium oxide roughens the surface of the glass and improves chemical adhesion. A tin sensitizer solution is applied just prior to the silver solution to chemically bond the reflective silver to the glass. A copper solution is then applied to improve the adhesion of the mirror backing paint (applied in a later step) to the reflective coating surface. The mirrors are again rinsed with deionized water and then heated in an electric oven. The mirrors then pass through a continuously flowing curtain of paint at the curtain coater. This backing paint is applied over the reflective metals to protect them from environmental conditions (moisture). The viscosity of the backing paint is constantly monitored and additional solvent is added as needed. The mirror backing paint application process is responsible for the majority of the VOC emissions from the facility.

The multi-coat line consists of three sets of curtain coaters and drying ovens in series that can be used to apply three different coatings to the backs of the mirrors. After a coating is applied in the first curtain coater, a conveyor moves the mirrors through a set of ovens that dry the paint before the mirrors enter the next curtain coater. The VOC emissions from the multi-coat line are controlled by a single regenerative thermal oxidation (RTO) unit.

The Plant 1 facility is a Title V major source of allowable VOC emissions. This source is located in an attainment area for all criteria pollutants. The facility is permitted under a minor NSR (Article 6) permit dated May 2, 2014.

COMPLIANCE STATUS

The facility is inspected at least once every two years. There are no outstanding compliance issues.

EMISSION UNIT IDENTIFICATION

Equipment to be operated consists of:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Curtain Coater – Mirror Back Painting							
1.A	1.A	Sommer and Maca mirror backing paint curtain coater (CC1) (Jan 1984)	40 gallons per minute	-	-	-	NSR permit mod. issued 05/2/14
Rotogravure UV Roll Coater							
1.B	1.B	Sommer and Maca rotogravure UV roll coater (Jan 1985)	7 lbs./hr	-	-	-	NSR permit mod. issued 05/2/14
Glass Cutting							
2	-	Lubricant for Bystronic Glass Cutting Machine	2 lbs./hr	-	-	-	NSR permit mod. issued 05/2/14
Glass Grinding & Beveling							
3	-	Coolant for glass grinding & beveling operations	200 gallons per week	-	-	-	NSR permit mod. issued 05/2/14
Multi-Coat Mirror Production Line							
4	7	Mirror backing paint curtain coater lines CC2, CC3, and CC4 with drying ovens	40 gallons per minute each	RTO (regenerative thermal oxidizer)	1	VOC	NSR permit mod. issued 05/2/14

EMISSIONS INVENTORY

The 2015 annual emissions are summarized in the following table:

All Emission Units	2015 Criteria Pollutant Emissions (Tons/Year)				
	VOC	CO	SO ₂	PM ₁₀	NO _x
	0.25	0.02	0.01	0.01	0.10

FUEL BURNING EQUIPMENT REQUIREMENTS

Not applicable.

PROCESS EQUIPMENT REQUIREMENTS

The following are applicable requirements from the NSR permit dated 5/2/14:

LIMITATIONS

Emission Unit ID# 1A

Condition 5 – Paint consumption limits of 88.23 lb/hr and 98.87 tons/yr for curtain coater line 1 (CC1).

Condition 5 – Consumption limits of 22.47 lb/hr and 24.82 tons/yr for n-butyl acetate, or equivalent reducer, for CC1.

Condition 5 – Consumption limits of 20.0 lbs/hr and 5.0 tons/yr for Guardian AR coating, or its equivalent, for CC1.

Condition 5 – Consumption limits of 88.23 lb/hr and 810 pounds/yr for Red Spot Guardian Galax CC Coating, or its equivalent, for CC1.

Condition 5 – Consumption limits of 104.6 lb/hr and 26.15 tons/yr of n-propanol reducer, or its equivalent, for CC1.

Condition 7 – Consumption limits of 5.0 tons/yr from n-propanol cleaning solvent, or its equivalent, for CC1.

Condition 11 – VOC emission limits of 123.61 lbs/hr and 100.00 tons/yr from the curtain coater mirror back painting process (CC1).

Condition 13 – VOC emission limits of 150 lbs/hr and 5.00 tons/yr from consumption of n-propanol, or equivalent, cleaning solvents, for CC1.

Emission Unit ID# 1B

Condition 8 – Consumption limits of 25.0 lb/hr and 75.0 T/yr for the Fenzi S.P.A. Topcoat UV 1 coating, or its equivalent, for the rotogravure UV coating process.

Condition 14 – VOC emission limits of 2.75 lbs/hr and 8.25 tons/yr from the operation of the rotogravure UV coating process.

Emission Unit ID# 2

Condition 9 – Consumption limits of 32.0 lb/hr and 5.0 T/yr of mineral spirits or equivalent lubricant, for the glass cutting operations.

Condition 15 – VOC emission limits of 32.00 lbs/hr and 5.00 tons/yr from the operation of the glass cutting operations.

Emission Unit ID# 3

Condition 10 – Consumption limits of 13.9 lb/hr and 80.0 T/yr of Quaker Microcut 106-C, or equivalent coolant, from the glass grinding & beveling operations.

Condition 16 – VOC emission limits of 1.39 lbs/hr and 8.00 tons/yr from the circulation and storage of the glass grinding & beveling coolant.

Emission Unit ID# 4

Condition 2 – Control of VOC emissions from the multi-coat curtain coating lines CC2, CC3, and CC4 using a regenerative thermal oxidizer (RTO), or equivalent.

Condition 3 – Provide a control efficiency for VOC of not less than 98% on a mass basis from the RTO.

Condition 4 – The enclosures to the three (3) multi-coat curtain coating lines CC2, CC3, and CC4 to provide an overall VOC capture efficiency of not less than 90% on a mass basis.

Condition 6 – Consumption limits of 409.8 lb/hr and 950 T/yr of approved coating materials (see Condition 23 of Title V permit) for curtain coater lines 2, 3, and 4 (CC2, CC3, and CC4).

Condition 6 – Consumption limits of 58.08 lb/hr and 153 T/yr of Sunoco Xylene Reducer (Product Code 430500) for curtain coater lines 2, 3, and 4 (CC2, CC3, and CC4).

Condition 12 – VOC emission limits of 33.14 lbs/hr and 78.99 tons/yr from the operation of the multi-coat curtain coating lines CC2, CC3, and CC4.

MONITORING AND RECORDKEEPING

Emission Unit ID# 1A

Condition 17 - Maintain a monthly and annual material balance for the curtain coater mirror back painting operation, including the throughput and emissions of VOC. Calculate hourly throughputs (or emissions) and annual throughput and emissions.

Emission Unit ID# 1B

Condition 17 - Maintain a monthly and annual material balance for the rotogravure UV coating process, including the throughput and emissions of VOC. Calculate hourly throughputs (or emissions) and annual throughput and emissions.

Emission Unit ID# 2

Condition 17 - Maintain a monthly and annual material balance for the glass cutting operations, including the throughput and emissions of VOC. Calculate hourly throughputs (or emissions) and annual throughput and emissions.

Emission Unit ID# 3

Condition 17 - Maintain a monthly and annual material balance for the the glass coolant used in the glass grinding & beveling operations, including the throughput and emissions of VOC. Calculate hourly throughputs (or emissions) and annual throughput and emissions.

Emission Unit ID# 4

The Plant 1 facility is a major source of allowable VOC emissions. The VOC emissions from the multi-coat line are controlled by a single regenerative thermal oxidation (RTO) unit. CAM requirements are applicable to Emission Unit I.D. No. 4 since this unit utilizes a regenerative thermal oxidizer (RTO) for VOC control. The permittee shall monitor, operate, calibrate and maintain the regenerative thermal oxidizer (RTO) for Unit I.D. No. 4 according to the following:

	Indicator No. 1	Indicator No. 2
Indicator	RTO Chamber Temperature	Air Flow into Enclosures
Measurement Approach	RTO chamber temperature is measured by 3 thermocouples and the average is displayed on a digital readout.	Air flow into each enclosures will be indicated by: <ul style="list-style-type: none"> • A manometer measuring the pressure differential between the interior and exterior of each enclosure • Streamers located in the natural draft openings (NDO) will indicate the direction of air flow.
Indicator Range	An excursion is defined as: <ul style="list-style-type: none"> • A temperature less than 1500° F or greater than 1750°; or • A temperature of less than 1525° F for more than 15 consecutive minutes. 	An excursion is defined as: <ul style="list-style-type: none"> • A manometer reading of less than 0.007" (H₂O); or • Any streamer indicating air flow out of an enclosure.
Performance Criteria		
- Data Representativeness	The thermocouples are located in the RTO as an integral part of the unit design. The minimum tolerance of the thermocouples is ± 0.75% of the actual temperature. The minimum chart recorder sensitivity (minor division) is 20° F	<ul style="list-style-type: none"> • The RTO system design is based on a minimum volumetric air flow rate from each enclosure that corresponds to a pressure drop of 0.007" (H₂O) between the interior and exterior of each enclosure. • Streamers located in or near each NDO will indicate air flow direction.
- QA/QC Practices and Criteria	At a minimum, thermocouples will be calibrated annually	<ul style="list-style-type: none"> • Manometer will be inspected monthly. • Streamers will be inspected monthly and replaced as necessary.
- Monitoring Frequency	Temperature is measured continuously.	<ul style="list-style-type: none"> • Pressure drop for each enclosure is to be measured at least once each calendar month. • Streamer air flow direction is measured continuously.
- Data Collection Procedures	Temperature is recorded continuously on a chart recorder; instantaneous temperature will be recorded at least four times per hour. A valid hour is a minimum of 45 minutes of data.	Pressure drop for each enclosure is to be recorded monthly.
- Averaging Period	No average is taken.	No average is taken.

(9 VAC 5-80-110 and 40 CFR 64)

Condition 17 - Maintain a monthly and annual material balance for the multi-coat curtain coating lines CC2, CC3, and CC4, including the throughput and emissions of VOC. Calculate hourly throughputs (or emissions) and annual throughput and emissions.

Condition 17 – CAM - Maintain a monthly and annual material balance for the multi-coat curtain coating lines CC2, CC3, and CC4, including the throughput and emissions of VOC. Calculate hourly throughputs (or emissions) and annual throughput and emissions

Condition 17 – CAM Recordkeeping - Maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit, including, but not limited to: the combined monthly and annual consumption of mirror back coatings and xylene reducer in the multi-coat curtain coater lines CC2, CC3, and CC4, and performance test results.

TESTING

This permit does not require source tests. DEQ and the EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

REPORTING

There are no new reporting requirements.

STREAMLINED REQUIREMENTS

None

INSIGNIFICANT EMISSION UNITS

Emission Unit No.	Emission Unit Description	Citation	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
19	Muriatic Acid (regeneration of deionizers and cleaning filter cloths in filter press)	9 VAC 5-80-720 B6	HCl (31.5%) (none emitted)	4950 gal/yr
20	Defoamer (Coolant Pit and Wastewater Treatment)	9 VAC 5-80-720 B2	VOC	3500 gal/yr
21	Parts Washer	9 VAC 5-80-720 B2	VOC	250 gal/yr
22	Propane (space heaters & water heaters)	9 VAC 5-80-720 B	VOC, PM10, SO ₂ , NO _x , CO	91,000 gal/yr
23	Hydraulic Oil	9 VAC 5-80-720 B	VOC	520 gal/yr
41	Silver Nitrate Solution (mirror plating process)	9 VAC 5-80-720 B	none	-
48	UV Ink (Printing on Mirror Back)	9 VAC 5-80-720 B	VOC	-

Emission Unit No.	Emission Unit Description	Citation	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
49	Rubber Adhesive (Attach particle board mirror backing)	9 VAC 5-80-720 B	VOC	-
50	Rubber Adhesive (Attach particle board mirror backing)	9 VAC 5-80-720 B	VOC	-
51	Air Conditioning Unit for Vinyl Storage	9 VAC 5-80-720 B	Chlorodifluoro methane	-
52	Motor Oil Tank	9 VAC 5-80-720 B	VOC	-
53	Used Oil Tank	9 VAC 5-80-720 B	VOC	-

These emission units are presumed to be in compliance with all requirements of the federal Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping, or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

COMPLIANCE PLAN

Not applicable.

INAPPLICABLE REQUIREMENTS

The following requirements which have been specifically identified as being not applicable to this permitted facility:

Citation	Title of Citation	Description of Applicability
40 CFR 63.7575	Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters	Space heaters and water heaters do not meet the definition of process heaters in the MACT, Subpart DDDDD

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9VAC5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

COMMENTS ON GENERAL CONDITIONS

Federal Enforceability

Article 1 (9VAC5-80-110 N) states that all terms and conditions in the Title V permit are enforceable by the administrator and citizens under the federal Clean Air Act, except those that have been designated as only state-enforceable.

Permit Expiration

This condition refers to the Board taking action on a permit application. The "Board" refers to the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.2-604 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement No. 2-09".

Failure/Malfunction Reporting

Section 9VAC5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9VAC5-20-180 is from the general regulations. All affected facilities are subject to section 9VAC5-20-180 including Title V facilities. A facility may make a single report that meets the requirements of 9VAC5-20-180. The report must be made within four daytime business hours of discovery of the malfunction.

Permit Modification

This general condition cites the sections that follow:

9VAC5-80-50. Applicability, Federal Operating Permit for Stationary Sources

9VAC5-80-190. Changes to Permits

9VAC5-80-260. Enforcement

9VAC5-80-1100. Applicability, Permits For New and Modified Stationary Sources

9VAC5-80-1605. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas

9VAC5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

Asbestos Requirements

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

Future Applicable Requirements

None

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V significant modification application are available for public review.

PUBLIC PARTICIPATION

A public notice appeared in The Galax Gazette on January 25, 2017 announcing a 30-day public comment period for the significant modification to the Title V permit. Notice was also provided to North Carolina, Tennessee, and West Virginia as affected states. No comments or requests for a hearing were received.

**TITLE V PERMIT REVIEW
PERMIT APPLICATION SUMMARY FORM**

State: Virginia Source Name: Consolidated Glass & Mirror Corp – Plant #1
AFS ID No. 51-640-00060 Permit No. SWRO11015
Source Type: Mirror Manufacturing (Glass Products, Made of Purchased Glass) SIC 3231
Source Location (County and Town): City of Galax

I. Is this a general permit? No (If No, go to Part II)
If yes, which one? _____ (Go to Part III)

II. PROGRAM IMPLEMENTATION

Does the permit contain "streamlined limits" (per White Paper #2)? **NO**

Does the permit contain requirements/provisions for:

1. Periodic Monitoring **YES**
2. NESHAP/MACT (If so, please list subpart(s)) _____ **NO**
3. Case-by-case MACT **NO**
4. NSPS (if so, please list subpart(s)) _____ **NO**
5. PSD/NSR **YES** (minor NSR)
6. Acid Rain Phase II Permit **NO**
7. Potential-to-Emit Limits **YES**
8. Consent Order or Agreement **NO**
9. NO_x RACT **NO**
10. VOC RACT **NO**

III. Compliance Status

Is the source subject to a compliance schedule? **NO**

IV. EPA Review

1. Do you want EPA to review all or part of this permit? **NO**
If yes, which part do you want reviewed? _____
2. Are there any other issues you would like to call to EPA's attention? Please explain. **NO**

State Contact: Robert Lowe Date: 03/15/2017
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State Office Southwest Regional Office (SWRO)

(For EPA use only) Date Entered: _____ Init _____ Action _____