



Charlie Christ
Governor

Ana M. Viamonte Ros, M.D., M.P.H.
State Surgeon General

August 13, 2009

CERTIFIED MAIL

NOTICE OF AIR POLLUTION OPERATION PERMIT

Bahama Boat Works, LLC
5470 Dexter Way, Suite B
Mangonia Park, FL 33407-2231

ARMS No.	099-0642
Air Permit No.	099-0642-003-AO
Issued:	08/13/2009
Expires:	08/12/2014

Authorized Representative:
Robert Sparks, President

Dear Mr. Sparks:

Enclosed is [Air Permit No. 0990642-003-AO](#) for the operation of a source of air pollution located in Palm Beach County. This permit is issued pursuant to Chapter 403.087 of the Florida Statutes (F.S.) and Chapters 62-4, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code. Any party to this Order (Permit) has the right to seek judicial review pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure with the Health Department at the address listed below and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Order (Permit) is filed with the Clerk of the Health Department.

Executed in West Palm Beach, Florida
PALM BEACH COUNTY HEALTH DEPARTMENT

James E. Stormer, Q.E.P., Environmental Administrator
Air & Waste Program
Division of Environmental Health and Engineering

If you have any questions, contact:
Laxmana Tallam, PE,
Permitting Supervisor
Air & Waste Program
Palm Beach County Health Department
P.O. Box 29 (800 Clematis St.)
West Palm Beach, Florida, 33402-0029



Post Office Box 29 / 800 Clematis Street,
West Palm Beach, FL. 33402
www.pbchd.com

CERTIFICATE OF SERVICE

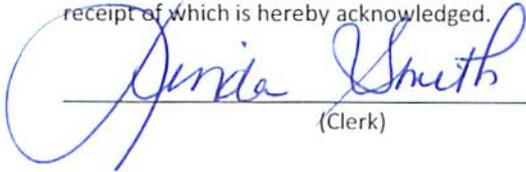
The undersigned duly designated agency clerk hereby certifies that the Notice of Permit and the Final Permit were sent by CERTIFIED MAIL before the close of business on 8/13/09 to the permittee.

In addition, the undersigned duly designated deputy agency clerk hereby certifies that *copies* of these documents were sent by electronic mail (with read receipt) on the same date to the following persons:

Lennon Anderson, P.E.
FL DEP/Southeast District
400 North Congress Avenue, Suite 200
West Palm Beach, Florida 33401
Lennon.Anderson@dep.state.fl.us

Tom T John, P.E.
Tom John, P.E. Incorporated
14326 Nottingham Trail
Hudson, Florida 34669
Tjenqr@msn.com

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), F.S., with the designated agency Clerk, receipt of which is hereby acknowledged.



(Clerk)

8/13/09

(Date)



Charlie Crist
Governor

Ana M. Viamonte Ros, M.D., M.P.H.
State Surgeon General

AIR POLLUTION OPERATING PERMIT

ISSUED TO (PERMITTEE):

Bahama Boat Works, LLC
5470 Dexter Way, Suite B
Mangonia Park, FL 33407-2231

ARMS No.	099-0642
Air Permit No.	099-0642-003-AO
Issued:	08/13/2009
Expires:	08/12/2014

Authorized Representative:

Robert Sparks, President

Located At:

Bahama Boat Works, LLC
5470 Dexter Way, Suite B,
Mangonia Park, FL 33407

UTM: Zone 17; 590.41 km E; 2960.39 km N/Latitude 26 deg. 45' 48.43"N; Longitude 80 deg. 4' 53.56"W
SIC No. 3732, Boat Building and Repairing

Project Description: Initial Air Operation Permit

STATEMENT OF BASIS:

The Florida Department of Environmental Protection (DEP) has permitting jurisdiction for this project pursuant to Section 403.087 of the Florida Statutes (F.S.). However, in accordance with Section 403.182, F.S., the DEP recognizes the Palm Beach County Health Department (Health Department) as the approved local air pollution control program in Palm Beach County. As such, the DEP and the Health Department have entered into a Specific Operating Agreement that authorizes the Health Department to issue or deny permits for this type of air pollution source located in Palm Beach County. Accordingly, the Health Department issues this permit under the provisions of Chapter 403, F.S. and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The permittee is authorized to perform the work for the proposed project in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Health Department.

ISSUED BY:

Executed in West Palm Beach, Florida
PALM BEACH COUNTY HEALTH DEPARTMENT

James E. Stormer, Q.E.P., Environmental Administrator
Air and Waste Program
Division of Environmental Health and Engineering



Post Office Box 29 / 800 Clematis Street,
West Palm Beach, FL 33402
www.pbchd.com

SPECIFIC CONDITIONS**PERMIT HISTORY**

08-07-09: PBCHD issued Final Permit No. 0990642-002-AC
 07-22-09: PBCHD received proof of Public Notice that was published on 07-17-09
 07-10-09: PBCHD issued Draft Permit No. 0990642-002-AC
 06-04-09: PBCHD received the permit application for 0990642-002-AC & 0990642-003-AO

REGULATORY CLASSIFICATION

This facility is classified as an area source for HAPs and is not subject to 40 CFR 63 Subpart VVVV "National Emission Standard for Hazardous Air Pollutants for Boat Manufacturing."

The facility is also not subject to any source specific federal emission standards adopted under Sections 111 and 112 of the Federal Clean Air Act, as amended. In addition, the source is classified as a synthetic non-Title source with potential emissions of less than 100 tons per year of any regulated pollutant, 10 tons per year of any listed HAP, and 25 tons per year of any combination listed HAPs.

PERMIT CONTENT

- Section I: Summary Information
- Section II: Facility-Wide Specific Conditions
- Section III: Emissions Unit Specific Conditions
- Section IV: *Appendix A*: General Conditions
 Appendix B: Unified Emission Factors for Open Molding of Composites

EMISSIONS UNIT LIST

This permit addresses the following emissions unit.

Emission Unit Number	Emission Unit Description
001	Fiberglass boatbuilding, resin and gel-coat application, miscellaneous solvents, and related assembly/cleanup activities

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS**1.0 ADMINISTRATIVE REQUIREMENTS**

1.1 Regulating Agencies: All applications, reports, tests, and notifications shall be submitted to the Air Pollution Control Section of the Palm Beach County Health Department (Health Department) at P.O. Box 29 (800 Clematis Street), West Palm Beach, Florida, 33402-0029, and telephone number (561) 837-5900.

[Specific Operating Agreement]

1.2 General Conditions: The permittee shall be aware of, and operate under the attached General Conditions listed in *Appendix A* of this permit. General Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. **[Rule 62-4.160, F.A.C.]**

1.3 Application for Operation Permit Renewal: The permittee shall apply for a renewal permit at least 60 days prior to the expiration of this operation permit. The application shall include: the Application Form [*DEP Form No. 62-210.900(4)*]; the correct application processing fee; all required test reports; and a summary of any changes or substitutions to the original equipment, processes, fuels, controls, etc. When the renewal application is timely and sufficient, the existing permit shall remain in effect until final action is taken by the Health Department. **[Rules 62-4.090 and 62-210.900, F.A.C.]**

1.4 Applicable Regulations: This facility is subject to the following regulations: Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. **[Rule 62-210.300(1), F.A.C.]**

2.0 EMISSION LIMITING STANDARDS

2.1 General VOC Standards: The permittee shall not store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents without applying known and existing vapor emission control devices or systems. This includes: **[Rule 62-296.320(1), F.A.C.]**

- Regular inspection and maintenance of piping, valves, flanges, tanks, and containers used for storage and transfer of organic liquids in order to minimize fugitive VOC emissions.
- When not in use, directing solvent-containing materials to containers that prevent evaporation.

2.2 Objectionable Odors: The permittee shall not cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. **[Rule 62-296.320(2), F.A.C.]**

Note: An objectionable odor is defined as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rule 62-210.200(220), F.A.C.]

2.3 General Visible Emissions Standard: Unless otherwise specified in this permit, the permittee shall not cause, let, permit, suffer or allow to be discharged into the atmosphere any air pollutants from new, or existing emissions units, the opacity of which is equal to or greater than 20 percent. **[Rule 62-296.320(4)(b), F.A.C.]**

2.4 Unconfined Emissions of Particulate Matter: The permittee shall not cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions. Reasonable precautions include the following: **[Rule 62-296.320(4)(c), F.A.C.]**

- Paving and maintenance of roads, parking areas and yards.
- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
- Application of asphalt, water, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

Note: Facilities that cause frequent, valid complaints will be required by the Health Department to take these or other reasonable precautions. In determining what constitutes reasonable precautions for a particular facility, the Health Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

3.0 OPERATION AND MAINTENANCE REQUIREMENTS

3.1 Circumvention: The permittee shall not circumvent air pollution control equipment/methods or allow the emission of air pollutants without the equipment/methods operating properly. **[Rule 62-210.650, F.A.C.]**

3.2 Excess Emissions Requirements:

- (a) Excess emissions resulting from start-up, shutdown or malfunction of these emissions units shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the Health Department for longer duration. **[Rule 62-210.700(1), F.A.C.]**
- (b) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown, or malfunction are prohibited. **[Rule 62-210.700(4), F.A.C.]**
- (c) In case of excess emissions resulting from malfunctions, the permittee shall notify the Air Pollution Control Section of the Palm Beach County Health Department within one working day of: the nature, extent, and duration of the excess emissions; the cause of the problem; and the corrective actions being taken to prevent recurrence. **[Rule 62-210.700(6), F.A.C.]**

Note: This state rule does not apply to any emissions standards imposed by federal regulations such as New Source Performance Standards (NSPS) or National Emissions Standards for Hazardous Air Pollutants (NESHAP).

4.0 COMPLIANCE MONITORING REQUIREMENTS

4.1 Retention of Records: Unless otherwise specified in this permit, all records and reports required by this permit shall be kept for at least 3 years from the date the information was recorded. **[Rule 62-4.160(14)(b), F.A.C.]**

4.2 Test Procedures: All test methods and procedures shall be performed in accordance with the applicable requirements of Chapter 62-297, F.A.C. **[Rule 62-297.100, F.A.C.]**

4.3 Operational Rate During Testing: Unless otherwise stated in the applicable emission limiting standard for a rule, testing of emissions shall be conducted with the emissions unit operating at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impracticable to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. **[Rule 62-297.310(2), F.A.C.]**

4.4 Stack Testing Facilities: The permittee shall install and maintain permanent or temporary stack testing facilities in accordance with the requirements of 62-297 F.A.C. **[Rule 62-297.310(6), F.A.C.]**

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

- 4.5 **Test Notification:** At least 15 days prior to the date on which each formal compliance test is to begin, the permittee shall notify the Health Department in writing of: the test date; the expected test time; the location of the test; the facility contact person responsible for coordinating the test; and the person or company conducting test. The 15-day notification requirement may be waived at the discretion of the Health Department. Likewise, if circumstances prevent testing during the 60-day test window specified for the emissions unit, the owner or operator may request an alternate test date before the expiration of this window. **[Rule 62-297.310(7)(a)9., F.A.C.]**
- 4.6 **Special Compliance Tests:** When the Health Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a DEP rule or permit is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Health Department. **[Rule 62-297.310(7)(b), F.A.C.]**

5.0 REPORTS REQUIRED

- 5.1 **Annual Operations Report:** Before April 1st of each year, the owner or operator shall submit an Annual Operations Report [*DEP Form No. 62-210.900(5)*] to the Health Department which summarizes operations for the previous calendar year. **[Rule 62-210.370(3), F.A.C.]**
- 5.2 **Emission Compliance Stack Test Reports:** For each required emissions compliance test, a report indicating the results of the test shall be filed with the Health Department as soon as practical, but no later than 45 days after the last sampling run is completed. The report shall provide sufficient detail on the tested emissions unit and the procedures used to allow the Health Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in **Rule 62-297.310(8)(c), F.A.C.** Additional report information may be specified for a given group of emissions units in this permit. **[Rule 62-297.310(8), F.A.C.]**

6.0 WASTE REQUIREMENTS

- 6.1 **Waste Disposal:** The owner or operator shall treat, store, and dispose of all liquid, solid, and hazardous wastes in accordance with all applicable Federal, State, and Local regulations. This air pollution permit does not preclude the permittee from securing any other types of required permits, licenses, or certifications.

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

This part of this permit addresses the following emission unit.

Emission Unit Number	Emission Unit Description
001	Fiberglass boatbuilding, resin and gel-coat application, miscellaneous solvents, and related assembly/cleanup activities

{Permitting Note: This facility is not subject to 40 CFR 63, Subpart VVVV, "National Emission Standard for Hazardous Air Pollutants for Boat Manufacturing."}

1.0 Emission Limiting Standards and Operation Restrictions

1.1 Facility-Wide VOC and HAP Emission: Emissions of volatile organic compounds (VOC), including hazardous air pollutants (HAP), shall not exceed 20 tons; emissions of total HAPs shall not exceed 20 tons; and emissions of individual HAP shall not exceed 8 tons; in any consecutive 12-month period. **[Permit No. 0990642-002-AC and applicant request to escape Title V Regulations]**

2.0 Compliance Monitoring and Testing Requirements

2.1 VOC Content: The owner or operator shall determine the VOC content of all materials, coatings, solvents, and shall monitor the usage of such materials (see specific condition 3.1 of this Section). **[Permit No. 0990642-002-AC]**

2.2 HAP Content: The owner or operator shall determine the total and individual HAP contents of all materials, coatings, solvents, and shall monitor the usage of such materials (see specific condition 3.1 of this Section). **[Permit No. 0990642-002-AC]**

2.3 Material Usage: The owner or operator shall monitor the usage of all materials (i.e., resin, gel coat, catalyst, putty, filler, etc.) **[Permit No. 0990642-002-AC]**

3.0 Recordkeeping and Reporting Requirements

3.1 Records of Emission Required: The permittee shall keep and maintain a five-year ongoing compilation of the following records to demonstrate compliance with the VOC, Styrene, and total HAPs emission limitations of Specific Condition No. 1.1 of this Section. Records shall be completed no later than the 30th of the following month.

- Amounts in pounds of each material, that contains VOC and/or HAP, used each month.
- Weight percentage of HAP in materials using the highest value listed on Manufacturer's Safety Data (MSD) Sheets. For non-HAP VOC the mid-point value may be used.
- Amount in pounds of VOC/HAP emitted each month from each material used during the month, calculated by multiplying the amount of each material used by its VOC/HAP content and then by the emission factor derived from the MSD Sheets or UEF Table (see Appendix B) or equivalent.
- Total amount in pounds of VOC/HAP emitted each month, calculated as the sum of VOC/HAP emitted from each material used during the month as determined above.
- Rolling 12-month total amount in pounds and tons of VOC/HAP/total HAPs emitted in the most recent consecutive 12-month period, calculated as the sum of VOC/HAP emitted during month and the preceding eleven months.
- Total VOC/HAP in tons per calendar year shall be determined and reported in the AOR (see facility-wide condition 5.1). **[Permit No. 0990642-002-AC]**

**SECTION IV.
LIST OF APPENDICIES**

APPENDIX	DESCRIPTION
A	General Permit Conditions.
B	Unified Emission Factors for Open Molding of Composites

APPENDIX A
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- (a) Have access to and copy and records that must be kept under the conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- (a) A description of and cause of non-compliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

APPENDIX A
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

- G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:

Standard	Applicable	Not applicable
Determination of Best Available Control Technology (BACT)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Determination of Prevention of Significant Deterioration (PSD)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Compliance with New Source Performance Standards (NSPS)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- G.14 The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

APPENDIX B

Unified Emission Factors for Open Molding of Composites

Emission Rate in Pounds of Styrene Emitted per Ton of Resin or Gelcoat Processed

Application Process	Styrene content in resin/gelcoat, % ⁽¹⁾	<33 ⁽²⁾	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	>50 ⁽²⁾
	Manual	0.126 x %styrene x 2000	83	89	94	100	106	112	117	123	129	134	140	146	152	157	163	169	174	180	((0.286 x %styrene) - 0.0529) x 2000
	Manual w/ Vapor Suppressed Resin VSR ⁽³⁾	Manual emission factor [listed above] x (1 - (0.50 x specific VSR reduction factor for each resin/suppressant formulation))																			
	Mechanical Atomized	0.169 x %styrene x 2000	111	126	140	154	168	183	197	211	225	240	254	268	283	297	311	325	340	354	((0.714 x %styrene) - 0.18) x 2000
	Mechanical Atomized with VSR ⁽³⁾	Mechanical Atomized emission factor [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
	Mechanical Atomized Controlled Spray ⁽⁴⁾	0.130 x %styrene x 2000	86	97	108	119	130	141	152	163	174	185	196	207	218	229	240	251	262	273	0.77 x ((0.714 x %styrene) - 0.18) x 2000
	Mechanical Controlled Spray with VSR	Mechanical Atomized Controlled Spray emission factor [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
	Mechanical Non-Atomized	0.107 x %styrene x 2000	71	74	77	80	83	86	89	93	96	99	102	105	108	111	115	118	121	124	((0.157 x %styrene) - 0.0165) x 2000
	Mechanical Non-Atomized with VSR ⁽³⁾	Mechanical Non-Atomized emission factor [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
	Filament application	0.184 x %styrene x 2000	122	127	133	138	144	149	155	160	166	171	177	182	188	193	199	204	210	215	((0.2746 x %styrene) - 0.0298) x 2000
	Filament application with VSR ⁽³⁾	0.120 x %styrene x 2000	79	83	86	90	93	97	100	104	108	111	115	118	122	125	129	133	136	140	0.65 x ((0.2746 x %styrene) - 0.0298) x 2000
	Gelcoat Application	0.445 x %styrene x 2000	294	315	336	356	377	398	418	439	460	481	501	522	543	564	584	605	626	646	((1.03646 x %styrene) - 0.195) x 2000
	Gelcoat Controlled Spray Application ⁽⁴⁾	0.325 x %styrene x 2000	215	230	245	260	275	290	305	321	336	351	366	381	396	411	427	442	457	472	0.73 x ((1.03646 x %styrene) - 0.195) x 2000
	Covered-Cure after Roll-Out	Non-VSR process emission factor [listed above] x (0.80 for Manual <or> 0.85 for Mechanical)																			
	Covered-Cure without Roll-Out	Non-VSR process emission factor [listed above] x (0.50 for Manual <or> 0.55 for Mechanical)																			

Emission Rate in Pounds of Methyl Methacrylate Emitted per Ton of Gelcoat Processed

MMA content in gelcoat, % ⁽⁶⁾	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	≥20
Gel coat application ⁽⁷⁾	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	0.75 x %MMA x 2000

Notes

- 1 Including styrene monomer content as supplied, plus any extra styrene monomer added by the molder, but before addition of other additives such as powders, fillers, glass, ...etc.
- 2 Formulas for materials with styrene content < 33% are based on the emission rate at 33% (constant emission factor expressed as percent of available styrene), and for styrene content > 50% on the emission rate based on the extrapolated factor equations; these are not based on test data but are believed to be conservative estimates. The value for "% styrene" in the formulas should be input as a fraction. For example, use the input value 0.30 for a resin with 30% styrene content by weight.
- 3 The VSR reduction factor is determined by testing each resin/suppressant formulation according to the procedures detailed in the **CFA Vapor Suppressant Effectiveness Test**.
- 4 See the **CFA Controlled Spray Handbook** for a detailed description of the controlled spray procedures.
- 5 The effect of vapor suppressants on emissions from filament winding operations is based on the **Dow Filament Winding Emissions Study**.
- 6 Including MMA monomer content as supplied, plus any extra MMA monomer added by the molder, but before addition of other additives such as powders, fillers, glass, ...etc.
- 7 Based on gelcoat data from **NMMA Emission Study**