

PERMIT BOOK

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **092010-002** Project Number: 2010-04-037

Parent Company: Sabreliner Corporation

Parent Company Address: 7733 Forsyth Boulevard Suite 1500, St. Louis, MO 63105

Installation Name: Sabreliner Corporation Perryville

Installation Address: 1390 Highway H, Perryville, MO 63775

Location Information: Perry County, S31, T36N, R11E

Application for Authority to Construct was made for:
Installation of an aircraft hangar equipped with a paint stripping booth and paint spray booths. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

-
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

SEP - 1 2010

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "James L. Kavanagh".

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Departments' Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Sabreliner Corporation Perryville
Perry County, S31, T36N, R11E

1. **Superseding Condition**
The conditions of this permit supersede special condition 2.A. found in the previously issued construction permit 042009-003 issued by the Air Pollution Control Program.
2. **Emission Limitation**
 - A. Sabreliner Corporation Perryville shall emit less than forty (40.0) tons of Volatile Organic Compounds (VOCs) in any consecutive 12-month period from the entire installation.
 - B. Sabreliner Corporation Perryville shall emit less than ten (10.0) tons individually and twenty-five (25.0) tons combined of Hazardous Air Pollutants (HAPs) in any consecutive 12-month period from the entire installation.
 - C. Sabreliner Corporation Perryville shall emit less than forty pounds (0.02 tons) of 1,6 hexamethylene diisocyanate (CAS# 822-06-0) in any consecutive 12-month period from the equipment in this permit (P-A3B & P-A3C).
 - D. The entire installation includes all equipment/processes installed or permitted at Sabreliner Corporation Perryville as of the effective date of this permit.
 - E. Attachment A, Attachment B, Attachment C, and Attachment D or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 2.A, 2.B, and 2.C.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

3. Control Device Requirement - 3-Stage Filter Systems
 - A. Sabreliner Corporation Perryville shall control emissions from the aircraft paint booth (P-A3B) and the small parts paint booth (P-A3C) using 3-Stage Filter Systems that are certified using EPA method 319 in Appendix A of 40 CFR 63 as specified in the permit application.
 - B. The 3-Stage Filter Systems shall be operated and maintained in accordance with the manufacturer's specifications. The 3-Stage Filter Systems shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the Department of Natural Resources employees may easily observe them.
 - C. Replacement filters for the 3-Stage Filter Systems shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. Sabreliner Corporation Perryville shall monitor and record the operating pressure drop across the 3-Stage Filter Systems at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - E. Sabreliner Corporation Perryville shall maintain an operating and maintenance log for the 3-Stage Filter Systems which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
4. Record Keeping and Reporting Requirements
 - A. Sabreliner Corporation Perryville shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include Material Safety Data Sheets (MSDS) for all materials used at the installation.
 - B. Sabreliner Corporation Perryville shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2010-04-037
Installation ID Number: 157-0002
Permit Number:

Sabreliner Corporation Perryville
1390 Highway H
Perryville, MO 63775

Complete: April 12, 2010

Parent Company:
Sabreliner Corporation
7733 Forsyth Boulevard Suite 1500
St. Louis, MO 63105

Perry County, S31, T36N, R11E

REVIEW SUMMARY

- Sabreliner Corporation Perryville has applied for the authority to construct an aircraft hangar equipped with a paint stripping booth (P-A3A) and two paint spray booths (P-A3B and P-A3C).
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs of concern from the painting activities are chromium compounds, including strontium chromate (CAS# 7789-06-2), xylene (all isomers), toluene (CAS# 108-88-3), ethylbenzene (CAS# 100-41-4), and 1,6 hexamethylene diisocyanate (HDI) (CAS# 822-06-0).
- None of the New Source Performance Standards (NSPS) apply to the proposed equipment.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to the proposed equipment.
- The Maximum Achievable Control Technology (MACT) Standard, 40 CFR 63, Subpart GG, *National Emission Standards for Aerospace Manufacturing and Rework Facilities*, does not apply to the facility because it is not a major source of HAPs.
- The MACT Standard, 40 CFR 63 Subpart HHHHHH, *National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*, applies to the application of paints containing chromium compounds.
- The MACT Standard, 40 CFR 63, Subpart WWWWWW, *National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations*, does not apply to the facility because they have no affected sources covered under the rule.

- 3-stage panel filters are being used to control the particulate matter less than 10 microns and 2.5 microns in diameter (PM₁₀ and PM_{2.5}) and particulate HAP emissions.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions are conditioned below de minimis levels.
- This installation is located in Perry County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels and potential emissions of HAPs are conditioned below the Screening Model Action Levels (SMAL).
- Emissions testing is not required for the equipment.
- An operating permit is not required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Sabreliner Corporation Perryville (Sabreliner) is an existing aircraft maintenance, repair and refurbishing installation. The facility is located at the Perryville Municipal Airport approximately 1.5 miles to the west of the intersection of Highway H and Highway 51 in Perry County. Activities at this installation include paint stripping, primer and top-coat application, parts washing, and engine testing.

Sabreliner's actual emissions are de minimis, and the facility currently holds a basic state operating permit. However, permit number 042009-003 indicated that the potential emissions of VOCs were above major source levels. In order to avoid the requirement to obtain an Intermediate or Part 70 operating permit, Sabreliner has requested a facility-wide de minimis limit for VOC emissions. Therefore, a special condition of this permit is to limit the entire installation to less than de minimis levels, and Sabreliner may write to the Air Pollution Control Program and request that their basic state operating permit be terminated.

The following permits have been issued to Sabreliner from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
022001-013	Construction of Paint Booth (Note: Permit Rescinded during Project 2002-01-025)
012008-006	Construction of Paint Booth
042009-003	Construction of Paint Booth

Construction permit number 022001-013 was rescinded after it was determined that the equipment was constructed prior to the May 13, 1982 applicability date for the construction permits rule.

PROJECT DESCRIPTION

Sabreliner has proposed to construct an aircraft refurbishing hangar equipped with an aircraft paint stripping booth (P-A3A), an aircraft paint spraying booth (P-A3B), and a small parts paint spraying booth (P-A3C). The hangar will be used to paint new aircraft (airplanes and helicopters) or refurbish existing aircraft for both the military and civilian markets. Table 2 below summarizes the typical process flow for refurbishing aircraft.

Table 2: Typical Process Flow (hours per aircraft)

Steps	P-A3A Booth	P-A3B & P-A3C Booths
Mask/Apply Stripping Agent (Stripper)	12	N/A
Rinse/Sand	2	N/A
Apply Etchant & Corrosion Protection	8	N/A
Mask for Primer	N/A	3
Primer Application/Cure	N/A	21
Rough Sand/Rinse	1	N/A
Mask for White Paint	N/A	3
White Paint Application/Cure	N/A	21
Rough Sand/Rinse	1	N/A
Mask for Orange Paint	N/A	3
Orange Paint Application/Cure	N/A	21
Rough Sand/Rinse	1	N/A
Mask for Black Paint	N/A	3
Black Paint Application/Cure	N/A	21
Rough Sand/Rinse	1	N/A
Mask for Emblem Paint	N/A	4
Emblem Paint Application/Cure	N/A	20
Final Sand/Rinse	4	N/A
Total (hours per plane)	26	120

N/A = Not Applicable

The stripper, etchant, and corrosion protection materials are applied in the paint stripping booth (P-A3A) and are hydraulically sprayed onto the aircraft and then rinsed

off after sufficient residence time. Although the materials are applied with a spray application method, the hydraulic spray nozzle does not atomize the fluid and therefore no particulate emissions are associated with these activities. The stripper and etchant are both VOC-containing materials. The maximum application rates of 75 gallons stripper and 3 gallons etchant per aircraft were provided by Sabreliner and were based on the maximum amount of the materials used on the largest aircraft. According to Sabreliner, each paint stripping activity requires a minimum of 22 hours to allow for masking, stripper application, rinsing, sanding, etchant application, and corrosion protection application. Therefore the maximum hourly design rate for the paint stripping booth (P-A3A) was determined to be 3.41 gallons stripper per hour and 0.14 gallons etchant per hour. A maximum design rate for the corrosion protection material was not provided because the corrosion protection material contains no VOC compounds. Although the corrosion protection material contains the hazardous air pollutant, chromic acid, this is a particulate HAP and no particulate emissions are expected due to the non-atomizing spray application method.

Painting activities will occur in the aircraft paint booth (P-A3B) and the small parts paint booth (P-A3C). The purpose of the small parts paint booth is to paint the control surfaces of the aircraft (e.g. flaps and ailerons) that are more easily painted when they are removed from the aircraft frame. Since the small parts paint booth will not increase the throughput of finished aircraft, the two booths were considered one activity for the potential emissions calculations. Both primer and paint are applied in the painting booths (P-A3B and P-A3C). The primer is a two-part epoxy coating and the paints are two-part urethane coatings. The materials are mixed in a paint shaker and applied with a high volume low pressure (HVLP) spray gun. The maximum application rate of 6 gallons primer per aircraft was provided by Sabreliner and was based on the maximum amount of primer used on the largest aircraft. The primer coat is applied at twice the coating thickness of the paint; hence it is considered a worst case application rate for potential emissions calculations associated with the application of paint and primer. According to Sabreliner, each paint/primer application requires a minimum of 24 hours to allow for masking, spraying, and curing. Therefore, the maximum hourly design rate for the paint spray booths (P-A3B and P-A3C) was determined to be 0.25 gallons primer (or paint) per hour.

EMISSIONS/CONTROLS EVALUATION

Potential emissions of VOCs from the stripping and painting activities were calculated using a mass balance approach and assuming 100% emitted. Particulate emissions from the painting activities were calculated using a mass balance approach and assuming a 40% overspray. The painting activities occur in painting booths that are equipped with a 3-stage filter system that is certified using EPA method 319 in Appendix A of 40 CFR 63. The filter efficiencies were calculated for this project with filter efficiency data provided by the manufacturer and particle size distribution data obtained from a published study. Table 3 below contains a summary of this data and the corresponding filter efficiencies for PM_{2.5}, PM₁₀, and total particulate. The filter efficiency for total particulate was used to determine the control efficiency for the emissions of particulate HAPs, strontium chromate containing hexavalent chromium [Cr(VI)].

Table 3: 3-Stage Filter Control Efficiency

Particle Size (microns) ^[1]	Particle Size Distribution (percent) ^[1]	Particle Size Control Efficiency (percent) ^[2]	PM _{2.5} Weight ^[3]	PM ₁₀ Weight ^[3]	Total PM Weight ^[3]
< 0.5	1.93	86.68	0.19	0.05	0.02
0.5 - 1.0	1.33	95.12	0.13	0.03	0.01
1.0 - 2.0	1.03	97.93	0.10	0.03	0.01
2.0 – 3.5	5.62	99.53	0.57	0.14	0.06
3.5 – 6.0	11.60	99.96	N/A	0.28	0.12
6.0 - 10.0	19.22	100.00	N/A	0.47	0.19
> 10.0	59.38	100.00	N/A	N/A	0.59
Percent of Total Distribution (%)			9.92	40.73	100.00
Control Efficiency (%) ^[4]			96.27	99.08	99.74

N/A = Not Applicable

¹Particle Size and Distribution obtained from *The Annals of Occupational Hygiene*, "Size Distribution and Speciation of Chromium in Paint Spray Aerosol at an Aerospace Facility", R. A. Sabty-Daily et al. (Vol. 49, No. 1, pp. 47–59, 2005).

²Particle size specific control efficiencies obtained from the test report for the 3-stage filter system provided by the manufacturer and included the test results for method 319 in Appendix A of 40 CFR 63.

³The weight represents the multiplication factor used to calculate the weighted average control efficiency.

⁴The control efficiency is a weighted average based on the particle size distribution and the particle size control efficiency.

Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year.) The following table provides an emissions summary for this project.

Table 4: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions ^[1]	Existing Actual Emissions (2009 EI _Q)	Potential Emissions of the Application	New Installation Conditioned Potential
PM ₁₀	15.0	N/D	0.21	0.013	N/A
PM _{2.5}	10.0	N/D	N/D	0.007	N/A
SO _x	40.0	N/D	0.24	N/A	N/A
NO _x	40.0	N/D	0.27	N/A	N/A
VOC	40.0	>250	14.29	65.207	<40.0
CO	100.0	N/D	0.58	N/A	N/A
HAPs	10.0/25.0	<10.0/25.0	1.36	1.305	<10.0/25.0
Individual HAPs	SMAL	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application	Project Conditioned Potential
Chromium (VI)	0.002	N/D	N/D	3.80E-04	N/A
Ethylbenzene	10.0	N/D	N/D	0.072	N/A
Xylene	10.0	N/D	N/D	0.480	N/A
HDI	0.02	N/D	N/D	0.032	<0.02
Toluene	10.0	N/D	N/D	0.720	N/A

¹Existing potential emissions obtained from permit number 042009-003

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions are conditioned below de minimis levels.

APPLICABLE REQUIREMENTS

Sabreliner Corporation Perryville shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*, 40 CFR Part 63, Subpart HHHHHH

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Kathi Jantz
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated April 5, 2010, received April 12, 2010, designating Sabreliner Corporation as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Southeast Regional Office Site Survey, dated April 16, 2010.
- Material Safety Data Sheets

Attachment D – Monthly HDI Compliance Worksheet

Sabreliner Corporation Perryville
 Perry County, S31, T36N, R11E
 Project Number: 2010-04-037
 Installation ID Number: 157-0002
 Permit Number: _____

This sheet covers the month of _____ in the year _____.

Column 1	Column 2 (a)	Column 3	Column 4 (b)	Column 5
Material Used in P-A3B & P-A3C Booths (Name)	Amount of Material Used (Include Units)	Density (Pounds per Gallon)	HDI Content (Weight %)	HDI Emissions (Tons)
(c) Total Individual HDI Emissions Calculated for this Month in Tons:				
(d) Last Month's 12-Month Individual HDI Emissions Total, in Tons:				
(e) Previous Year's Monthly Individual HDI Emissions Total, in Tons:				
(f) Current 12-month Total of Individual HDI Emissions in Tons: [(c) + (d) - (e)]				

Instructions: This worksheet must include HDI emissions from all materials used with the following emission units: P-A3B & P-A3C.

- (a) 1)If usage is in tons - [Column 2] x [Column 4] = [Column 5];
 2)If usage is in pounds - [Column 2] x [Column 4] x [0.0005] = [Column 5];
 3)If usage is in gallons - [Column 2] x [Column 3] x [Column 4] x [0.0005] = [Column 5];
- (b) HDI content should be obtained from the Material Safety Data Sheet (MSDS) and should represent the total mass of the HDI compound by weight. If the content is given as a range, then the maximum value should be used.
- (c) Summation of [Column 6] in Tons;
- (d) 12-Month Individual HDI emissions (f) from last month's Attachment D in Tons;
- (e) Monthly Individual HDI emissions total (c) from the previous year's Attachment D in Tons; and
- (f) Calculate the new 12-month Individual HDI emissions total. **A 12-Month Individual HDI emissions total (e) of less than 0.02 tons for the equipment in this permit (P-A3B & P-A3C).**