

STATE OF MISSOURI

PERMIT BOOK



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: 102014-002 Project Number: 2014-07-028

Installation Number: 173-0024

Parent Company: PTC Alliance Corp.

Parent Company Address: 6051 Wallace Road Ext., Suite 200, Wexford, PA 15090

Installation Name: Enduro Industries LLC

Installation Address: 2001 Orchard Drive, Hannibal, MO 63401

Location Information: Ralls County, S1, T56N, R5W

Application for Authority to Construct was made for:
Expansion of Phase I hard chromium electroplating line. 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.

OCT - 2 2014

EFFECTIVE DATE

Handwritten signature of Kyrat Moore in black ink.

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 Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. 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 these air contaminant sources.

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 sources(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."

Enduro Industries LLC
Ralls County, S1, T56N, R5W

1. Capture Device – Hoods
 - A. Enduro Industries LLC shall capture emissions from the emission units in Table 2 using respective hoods. Hood shields, i.e. partial tank covers, shall be in the closed position.
 - B. The hoods shall be designed in accordance with the latest version of *Industrial Ventilation, A Manual of Recommended Practice* from the American Conference of Governmental Industrial Hygienists. A comparison of the design to the *Manual* recommendations shall be kept on site.
 - C. Enduro Industries LLC shall maintain an operating and maintenance log for the capture devices, which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions;
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.; and
 - 3) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspection.
2. Control Device – Composite Mesh Pad Mist Eliminator
 - A. Enduro Industries LLC shall control emissions from the emission units in Table 2 using a respective composite mesh pad mist eliminator. The composite pad mist eliminator CD-5 shall also be fitted with HEPA.
 - B. Each composite mesh pad mist eliminator and any related instrumentation or equipment shall be operated and maintained in accordance with the manufacturer's specifications. The manufacturer's specifications shall be kept on site.

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SPECIAL CONDITIONS:

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

- C. Each composite mesh pad mist eliminator shall be equipped with a gauge or meter that indicates air pressure drop across the control device. These gauges and meters shall be located in such a way they may be easily observed by Department of Natural Resources' personnel.
 - D. Enduro Industries LLC shall monitor and record the operating pressure drop across each composite mesh pad mist eliminator at least once every 24 hours. The operating pressure drop shall be maintained within the specifications of MACT Subpart N §63.343, and within the range developed in Special Condition 4.E.
 - E. Enduro Industries LLC shall determine the outlet chromium concentration according to MACT Subpart N §63.343.
 - F. Enduro Industries LLC shall maintain an operating and maintenance log for the composite mesh pad mist eliminators, which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions;
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.; and
 - 3) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspection.
3. **Operational Requirement – Plating Chemicals**
Enduro Industries LLC shall keep the plating chemicals in closed containers whenever the materials are not in use. Enduro Industries LLC shall provide and maintain suitable, easily read, permanent markings on all plating chemical containers used with this equipment. This requirement is exclusive of non-heated, non-electric current tanks.
4. **Performance Testing – Hoods**
 - A. Enduro Industries LLC shall test the air velocity across each tank in Table 2.
 - B. Testing shall demonstrate air velocity not less than 150 feet per minute (fpm). Testing shall be conducted at a minimum of 3 locations (each end and the middle) along the length of each tank. The testing locations shall be at the furthest edge of the opening created by the tank shields, parallel

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SPECIAL CONDITIONS:

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

- to the hood face. Hood shields shall be in the closed position. The tanks shall be operating.
- C. These tests shall be performed no later than 180 days after respective initial start-up of each tank.
 - D. A completed Proposed Test Plan Form (enclosed) must be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required testing. Use of a handheld digital anemometer is acceptable.
 - E. Two copies of a written report of the performance test results shall be submitted to the Director within 60 days of completion of any required testing. At a minimum, the report must include tank identification, test locations, sampling equipment description, control device airflow rate (cfm), and legible copies of the raw data sheets. The report shall establish a control device pressure drop range respective to each tank.
 - F. If the results of the performance testing show that the airflow rate across any sampled point at any tank is less than 150 feet per minute, then Enduro Industries LLC shall evaluate the effects upon the hood capture efficiency and permit applicability of this project. Enduro Industries LLC shall submit the results of any such evaluation in a construction permit application within 30 days of submitting the Performance Test Results report required in Special Condition 4.E. of this permit.
5. Record Keeping and Reporting
- A. Enduro Industries LLC shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include MSDS / SDS for all materials used.
 - B. Enduro Industries LLC shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

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

Project Number: 2014-07-028
Installation ID Number: 173-0024
Permit Number:

Enduro Industries LLC
2001 Orchard Drive
Hannibal, MO 63401

Complete: July 28, 2014

Parent Company:
PTC Alliance Corp.
6051 Wallace Road Ext., Suite 200
Wexford, PA 15090

Ralls County, S1, T56N, R5W

REVIEW SUMMARY

- Enduro Industries LLC has applied for authority to expand the Phase I hard chromium electroplating line.
- Hexavalent chromium HAP emissions are expected from the proposed equipment.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs under 40 CFR 61 apply to this installation.
- 40 CFR 63 Subpart N, *National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*, applies to tanks I-D and I-E. Tank I-F is an etching tank and is not subject.
- 40 CFR 63 Subpart WWWW, *National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations*, applies to etching tank I-F.
- Two composite mesh pad mist eliminators, CD1 and CD5, are being used to control the particulate matter, sulfuric acid, and hexavalent chromium emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below de minimis levels. Potential hexavalent chromium emissions exceed the SMAL, requiring a permit.
- This installation is located in Ralls 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. Potential hexavalent chromium emissions exceed the SMAL, however they emit from emission units that are subject to MACT Subpart N. A Risk and Technology Review has been completed for the MACT, therefore modeling is not required.
- Emissions testing is required for the equipment subject to MACT Subpart N.
- No operating permit is required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Enduro Industries LLC is a hard chromium electroplating installation located in Hannibal, Missouri. They produce chrome plated tubing, bar, and hydraulic cylinder piston rods. Non-plated steel is received from off site, precision ground, surface hardened, plated, and shipped. No production welding occurs on site, only maintenance welding. The installation is a de minimis source for New Source Review. Project 2012-04-089 is near completion which will terminate the operating permit. This New Source Review permit will not affect the termination. The following New Source Review permits have been issued to the installation from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
0894-005	Three new plating lines: Phase I, II, and III
072009-003	Four new plating tanks and relocate three etch tanks
072009-003A	Time extension

PROJECT DESCRIPTION

The installation proposes to expand automated hard chromium electroplating line Phase I. Spare tank I-D will become plating tank I-D. Etch tank I-E will become plating tank I-E. Spare tank I-F will become etch tank I-F. The tanks will contain chromic and sulfuric acid solutions. The tanks will be open top and controlled by lateral hoods routed to composite mesh pad mist eliminators. CD-5 will be a new control device, while CD-1 is existing. Two new tanks will be installed to hold chromic acid plating solutions during plating tank sludge clean out and also hold mesh pad mist eliminator wash down water for reuse as plating tank make-up water. These two tanks are not expected to emit chromium. Precision grinding and heat treating are expected to see an increase in throughput due to the expansion. However, the increase in emissions will be insignificant. Heat treatment quench is performed with water, not oil. No other tanks will see an increase in usage or an increase in amp-hours. Project emission units are summarized in Table 2.

Table 2: Project Emission Units

Emission Point	Control Device Identification	Process Description	MHDR (amp-hour)	¹ MHDR (cfm)
EP-7	CD-5 composite mesh pad mist eliminator	Etching tank I-F	12,000	8,000
		Hard plating tank I-D	20,000	12,000
EP-1	CD-1 composite mesh pad mist eliminator	Hard plating tank I-E	20,000	7,500

¹ CFM has not been corrected to SCFM. Emission testing will report corrected values.

EMISSIONS/CONTROLS EVALUATION

The etching and hard plating process will emit particulate matter, hexavalent chromium compounds, and sulfuric acid. Particulate matter emissions were calculated using SCC 3-09-010-18 and the uncontrolled particle size distribution obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Table 12.20-3, July 1996. Particulate matter (PM, PM₁₀, PM_{2.5}) control efficiency for CD-5 was assumed 99.9 percent, which is conservatively low since the final stage of the mist eliminators is HEPA filtration. HEPA filters achieve 99.97 percent control to 0.3 microns. CD-2 is not equipped with HEPA filtration and was assigned 97.0 percent particulate matter control obtained from AP-42 Table B.2-3 AIRS code 058.

Hexavalent chromium stack driven compound emissions were calculated using the emission standard of 2.6E-06 grains per DSCF obtained from MACT Subpart N. Hexavalent chromium metal emissions were calculated based upon the ratio of the metal mass to the compound mass in the chromic acid, multiplied by the chromium compound emissions. All chromium was assumed hexavalent.

Sulfuric acid stack driven emissions were calculated using the ratio of sulfuric acid to hexavalent chromium obtained from a document titled, *Characterizing Site-Specific Source Emissions for EPA's Risk Assessment Tool for the Metal Finishing Industry*, The AESF/EPA Conference for Environmental Excellence, January 24-27, 1999. The ratio was multiplied by the chromium compound emissions.

The hoods were assigned 98 percent capture efficiency citing two documents: *Chromium Plating & Anodizing Operations Using Chromic Acid, Calculations Guidance Package*, Texas Commission on Environmental Quality, October 2007; and the EPA document *Metal Finishing Facility Risk Screening Tool Part 2: Updates to Source Emission Characterization*, AESF/EPA Conference for Environmental Excellence, January 17-29, 2000. The Texas document assigns 98 percent, while the EPA document assigns 99 percent. Conservatively 98 percent was assumed.

The Texas document references the American Conference of Governmental Industrial Hygienists document, *Industrial Ventilation, A Manual of Recommended Practice*, which recommends a minimum capture velocity of 150 fpm. Chapter 4 of the MACT Subpart N background document recommends the same velocity. The background document also recommends minimum air flowrate per tank surface area (cfm/ft²) values to ensure air velocity across the tank surface is at least 150 fpm.

The open tank parameters do not meet the flowrate per area values. However, the tanks will be operated and velocity tested with hood shields in place. The dimensions of the tank are not relevant if the velocity is adequate. The tanks are not equipped with baffles that extend vertically from the tank surface.

Hexavalent chromium uncaptured emissions were calculated using the uncontrolled emission factor obtained from AP-42 Table 12.20-1. Then the 98 percent capture efficiency was applied. Sulfuric acid uncaptured emissions were back-calculated from the stack driven emissions using 98 percent capture and 99.9 percent control efficiencies.

For hexavalent chromium, the total mass of the compound is used to determine emissions for comparison to the major source thresholds. The mass of the metal portion of the compound is used to determine emissions for comparison to the SMAL.

The following table provides an emissions summary for this project. Existing potential emissions were obtained from the operating permit termination project 2012-04-089. Existing actual emissions were obtained from the installation's 2013 EIQ. Potential emissions of the project represent the potential of the new equipment, assuming continuous operation (8,760 hours per year).

Table 3: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2013 EIQ)	Potential Emissions of the Project	New Installation Conditioned Potential
PM	25.0	N/D	Zero	0.26	N/D
PM ₁₀	15.0	1.90	Zero	0.15	2.05
PM _{2.5}	10.0	0.13	Zero	0.13	0.26
SO _x	40.0	0.01	Zero	N/A	0.01
NO _x	40.0	1.53	Zero	N/A	1.53
VOC	40.0	0.08	Zero	N/A	0.08
CO	100.0	0.31	Zero	N/A	0.31
Sulfuric Acid	7.0	N/D	N/D	5.53E-04	N/D
GHG (CO ₂ e)	100,000	N/D	N/A	N/A	N/D
GHG (mass)	250.0	N/D	N/A	N/A	N/D
Combined HAPs	25.0	1.76	Zero	0.08	1.84
Chromium VI Compounds	10.0	1.76	Zero	0.08	1.84
Chromium VI Metal	¹ 0.002	N/D	N/D	3.56E-02	N/D

N/A = Not Applicable; N/D = Not Determined ¹ SMAL

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 of all pollutants are below de minimis levels. Potential hexavalent chromium emissions exceed the SMAL, requiring a permit.

APPLICABLE REQUIREMENTS

Enduro Industries LLC 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
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *MACT Regulations*, 10 CSR 10-6.075
 - *National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*, 40 CFR Part 63, Subpart N
 - *National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations*, 40 CFR 63 Subpart W
- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260 applies to the chromium etch tank I-F and chromium plating tanks I-D and I-E. Potential sulfuric acid concentration from EP-7, including fugitives, is 1.2E-03 mg/m³. The regulation's limit is 35 mg/m³. The emission units are in compliance.

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.

David Little
Environmental Engineer III, PE

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated July 10, 2014, received July 14, 2014, designating PTC Alliance Corp. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

APPENDIX A

Abbreviations and Acronyms

%percent	m/s meters per second
°Fdegrees Fahrenheit	Mgal 1,000 gallons
acfmactual cubic feet per minute	MW megawatt
BACT Best Available Control Technology	MHDR maximum hourly design rate
BMPs Best Management Practices	MMBtu Million British thermal units
Btu British thermal unit	MMCF million cubic feet
CAM Compliance Assurance Monitoring	MSDS Material Safety Data Sheet
CAS Chemical Abstracts Service	NAAQS ... National Ambient Air Quality Standards
CEMS Continuous Emission Monitor System	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CFR Code of Federal Regulations	NO_x nitrogen oxides
CO carbon monoxide	NSPS New Source Performance Standards
CO₂ carbon dioxide	NSR New Source Review
CO_{2e} carbon dioxide equivalent	PM particulate matter
COMS Continuous Opacity Monitoring System	PM_{2.5} particulate matter less than 2.5 microns in aerodynamic diameter
CSR Code of State Regulations	PM₁₀ particulate matter less than 10 microns in aerodynamic diameter
dscf dry standard cubic feet	ppm parts per million
EQ Emission Inventory Questionnaire	PSD Prevention of Significant Deterioration
EP Emission Point	PTE potential to emit
EPA Environmental Protection Agency	RACT Reasonable Available Control Technology
EU Emission Unit	RAL Risk Assessment Level
fps feet per second	SCC Source Classification Code
ft feet	scfm standard cubic feet per minute
GACT Generally Available Control Technology	SDS Safety Data Sheet
GHG Greenhouse Gas	SIC Standard Industrial Classification
gpm gallons per minute	SIP State Implementation Plan
gr grains	SMAL Screening Model Action Levels
GWP Global Warming Potential	SO_x sulfur oxides
HAP Hazardous Air Pollutant	SO₂ sulfur dioxide
hr hour	tph tons per hour
hp horsepower	tpy tons per year
lb pound	VMT vehicle miles traveled
lbs/hr pounds per hour	VOC Volatile Organic Compound
MACT Maximum Achievable Control Technology	
µg/m³micrograms per cubic meter	

Mr. Jeffrey Burditt
Safety/Training Coordinator
Enduro Industries LLC
P.O. Box 509
Hannibal, MO 63401

RE: New Source Review Permit - Project Number: 2014-07-028

Dear Mr. Burditt:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for acronyms. Note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions and your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty 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 it will be deemed filed on the date mailed; if it is sent by any method other than registered or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, website: www.oa.mo.gov/ahc.

If you have any questions regarding this permit, please contact David Little, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:dll

Enclosures

c: Northeast Regional Office
PAMS File: 2014-07-028
Permit Number: