



TECHNICAL SUPPORT DOCUMENT

**Air Discharge Permit ADP 22-3504
ADP Application CL-3182**

Issued: March 8, 2022

**Wickum Weld
SWCAA ID - 2727**

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Abbreviations

acfm	actual cubic feet per minute
ADP	Air Discharge Permit
AP-42	<u>Compilation of Emission Factors, AP-42, Fifth Edition, Volume 1, Stationary Point and Area Sources</u> – published by the US Environmental Protection Agency
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
BACT	Best available control technology
Btu	British thermal unit
CAS #	Chemical Abstracts Service registry number
cfm	Cubic feet per minute
CPM	Condensable particulate matter
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO _{2e}	Carbon dioxide equivalent
dscfm	Dry standard cubic feet per minute
EPA	U.S. Environmental Protection Agency
GWP	Global warming potential
HAP	Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act
lb/hr	Pounds per hour
lb/MMBtu	Pounds per million British thermal units
lb/yr	Pounds per year
MERV	Minimum Efficiency Reporting Value – a measure of particulate matter filter effectiveness
MMBtu	Millions of British thermal units
MMBtu/hr	Millions of British thermal units per hour
SDS	Safety Data Sheet
SQER	Small Quantity Emission Rate listed in WAC 173-460 (as in effect August 21, 1998)
NO _x	Nitrogen oxides
PM	Total particulate matter (includes both filterable and condensable particulate matter as measured by EPA Methods 5 and 202)
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (includes both filterable and condensable particulate matter as measured by EPA Methods 5 and 202)
PM _{2.5}	Particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (includes both filterable and condensable particulate matter as measured by EPA Methods 5 and 202)
ppm	Parts per million
ppmv	Parts per million by volume
ppmvd	Parts per million by volume, dry
PSD	Prevention of Significant Deterioration
RCW	Revised Code of Washington
SQER	Small Quantity Emission Rate listed in WAC 173-460
SO ₂	Sulfur dioxide
SWCAA	Southwest Clean Air Agency
TAP	Toxic air pollutant pursuant to Chapter 173-460 WAC
T-BACT	Best Available Control Technology for toxic air pollutants
tpy	Tons per year
VOC	Volatile organic compound
WAC	Washington Administrative Code

1. FACILITY IDENTIFICATION

Applicant Name:	Wickum Weld, Inc.
Applicant Address:	2100 Kotobuki Way Vancouver, WA 98660
Facility Name:	Wickum Weld
Facility Address:	2100 Kotobuki Way Vancouver, WA 98660
SWCAA Identification:	2727
Contact Person:	Jarrold Wickum, President
Primary Process:	Metal Fabrication and Powder Coating
SIC/NAICS Code:	3479: Metal Coating, Engraving and Allied Services 332812: Coating, Engraving and Allied Services
Facility Classification:	Natural Minor

2. FACILITY DESCRIPTION

The Wickum Weld facility designs and manufactures a variety of aluminum truck accessories.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit application number CL-3182 (ADP Application CL-3182) dated April 27, 2021. Wickum Weld Inc. submitted ADP Application CL-3182 requesting approval of the following:

- Installation of a new powder coating line consisting of a staging area, an unvented powder booth, and a curing oven.

The current permitting action provides approval for the new powder coating line as proposed in ADP Application CL-3182. This action also incorporates existing welding operations into the permit.

This is the initial permitting action for this facility.

4. PROCESS DESCRIPTION

- 4.a Metal Fabrication/Welding (existing). Wickum Weld fabricates custom designed truck accessories from aluminum stock. Raw stock is cut, formed, and welded to produce a final product.
- 4.b Powder Coating (new). A portion of Wickum Weld's production is finished with a powder coating. Components to be powder coated are cleaned, coated, and cured in successive stages. A single natural gas fired oven is used to temper components and cure powder coatings.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

- 5.a Metal Fabrication/Welding (existing). A variety of metal working activities are performed in the fabrication portion of the facility. The primary source of air contaminant emissions is TIG welding. Emissions from these operations are contained inside the building envelope and not directly vented to atmosphere.

- 5.b Powder Coat Booth (new). One enclosure work booth is used to apply powder coating to components. The unit is described as follows:

Make / Model: Rohner / CM6000
 Dimensions: 7' h x 8' w x 8' l
 Rated exhaust flow: 6000 acfm
 Filters: Primary – (6) 14" x 26"
 Secondary – (4) 24" x 24" rated at 99.9% efficiency
 Exhaust description: None - vents inside building

- 5.c Powder Coat Oven (new). One natural gas fired oven is used to temper components and cure applied powder coating. The unit is described as follows:

Make / Model: Rohner / Class A (s/n R2018366)
 Length * width * height: 11'2" x 8'6" x 13'
 Rated exhaust flow: 800 acfm
 Exhaust description: 14" diameter stack, vertical at ~26' above ground level

Oven Burner.

Make / Model: Midco International / HMA 2
 Rated Heat Input: 0.999 MMBtu/hr
 Fuel: Natural gas
 Emissions: 100 ppmv NO_x / 50 ppmv CO – corrected to 3% O₂

- 5.d Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Metal Fabrication/Welding	Building Enclosure
2	Powder Coat Booth (Rohner – 6,000 acfm)	Process Enclosure, High Efficiency Filtration
3	Powder Coat Oven (Rohner – 0.999 MMBtu/hr)	Low Sulfur Fuel (Nat Gas)

6. EMISSIONS DETERMINATION

Emissions to the ambient atmosphere from fabrication operations proposed in ADP Application CL-3182 consist of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM) sulfur dioxide (SO₂), toxic air pollutants (TAPs), and hazardous air pollutants (HAPs).

Unless otherwise specified by SWCAA, actual emissions must be determined using the specified input parameter listed for each emission unit and the following hierarchy of methodologies:

- Continuous emissions monitoring system (CEMS) data;
- Source emissions test data (EPA reference method). When source emissions test data conflicts with CEMS data for the time period of a source test, source test data must be used;
- Source emissions test data (other test method); and
- Emission factors or methodology provided in this TSD.

- 6.a Welding Operations (existing). Potential emissions from welding operations are calculated from aluminum weld wire throughput of 2,000 lb/yr, a 50% capture/control efficiency, and emission factors from "Characterizing Shipyard Welding Emissions and Associated Control Options" - August 1995. The capture/control efficiency is attributed to building enclosure.

Annual emissions must be calculated from actual weld wire throughput using the same methodology unless an alternative approach is approved in writing by SWCAA.

Aluminum Welding - 5356 Wire				
Wire Throughput =	2000	lb/yr		
Control Efficiency =	0.5			
		EF	Emissions	
Pollutant	lb/lb rod	lb/1000 lb	lb/yr	Emission Factor Source
PM/PM ₁₀ /PM _{2.5}		72.3	72.3	See Footnote
Aluminum	0.9	24.705	24.7	Average % found in an MSDS * metal EF
Copper	0.0025	0.069	0.1	Average % found in an MSDS * metal EF
Manganese	0.01	0.275	0.3	Average % found in an MSDS * metal EF
Magnesium	0.03	0.824	0.8	Average % found in an MSDS * metal EF
* 72.3 lb fume and 27.45 lb metal fume / 1,000 lb wire				

- 6.b Powder Coat Booth (new). Powder coats are solid powders with no inherent VOC content. However, some VOC emissions are expected during the curing process due to thermal degradation of the material. Potential VOC emissions are estimated to be 5% of coating weight as referenced in the Emission Inventory Improvement Program document "Preferred and Alternative Methods for Estimating Air Emissions From Surface Coating Operation", July 2001. HAP and TAP emissions are calculated using material balance methodology. PM emissions are calculated assuming a 70% transfer efficiency and 98% capture/control efficiency (process enclosure, filtration). PM is assumed to be 78% PM_{2.5}.

Annual emissions must be calculated from actual powder coat throughput using the same methodology unless an alternative approach is approved in writing by SWCAA.

Powder Coating Emissions				
Annual Usage =		2,400 lbs of powder coat		
Annual Operation =		2,080 hr/yr		
Transfer Efficiency =		70%		
Capture and Filtration Efficiency =		98%		
Pollutant	Emissions lb/hr	Emissions lb/yr	Emission Factor Source	
VOCs (emitted from curing oven)	0.06	120	5% by weight volatilized (EIIP Vol II, 7/01)	
PM	0.007	14.4	Material Balance	
PM ₁₀	0.007	14.4	Material Balance	
PM _{2.5}	0.005	11.2	Material Balance	
Carbon Black	0.00007	0.14	Material Balance	

- 6.c Powder Coat Oven (new). Potential emissions from oven operation are calculated from a rated heat input of 0.999 MMBtu/hr, 8,760 hr/yr, and applicable emission factors. Emission factors for NO_x and CO correspond to 100 ppmv and 50 ppmv at 3% O₂, respectively. All other emission factors are taken from EPA AP-42 §1.4 "Natural Gas Combustion" (3/98). All PM is assumed to be PM_{2.5}.

Annual emissions must be calculated from actual fuel consumption using the same methodology unless new emission factors are developed through emission testing and approved by SWCAA.

Heat Input Rating =	0.999	MMBtu/hr			
Fuel Consumption =	8,751	MMBtu/yr			
	Emission Factor		Emissions		
Pollutant	(lb/MMBtu)	(lb/hr)	(lb/yr)	(tpy)	Emission Factor Source
NO _x	0.1214	0.12	1,062	0.53	Midco International
CO	0.0369	0.037	323	0.16	Midco International
VOC	0.0054	0.005	47	0.024	AP-42 Sec. 1.4 (7/98)
SO _x as SO ₂	5.88E-04	5.9E-04	5	0.0026	AP-42 Sec. 1.4 (7/98)
PM	0.0075	0.0074	65	0.033	AP-42 Sec. 1.4 (7/98)
PM ₁₀	0.0075	0.0074	65	0.033	AP-42 Sec. 1.4 (7/98)
PM _{2.5}	0.0075	0.0074	65	0.033	AP-42 Sec. 1.4 (7/98)
Benzene	2.06E-06	2.1E-06	1.8E-02	9.0E-06	AP-42 Sec. 1.4 (7/98)
Formaldehyde	7.35E-05	7.3E-05	6.4E-01	3.2E-04	AP-42 Sec. 1.4 (7/98)
CO ₂ e	117.1	117.0	1,024,753	512	40 CFR 98

- 6.d Emissions Summary/Facility-wide Potential to Emit. Facility-wide potential to emit as calculated in the sections above is summarized below.

<u>Pollutant</u>	<u>Potential Emissions (tpy)</u>	<u>Project Increase (tpy)</u>
NO _x	0.53	0.53
CO	0.16	0.16
VOC	0.02	0.02
SO ₂	0.003	0.003
Lead	0.0	0.0
PM	0.08	0.08
PM ₁₀	0.08	0.08
PM _{2.5}	0.07	0.07
TAP	0.013	0.013
HAP	0.001	0.001
CO ₂ e	512	512

Pollutant	CAS Number	Category	Facility-wide Emissions (lb/yr)	Project Increase (lb/yr)	WAC 173-460 SQER (lb/yr)
Aluminum	7429-90-5	TAP B	24.7	0.0	5,250
Benzene	71-43-2	HAP/TAP A	0.02	0.0	20
Carbon Black	1333-86-4	HAP/TAP B	0.1	0.1	1,750

Pollutant	CAS Number	Category	Facility-wide Emissions (lb/yr)	Project Increase (lb/yr)	WAC 173-460 SQER (lb/yr)
Copper	7440-50-8	TAP B	0.07	0.0	175
Formaldehyde	50-00-0	HAP/TAP A	0.6	0.0	20
Manganese	7439-96-5	HAP / TAP B	0.3	0.0	175

7. REGULATIONS AND EMISSION STANDARDS

Regulations that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the regulations, codes, or requirements listed below.

- 7.a 40 CFR 63 subpart HHHHHH (63.11169 et seq.) "National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources" establishes standards and work practices for all area sources engaged in paint stripping operations using methylene chloride, autobody refinishing operations, or spray coating of metal or plastic parts with coatings that contain chromium, lead, manganese, nickel, or cadmium (target HAPs). The powder coatings in use at this facility do not contain any target HAPs and are not "spray applied" as the term is used in this regulations; therefore this regulation does not apply to this facility.
- 7.b 40 CFR 63.11514 et seq. (Subpart XXXXXX) "National Emissions Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories" establishes standards and work practices for dry abrasive blasting, machining, dry grinding and polishing, spray painting, and welding operations at area sources primarily engaged in one of nine selected metal fabrication and finishing source categories. The proposed facility is not primarily engaged in any of the selected metal fabrication and finishing source categories so this regulation is not applicable.
- 7.c Revised Code of Washington (RCW) 70A.15.2040 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess.
- 7.d RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an Air Discharge Permit for installation and establishment of an air contaminant source.
- 7.e WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" requires Best Available Control Technology for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety. SWCAA implements WAC 173-460 as in effect on August 21, 1998.
- 7.f WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM₁₀, PM_{2.5}, lead, sulfur dioxide, nitrogen dioxide, ozone, and carbon monoxide in the ambient air, which shall not be exceeded.
- 7.g SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, sulfur dioxide, concealment and masking, and fugitive dust.
- 7.h SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met and that no person shall cause or permit the emission of particulate matter from any

combustion or incineration unit in excess of 0.23 grams per dry cubic meter (0.1 grains per dry standard cubic foot) of exhaust gas at standard conditions.

- 7.i SWCAA 400-060 "Emission Standards for General Process Units" prohibits particulate matter emissions from all new and existing process units in excess of 0.1 grains per dry standard cubic foot of exhaust gas.
- 7.j SWCAA 400-109 "Air Discharge Permit Applications" requires that an Air Discharge Permit application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an Air Discharge Permit application to request such changes. An Air Discharge Permit must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits.
- 7.k SWCAA 400-110 "New Source Review" requires that SWCAA issue an Air Discharge Permit in response to an Air Discharge Permit application prior to establishment of the new source, emission unit, or modification.
- 7.l SWCAA 400-111 "Requirements for Sources in a Maintenance Plan Area" requires that no approval to construct or alter an air contaminant source shall be granted unless it is evidenced that:
- (1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
 - (2) Emissions will be minimized to the extent that the new source will not exceed emission levels or other requirements provided in the maintenance plan;
 - (3) Best Available Control Technology will be employed for all air contaminants to be emitted by the proposed equipment;
 - (4) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
 - (5) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate Best Available Control Technology (BACT) for the types and amounts of air contaminants emitted by the processes as described below:

New BACT Determinations

- 8.a BACT Determination – Welding Operations. The proposed use of building enclosure has been determined to meet the requirements of BACT and T-BACT for the type and quantity of pollutants emitted by welding operations at this facility.
- 8.b BACT Determination – Powder Coat Booth. The proposed use of booth enclosure and discharge inside the building envelope has been determined to meet the requirements of BACT and T-BACT for the type and quantity of pollutants emitted by powder coating operations at this facility.
- 8.c BACT Determination – Powder Coat Oven. The proposed use of low sulfur fuel (natural gas), annual emission monitoring, and proper combustion controls has been determined to meet the requirements of BACT and T-BACT for the type and quantity of pollutants emitted by the curing oven at this facility.

Previous BACT Determinations

None.

Other Determinations

- 8.d Prevention of Significant Deterioration (PSD) Applicability Determination: The potential to emit of this facility is less than applicable PSD applicability thresholds. Likewise, this permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.
- 8.e Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because it is not a major source and is not required to obtain a Part 70 permit.

9. AMBIENT IMPACT ANALYSIS

- 9.a TAP Small Quantity Review. The incremental increases in TAP emissions associated with this permitting action are quantified in Section 6 of this Technical Support Document. All incremental increases in individual TAP emissions are less than the applicable small quantity emission rate (SQER) identified in WAC 173-460 (effective 8/21/98).

Conclusions

- 9.b Installation of a powder coating operation, as proposed in ADP Application CL-3182, will not cause the ambient air quality requirements of Title 40 Code of Federal Regulations (CFR) Part 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.
- 9.c Installation of a powder coating operation, as proposed in ADP Application CL-3182, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" (as in effect 8/21/98) or WAC 173-476 "Ambient Air Quality Standards" to be violated.
- 9.d Installation of a powder coating operation, as proposed in ADP Application CL-3182, will not cause a violation of emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions," 400-050 "Emission Standards for Combustion and Incineration Units," and 400-060 "Emission Standards for General Process Units."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP 22-3504 in response to ADP Application CL-3182. ADP 22-3504 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

- 10.a General Basis. Permit requirements for equipment affected by this permitting action incorporate the operating schemes proposed by the applicant in ADP Application CL-3182. Permit requirements established by this action are intended to implement BACT, minimize emissions, and assure compliance with applicable requirements on a continuous basis. Emission limits for approved equipment are based on the maximum potential emissions calculated in Section 6 of this Technical Support Document.
- 10.b Monitoring and Recordkeeping Requirements. ADP 22-3504 establishes monitoring and recordkeeping requirements sufficient to document compliance with applicable emission limits, ensure proper operation of approved equipment and provide for compliance with generally applicable requirements. Specific recordkeeping requirements are established for fuel consumption, material throughput, and maintenance activities that may affect emissions from permitted equipment.

- 10.c Reporting Requirements. ADP 22-3504 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for fuel consumption and material throughput. Reports are to be submitted on an annual basis.
- 10.d Emission Limits. Process emissions from the Powder Coat Booth and Powder Coat Oven can be impacted by how those emission units are operated. Emissions from each unit were limited to the calculated potential to emit based on proper operation and maintenance. An emission limit for VOC emissions from curing of powder coatings was not established because these emissions are relatively small and cannot be impacted by how the activity is conducted. Other than a visual emission limit, short-term emission limits were not established for the curing oven because potential emissions from the unit are too small to warrant periodic source testing or performance monitoring.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

- 11.a Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology based emission standards and control technology determinations shall take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA shall include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

The applicant did not identify any start-up and shutdown periods during which affected equipment is not capable of achieving continuous compliance with applicable technology determinations or approval conditions. To SWCAA's knowledge, this facility can comply with all applicable standards during startup and shutdown.

- 11.b Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the permit requirements.
- 11.c Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the permit requirements.

12. EMISSION MONITORING AND TESTING

There are no formal emission monitoring or testing requirements for this facility. Emission monitoring and testing would be most applicable to the Curing Oven. However, potential emissions from the Curing Oven are relatively small and the burner does not rely on low emission technology to achieve the emission limits, so periodic emission monitoring or testing was not required.

13. FACILITY HISTORY

- 13.a Previous Permitting Actions. SWCAA has not previously issued any Permits for this facility.
- 13.b Compliance History. A search of source records on file at SWCAA did not identify any outstanding compliance issues at this facility.

14. PUBLIC INVOLVEMENT OPPORTUNITY

- 14.a Public Notice for ADP Application CL-3182. Public notice for ADP Application CL-3182 was published on the SWCAA internet website for a minimum of (15) days beginning on February 4, 2022.
- 14.b Public/Applicant Comment for ADP Application CL-3182. SWCAA did not receive specific comments, a comment period request or any other inquiry from the public regarding this ADP application. Therefore no public comment period was provided for this permitting action.
- 14.c State Environmental Policy Act. A complete SEPA checklist was submitted by Wickum Weld Inc. in conjunction with ADP Application CL-3182. After reviewing the checklist, SWCAA has made a Determination of Non Significance (DNS 22-003) concurrent with issuance of ADP 22-3504.