



TECHNICAL SUPPORT DOCUMENT

**Air Discharge Permit ADP 23-3577
Air Discharge Permit Application CL-3227**

Issued: April 19, 2023

LaPel Solutions, LLC

SWCAA ID - 2553

Prepared By: Wess Safford
Air Quality Engineer
Southwest Clean Air Agency

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ABBREVIATIONS

List of Acronyms

ADP	Air Discharge Permit	NOV	Notice of Violation/
AP-42	Compilation of Emission Factors, AP-42, 5th Edition, Volume 1, Stationary Point and Area Sources – published by EPA	NSPS	New Source Performance Standard
ASIL	Acceptable Source Impact Level	PSD	Prevention of Significant Deterioration
BACT	Best available control technology	RCW	Revised Code of Washington
CAM	Compliance Assurance Monitoring	SDS	Safety Data Sheet
CAS#	Chemical Abstracts Service registry number	SQER	Small Quantity Emission Rate listed in WAC 173-460
CFR	Code of Federal Regulations	Standard	Standard conditions at a temperature of 68°F (20°C) and a pressure of 29.92 in Hg (760 mm Hg)
EPA	U.S. Environmental Protection Agency	SWCAA	Southwest Clean Air Agency
NESHAP	National Emission Standards for Hazardous Air Pollutants	T-BACT	Best Available Control Technology for toxic air pollutants
		WAC	Washington Administrative Code

List of Units and Measures

MMBtu	Million British thermal unit	ppmw	Parts per million by weight
ppm	Parts per million	psig	Pounds per square inch, gauge
ppmv	Parts per million by volume	tpy	Tons per year
ppmvd	Parts per million by volume, dry		

List of Chemical Symbols, Formulas, and Pollutants

CO	Carbon monoxide	PM	Particulate Matter with an aerodynamic diameter 100 µm or less
CO ₂	Carbon dioxide	PM ₁₀	PM with an aerodynamic diameter 10 µm or less
CO _{2e}	Carbon dioxide	PM _{2.5}	PM with an aerodynamic diameter 2.5 µm or less
HAP	Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act	SO ₂	Sulfur dioxide
NO ₂	Nitrogen dioxide	SO _x	Sulfur oxides
NO _x	Nitrogen oxides	TAP	Toxic air pollutant pursuant to Chapter 173-460 WAC
O ₂	Oxygen	VOC	Volatile organic compound
O ₃	Ozone		

Terms not otherwise defined have the meaning assigned to them in the referenced regulations or the dictionary definition, as appropriate.

1. FACILITY IDENTIFICATION

Applicant Name: LaPel Solutions, LLC
Applicant Address: 14950 NE 65th Street, Suite 101, Vancouver, WA 98682

Facility Name: LaPel Solutions, LLC
Facility Address: 14950 NE 65th Street, Vancouver, WA 98682

SWCAA Identification: 2553

Contact Person: Leo Gordiyenko

Primary Process: Chemical Blending
SIC/NAICS Code: 2869 - SIC description
325199 - NAICS description

Facility Classification: Natural Minor

2. FACILITY DESCRIPTION

LaPel Solutions, LLC (LaPel) produces blended chemicals for material grinding including coolants, polishing slurries and chemical process solutions. Process boilers are operated in support of the production of specific sized silica crystals in an aqueous matrix used as an anti-skid coating for packaging materials. All material handling occurs inside the fully enclosed building with no significant dust generation potential.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit application number CL-3227 (ADP Application CL-3227) dated March 24, 2023. LaPel submitted ADP Application CL-3227 requesting approval of the following:

- Installation of a new natural gas fired process boiler (York-Shipley – 8.4 MMBtu/hr).

The current permitting action provides approval for the proposed process boiler. ADP 23-3577 will supersede ADP 19-3345 in its entirety.

4. PROCESS DESCRIPTION

4.a Boilers – Hot Water (existing). Natural gas fired package boilers are used to provide process heat for the production of silica crystals. Heated water is circulated through a heat exchanger and is not used directly in the process.

ADP Application CL-3227. LaPel is not proposing any significant change in method of operation or the introduction of new products/processes. The proposed process boiler will simply expand facility capacity.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

5.a Boiler #1 – Hurst (existing). This boiler is used to provide hot process water for use in the production of silica crystals.

Boiler Make/Model: Hurst / LPE246-30-15M (s/n 03-50293)
 Burner Make/Model: Weishaupt / G5/1-D, ZMD-LN (s/n 5297053)
 Low emission burner with 5:1 turndown (2.833 MMBtu/hr max rating)
 Emissions: 40 ppmv NO_x / 50 ppmv CO – corrected to 3% O₂
 Rated Heat Input: 2.5 MMBtu/hr
 Fuel: Natural Gas
 Year of Manufacture: 2003
 Exhaust Stack: 12" diameter vertical at ~42' above grade (~10' above building roof)
 ~190' east from the northwest corner of the main building

5.b Boiler #2 – York-Shipley (new). This boiler is used to provide hot process water for use in the production of silica crystals.

Boiler Make/Model: York-Shipley / YS5-200-030HW (s/n B802)
 Burner Make/Model: Cyclonetic / JBFX3G-200-100-MV37-M.25-UL/CSD-1 (s/n U144393A-01)
 Emissions: 12 ppmv NO_x / 50 ppmv CO – corrected to 3% O₂
 Rated Heat Input: 8.4 MMBtu/hr
 Fuel: Natural Gas
 Year of Manufacture: 2022
 Exhaust Stack: 14" diameter vertical at ~37' above grade (~5' above building roof)

5.c Insignificant Emission Units. The following pieces of facility equipment have been determined to have insignificant emissions, and are not registered as emission units:

- Four natural gas fired comfort heaters serve the facility's business office.

5.d Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Boiler #1 (Hurst – 2.5 MMBtu/hr)	Low NO _x Burner, Low Sulfur Fuel (Nat Gas)
2	Boiler #2 (York-Shipley – 8.4 MMBtu/hr)	Ultra-low NO _x Burner, Low Sulfur Fuel (Nat Gas)

6. EMISSIONS DETERMINATION

Emissions to the ambient atmosphere from the process boilers proposed in ADP Application CL-3227 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:

- (a) Continuous emissions monitoring system (CEMS) data;
- (b) 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;
- (c) Source emissions test data (other test method); and
- (d) Emission factors or methodology provided in this TSD.

6.a Boiler #1 - Hurst (existing). Potential emissions from boiler operation are calculated based on a rated heat input of 2.5 MMBtu/hr, 4,380 hr/yr, and applicable emission factors. Emission factors for NO_x and CO correspond to 40 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 will be calculated based on actual fuel consumption using the same methodology.

Heat Input Rating =	2.500	MMBtu/hr	
Gas Heat Content =	1,020	Btu/scf	
Fuel Consumption =	10,950	MMBtu/yr	
	Emission Factor		Emissions
Pollutant	(lb/MMBtu)	(lb/hr)	(tpy)
NO _x	0.0486	0.12	0.27
CO	0.0369	0.092	0.20
VOC	0.0054	0.013	0.030
SO _x as SO ₂	0.0006	1.5E-03	0.0033
PM (total)	0.0075	0.019	0.041
PM ₁₀	0.0075	0.019	0.041
PM _{2.5}	0.0075	0.019	0.041
Benzene	2.06E-06	5.1E-06	1.1E-05
Formaldehyde	7.35E-05	1.8E-04	4.0E-04
CO ₂ e	117	292.7	641

6.b Boiler #2 – York-ShIPLEY (new). Potential emissions from boiler operation are calculated based on a rated heat input of 8.4 MMBtu/hr, 4,380 hr/yr, and applicable emission factors. Emission factors for NO_x and CO correspond to 12 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 will be calculated based on actual fuel consumption using the same methodology.

Heat Input Rating =	8.400	MMBtu/hr
Gas Heat Content =	1,020	Btu/scf
Fuel Consumption =	73,584	MMBtu/yr
	Emission Factor	
Pollutant	(lb/MMBtu)	(lb/hr)
		Emissions (tpy)
NO _x	0.0146	0.12
CO	0.0369	0.310
VOC	0.0054	0.045
SO _x as SO ₂	0.0006	5.0E-03
PM (total)	0.0075	0.063
PM ₁₀	0.0075	0.063
PM _{2.5}	0.0075	0.063
Benzene	2.06E-06	1.7E-05
Formaldehyde	7.35E-05	6.2E-04
CO ₂ e	117	983.6

6.c 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	0.80	0.54
CO	1.56	1.36
VOC	0.23	0.20
SO ₂	0.025	0.022
Lead	0.00	0.00
PM	0.31	0.27
PM ₁₀	0.31	0.27
PM _{2.5}	0.31	0.27
TAP	3.2E-3	2.8E-3
HAP	3.2E-3	2.8E-3
CO ₂ e	4,949	4,308

Pollutant	CAS Number	Category	Facility-wide Emissions (lb/yr)	Project Increase (lb/yr)	WAC 173-460 SQER (lb/yr)
Benzene	71-43-2	HAP/TAP A	0.17	0.15	20
Formaldehyde	50-00-0	HAP/TAP A	6.2	5.4	20

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 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.b 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.c 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.
- 7.d 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.e 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.f 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.g 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.h 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.i 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.j 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 – Process Boiler. The proposed use of low sulfur fuel (natural gas), annual emission monitoring and low emission burner technology (≤ 12 ppmv - NO_x, ≤ 50 ppmv CO) has been determined to meet the requirements of BACT for the new process boiler at this facility.

Previous BACT Determinations

- 8.b BACT Determination – Boiler – Natural Gas Combustion (19-3345). Potential emissions from this unit are constrained by the relatively small size (2.5 MMBtu/hr), and the fact that the process will not demand enough hot water to operate at a 100% capacity factor. The retrofitting of the unit with a new burner capable of lower emissions, if technically feasible, would not be a cost-effective method of further reducing emissions in this case. The use of natural gas by the existing low-emission burner, limitation of NO_x and CO emissions to 40 and 50 ppmvd @ 3% O₂ respectively, limitation of the natural gas usage to the equivalent of a 50% capacity factor, and vertical dispersion meets the requirements of BACT in this instance.

Other Determinations

- 8.c 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.d 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.

Conclusions

- 9.b Installation of a new process boiler, as proposed in ADP Application CL-3227, 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 new process boiler, as proposed in ADP Application CL-3227, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" or WAC 173-476 "Ambient Air Quality Standards" to be violated.
- 9.d Installation of a new process boiler, as proposed in ADP Application CL-3227, 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 23-3577 in response to ADP Application CL-3227. ADP 23-3577 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

- 10.a Supersession of Previous Permits. ADP 23-3577 supersedes ADP 19-3345 in its entirety.
- 10.b General Basis. Permit requirements for equipment affected by this permitting action incorporate the operating schemes proposed by the applicant in ADP Application CL-3227. 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.c Monitoring and Recordkeeping Requirements. ADP 23-3577 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 reporting requirements are established for boiler fuel consumption.
- 10.d Reporting Requirements. ADP 23-3577 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for boiler fuel consumption. Reports are to be submitted on an annual basis.
- 10.e Process Boilers. Permit requirements for the boilers listed in this application incorporate expected operational performance and the operating schemes proposed by the permit applicant at the time of installation. Short-term emission limits for each boiler are based on manufacturer's information regarding burner performance. Operation of the Hurst boiler is limited to a 50% capacity factor. This limitation was applied as a BACT measure at the time of installation because lower NO_x emission rates would be necessary for a boiler of this size with unrestricted operation. The burner in the York-Shipley boiler is capable of ultra-low NO_x emission rates so operation of that boiler is unrestricted. The permittee is required to take corrective action if emission monitoring data indicates emissions in excess of applicable emission limits.
- 10.f Requirements for Unmodified Emission Units. Permit requirements for existing emission units not affected by ADP Application CL-3227 are carried forward unchanged from ADP 19-3345.

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 separately or in addition to those measures required under BACT considerations. Therefore, none were included in the permit requirements.

12. EMISSION MONITORING AND TESTING

- 12.a Emission Testing – York-Shipley Boiler. Emission testing of the York-Shipley process boiler is required on a continuing 5-year cycle. All emission testing shall be conducted in accordance with ADP 23-3577, Appendix A.
- 12.b Emission Monitoring – Process Boilers. Emission monitoring of both process boilers is required on a continuing 12-month cycle. All emission monitoring shall be conducted in accordance with ADP 23-3577, Appendix B.

13. FACILITY HISTORY

- 13.a Previous Permitting Actions. SWCAA has previously issued the following Permits for this facility:

<u>Permit Number</u>	<u>Application Number</u>	<u>Date</u>	<u>Purpose</u>
19-3345	CL-3076	June 4, 2019	Installation of Hurst process boiler.

- 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-3227. Public notice for ADP Application CL-3227 was published on the SWCAA internet website for a minimum of (15) days beginning on March 29, 2023.
- 14.b Public/Applicant Comment for ADP Application CL-3227. 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 LaPel in conjunction with ADP Application CL-3227. After reviewing the checklist, SWCAA has made a Determination of Nonsignificance (DNS 23-018) concurrent with issuance of ADP 23-3577.