

DRAFT
ENGINEERING EVALUATION
SHERWIN-WILLIAMS Co. #4394, Plant 18468
Application 16132

I. BACKGROUND

Sherwin-Williams has applied to obtain an Authority to Construct (AC) and/or a Permit to Operate (PO) for the following equipment:

S-1 Stationary Paint Blending Mixing Tank, 150 gallon capacity, Make: Fawcett, Model: 2.0 EM 48IT Electric Mixer with 150 gallon tub

at 1033 Montague St., San Leandro, CA 94577

Sherwin-Williams Company #4394 is a new retail store that will lease existing space in an industrial building and will sell to and blend surface coatings for various users. The operator from Sherwin-Williams store will blend finished coatings together to match or achieve desired colors. The mixing tank is subject to Rule 8-2 according to the Permit Handbook. The applicant estimated the maximum throughput of the 150 gallon mixing tank to be 117,000 gal/year and 39,000 gal/year of cleanup solvent at 3 batches/day (165 minutes per batch) with a store operating schedule of 8 hours/day, 5 days/week, 52 weeks/year.

The facility also contains the following exempt equipment:

(2) Clamp-on Air Mixers, 55 gallon capacity, Fawcett #OD-206

(18) Air Mixers with blades, 5-10 gallon capacity, Indco #IM-LM5-10, ¾ HP

(1) Air Mixer with blade, 20 and 30 gallon tanks with lid, Indco #IM-LMH20-30 1 ½HP

The above sources are exempt under Regulation 2-1-121.5 (Batch Mixers with a rated working capacity of 55 gallons or less).

(1) Spray Booth, #IDB-67-S Global Finishing Double Lab Spray Booth

The spray booth is used for quality assurance and quality control testing of the color of the paint blend by spraying a 2.5 ounce sample onto a small card. The spray booth is exempt under Regulation 2-1-126.2 (Bench Scale laboratory equipment or processes used exclusively for chemical or physical analyses or experimentation, quality assurance and quality control testing, research and development, or similar bench scale equipment, excluding pilot plants).

(2) Lab Ovens, #49A650 Precision Quincy

These ovens are electrically heated and are exempt under Regulation 2-1-119.4 (An oven associated with an exempt coating source, provided that the oven is electrically heated, or

the oven is fired exclusively with natural gas, liquefied petroleum gas (e.g. propane, butane, isobutene, propylene, butylenes, and their mixture) and the maximum firing rate is less than 10 million BTU per hour).

II. EMISSION CALCULATIONS

Emissions from S-1 are calculated below, assuming 1.5% POC and NPOC emission loss per AP-42, Section 6.4.1 Paint Manufacturing.

Emissions and Total Throughput Summary:

Basis: 150 gal/batch
 165 min/batch, 8 hours/day = 3 batches/day max
 5 day/week, 52 week/year = 780 batches/yr = 117,000 gallons/yr
 7.5 lb/gal paint
 1.5% VOC emission loss (from EPA AP-42) from paints
 0.5% NPOC emission loss from cleanup solvent
 2 charging steps per use of cleanup solvent
 50 gallons of cleanup solvent per batch of paint mixed
 6.59 lb/gal acetone

Annual emissions:

POC annual emissions:

$(117,000 \text{ gal paint mixed/yr})(7.5 \text{ lb/gal paint})(0.015 \text{ lb VOC emitted/lb paint})(0.55 \text{ lb POC/lb VOC})$
 = **7,239.3 lb/yr or 3.620 TPY POC**

NPOC annual emissions:

From paint = $(117,000 \text{ gal paint mixed/yr})(7.5 \text{ lb/gal paint})(0.015 \text{ lb VOC emitted/lb paint})(0.45 \text{ lb NPOC/lb VOC}) = 5,923.1 \text{ lb/yr NPOC}$

From cleanup solvent = $(780 \text{ batch paint mixed/yr})(50 \text{ gal acetone/clean-up batch})(2 \text{ clean-up batch/batch paint mixed})(6.59 \text{ lb/gal acetone})(0.005 \text{ lb NPOC emitted/lb acetone}) = 2,570.1 \text{ lb/yr NPOC}$

Total from paint and cleanup solvent = **8493.2 lb/yr or 4.247 TPY NPOC**

Maximum Daily emissions:

POC daily emissions:

$(150 \text{ gal/batch})(3 \text{ batch/day})(7.5 \text{ lb/gal paint})(0.015 \text{ lb VOC emitted/lb paint})(0.55 \text{ lb POC/lb VOC})$

= 27.84 lb/day POC

NPOC daily emissions:

From paint = (150 gal/batch)(3 batch/day)(7.5 lb/gal paint)(0.015 lb VOC emitted/lb paint)(0.45 lb NPOC/lb VOC) = 22.78 lb/day NPOC

From cleanup solvent = (3 batch/day)(50 gal acetone/clean-up batch)(2 clean-up batch/batch paint mixed)(6.59 lb NPOC/gal acetone)(0.005 lb NPOC emitted/lb NPOC) = 9.885 lb/day NPOC

Total from paint and cleanup solvent = **32.67 lb/day NPOC**

III. PLANT CUMULATIVE INCREASE

Sherwin-Williams Company #4394 at 1033 Montague St., San Leandro, CA 94577 is a new facility. Therefore, the District’s database does not contain information on existing emissions at the plant. Table 1 summarizes the cumulative increase in criteria pollutant emissions that will result from the operation of S-1.

Table 1

Pollutant	Current plant emissions (TPY)	Increase in plant emissions associated with this application (TPY)	Cumulative emissions (Current + Increase) (TPY)
NOx	0	0	0
POC	0	3.62	3.62
NPOC	0	4.25	4.25
CO	0	0	0
PM10	0	0	0
SO2	0	0	0

IV. TOXIC SCREENING ANALYSIS

A "Risk Screening Analysis Questionnaire" form was not required with this application since none of the toxic cutoff levels were exceeded. Table 2 and Table 3 summarize the toxic air contaminants found in the coatings and the risk trigger levels from Regulation 2-5, Table 2-5-1.

Table 2

<u>Toxic Pollutant Emitted</u>	<u>Emission Rate (lb/yr)</u>	<u>Chronic Risk Screen Trigger (lb/yr)</u>	<u>Risk Screen Triggered?</u>
2-Butoxyethanol	6	-	no
Ethylbenzene	43	77,000	no
Formaldehyde	2	27,000	no
Methanol	518	150,000	no
Methyl Ethyl Ketone	67	39,000	no
Naphthalene	1	5.3	no
Toluene	36	12,000	no
Xylenes	221	27,000	no

Table 3

<u>Toxic Pollutant Emitted</u>	<u>Emission Rate (lb/hr)</u>	<u>Acute Risk Screen Trigger (lb/hr)</u>	<u>Risk Screen Triggered?</u>
2-Butoxyethanol	0.0023	-	no
Ethylbenzene	0.0172	-	no
Formaldehyde	0.0009	-	no
Methanol	0.2065	62	no
Methyl Ethyl Ketone	0.0266	29	no
Naphthalene	0.0005	-	no
Toluene	0.0145	82	no
Xylenes	0.0881	49	no

To calculate hourly emission rate of Toxic Air Contaminants, total operating time was used. Each yearly emission rate was divided by the number of operating hours per year to estimate hourly emission rate.

$$\begin{aligned} \text{Operating time} &= (165 \text{ min/batch})(1\text{hr}/60\text{min})(3\text{batch/day})(5\text{day/wk})(52\text{wk/yr}) \\ &= 2145 \text{ hr/yr} \end{aligned}$$

V. BEST AVAILABLE CONTROL TECHNOLOGY

S-1 triggers BACT since the emission rates of POC and NPOC are above 10 pounds per highest day. The District BACT/TBACT workbook does not currently address paint mixers. Sherwin-Williams Co. #4394 will supply paints to meet customer demands. BACT(1) for VOC control would be the use of a thermal oxidizer, catalytic oxidizer, or carbon adsorber. According to the

District’s program to determine cost-effectiveness, CON-COST, the cost-effectiveness of these options would be as follows:

Table 4

Control Device	Cost (\$/ton POC)	Cost-effectiveness threshold (\$/ton)	Cost-effective?
Thermal oxidizer	57,545	17,500	no
Catalytic oxidizer	34,645	17,500	no
Carbon adsorber	21,435	17,500	no

Table 5

Control Device	Cost (\$/ton NPOC)	Cost-effectiveness threshold (\$/ton)	Cost-effective?
Thermal oxidizer	49,015	17,500	no
Catalytic oxidizer	29,510	17,500	no
Carbon adsorber	22,283	17,500	no

As seen in Tables 4 and 5 above, these control devices would not be cost-effective for this operation. BACT(2) is the use of water-based paints when they meet customer demands, and the use of an NPOC cleanup solvent, which Sherwin-Williams Co. #4394 will use.

VI. OFFSETS

Sherwin-Williams Co. #4394 is a new facility. Table 4 summarizes the increase in criteria pollutant emissions that will result in the operation of S-1.

Pollutant	Increase in Emissions At Plant Since April 5, 1991 (TPY)	Increase in Emissions Associated With This Application (TPY)	Total Emissions (Post 4/5/91 + Increase) (TPY)	Regulation 2-2-302 and 2-2-303 Offset Triggers (TPY)
NOx	0	0	0	> 10; < 35
POC	0	3.62	3.62	> 10; < 35
NPOC	0	4.25	4.25	N/A
CO	0	0	0	N/A
PM10	0	0	0	> 1
SO2	0	0	0	> 1

It can be seen from Table 4 above that S-1 does not trigger any offset. Therefore, offsets are not warranted for any emission.

VII. STATEMENT OF COMPLIANCE

S-1 is subject to the POC emission standards of Regulation 8-2-301. S-1 is expected to comply with the standard because although the POC emissions may exceed 15 lbs per day, the concentration of total carbon on a dry basis is not expected to exceed 300 ppm.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors as described in the District's Permit Handbook Chapter 11.9 and therefore is not discretionary as defined by CEQA.

This project is less than 1,000 ft from the nearest public school and is therefore subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screening analysis is not required because emissions of toxic air contaminants did not exceed risk trigger levels in Table 2-5-1.

Offsets, PSD, NSPS, and NESHAPS do not apply.

VIII. PERMIT CONDITIONS

CONDITION #23718

SHERWIN-WILLIAMS Co. #4394, Plant 18468

Application 16132

S-1 Stationary Paint Blending Mixing Tank, 150 gallon capacity

1. The owner/operator of S-1 Stationary Paint Blending Mixing Tank shall not exceed the following usage limits during any consecutive twelve-month period:

- a. 117,000 gallons of paint or varnish
- b. 39,000 gallons of acetone cleanup solvent

(Basis: Cumulative Increase)

2. The owner/operator may use an alternate material(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:

- a. Total POC emissions from S-1 do not exceed 7,240 pounds in any consecutive twelve month period;
- b. Total NPOC emissions from S-1, which includes the paint mixing operation and tank cleaning, do not exceed 8,494 pounds in any consecutive twelve month period; and

- c. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.

(Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

- a. Quantities of each type of coating and cleanup solvent used at this source on a quarterly basis.
- b. POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 3, on a quarterly basis;
- c. Quarterly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.

All records shall be retained on-site for two years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations. (Basis: Cumulative Increase; Toxics, Regulation 1-441)

IX. RECOMMENDATION

Issue a conditional Authority to Construct to Sherwin-Williams Co. #4394 for:

S-1 Stationary Paint Blending Mixing Tank, 150 gallon capacity

DATE: 9/20/07

*Kathleen Truesdell
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