



NPDES Pretreatment Compliance Sampling Inspection Report

Standard Printed Circuits, Inc.

44 South Main Street
Sherburne, New York 13460

40 CFR Parts 403 & 413.84(b)
SIU Permit: #3

February 23, 2022

Report Prepared by:

THUAN TRAN Digitally signed by THUAN TRAN
Date: 2022.04.20 08:35:04 -04'00'

Thuan Tran, Physical Scientist

Date: _____

Report Approved by:

ROBERT MORRELL Digitally signed by ROBERT
MORRELL
Date: 2022.04.20 09:36:11 -04'00'

Robert Morrell, Acting Chief
Monitoring Operations Section

Date: _____

1.0 OBJECTIVE

On February 23, 2022, at the request of the Enforcement and Compliance Assurance Division (ECAD), a Pretreatment Compliance Sampling Inspection (CSI) was conducted at Standard Printed Circuits, Inc. in Sherburne, New York. The objective of the Pretreatment CSI was to gather information necessary to determine compliance with the requirements and limitations of 40 CFR Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollution, and 40 CFR Part 413.84(b) – Electroplating Point Source Category, Subpart H – Printed Circuit Board Subcategory Pretreatment Standards for Existing Sources, as well as the Standard Industrial User permit from the Village of Sherburne WWTP.

2.0 KEY PARTICIPANTS

Listed below are key inspection participants and contact information, grouped by organization.

U.S. Environmental Protection Agency
Thuan Tran; Physical Scientist, Lead Inspector
732-321-445; Email: tran.thuan@epa.gov
Kathleen Savino, Physical Scientist

Standard Printed Circuits, Inc.
Kevin Johnson, General Manager
607-674-2741; Email: kevin@standardpc.com
Steve Lee, Wet Process Supervisor
David Barker; Pretreatment System Manager
Duane Coughlin; Production Operator

3.0 FACILITY DESCRIPTION

3.1 General Information

Standard Printed Circuits, Inc., located at 44 South Main Street in Sherburne, New York, began operations in 1967 and occupies a 15,000 square foot manufacturing facility. Standard Printed Circuits, Inc. is an independently owned manufacturer of rigid printed circuit boards up to 14 layers and is categorized as Standard Industrial Classification (SIC) 3351 for Rolling, Drawing, and Extruding of Copper and the North American Industry Classification System (NAICS) 331420 for Copper Rolling, Drawing, Extruding, and Alloying. The company serves the communication, military, and medical sectors. Standard Printed Circuits, Inc. employs 18 personnel and operates 7:00AM to 4:30PM from Monday to Friday.

3.2 Process Information

The printed circuit board consists of patterns of conductive material such as copper (Cu) formed on a non-conductive base that contains all the conductive materials. The facility is a “bare-board manufacturer” that produces boards with no components installed on them as specified by the clients so they may install components on the completed products at their facilities.

The manufacturing process begins with the double-sides Cu-clad board consisting of a fiberglass laminate. The process can be characterized with the following generic phases that may vary with each specified custom product:

1. Shear laminated into panels that become the customized boards.
2. Arrange and mark-up panel for the boards to fit on it and that will later be cut out.
3. Computer-assisted drilling for each panel with customer-specified hole configurations provided by customer software.
4. Deburr panel by a dry, mechanical process done manually and rinse.
5. Scrub panel and rinse.
6. Direct metallization is used to coat the holes using an organic inductive polymer process that creates a protective film.
7. Panel undergoes the photoimaging process (lamine, expose, develop) by:
 - a. Adhering the circuit pattern to the board.
 - b. Shining UV light to adhere circuit pattern.
 - c. Removing unexposed film so that bare metal surfaces are ready to be plated after a series of rinses.
8. Board electrolytically Cu-plated, rinsed, and dried with air knife.
9. Board electrolytically tin/lead (Sn/Pb) plated and rinsed, then step 10 or.
10. Board electrolytically nickel/gold (Ni/Au) plated or rinsed.
11. Board has remaining film stripped.
12. Board is etched via several rinses to remove excess Cu in areas of Sn/Pb.
13. Board is rinsed and dried.
14. Hot Air Solder Level (HASL).
15. Solder mask legend is applied.
16. Board is routed for electrical testing, inspection, and shipping.

Standard Printed Circuits, Inc. business is mostly on a “per order basis” involving custom-made products but they produce some inventory of selected finished products. Most process tanks are dip tanks (manually operated), and semi-automated, except the etching process which is automated with conveyers. The facility also has a press room to manufacture multi-layer boards up to 14 double-sided printed circuits that can be laminated together into one multi-layer board as required by customer specifications.

The facility receives water from the Village of Sherburne. No further treatment is necessary for use in the manufacturing operation. Process wastewater is generated from eleven different locations within the manufacturing operation. They are as followed:

1. Plating Room
2. Wet Rack
3. Multiple-Layer Press
4. Solder Stripping
5. Etching
6. Tin/Lead Plating
7. Copper Plating
8. Pre-Line Rinse before Micro Tech/H₂SO₄ Bath
9. Small Scale Plating Rinse
10. Developer
11. Micro-Etching

Process waste streams are conveyed to the floor drains, then flow into sump pits that are level controlled. The process wastewater is pumped to the final receiving sump pit in the waste treatment room where it is pumped into Equalization Tank #1. Sodium hydroxide (NaOH) and polymers are added into Equalization Tank #1 for pH adjustment and increased coagulation of solids while continuously mixing. The wastewater continues to Equalization Tank #2 where sodium hydroxide can be added, if necessary, to achieve the pH range between 7-9 Standard Units (SU). From Equalization Tank #2, the wastewater is pumped to the flocculation tank where a flocculant is mixed with the wastewater. The homogenized wastewater continues to the Lamella clarifier to allow for phase separation. The effluent from the clarifier discharges into the monitoring tank where copper and pH are monitored before discharging into the Village of Sherburne sewer collection system.

Solids accumulated in the Lamella clarifier are pumped to the Plate-and-Frame Filter Press. The dewatered sludge is considered class F006 hazardous waste and is transported to World Resources Inc., in Pottsville, PA for recovery. The filtrate from the filter press is directed to the head of the On-Site Pretreatment System.

3.3 Facility Self-Monitoring Information

Microbac Laboratories, Inc., located at 3821 Buck Drive, Cortland, NY, provides Standard Printed Circuits, Inc. with preserved and unpreserved sample containers and the chain of custody. Compliance samples are collected from the On-Site Pretreatment System monitoring tank by a facility employee. Samples are collected for cyanide (amendable to chlorine), metals (cadmium, chromium, copper, lead, and nickel), non-volatile

organic analytes (NVOAs), pesticides and polychlorinated biphenyls (PCBs), oil & grease (O&G), hydrogen ion (pH), and volatile organic analytes (VOAs).

The samples and chain of custody are packed inside the sample cooler and delivered to the laboratory for analysis.

On-site samples for pH, Temperature and Total Residual Chlorine (TRC) are not analyzed.

4.0 EPA SAMPLING/INSPECTION ACTIVITIES

4.1 Sampling Activities

An ISCO automatic composite sampler was programmed to take 32 sample aliquots during the 8-hour sampling event from the On-Site Pretreatment System at the effluent monitoring location. The 8-hour composite sample was collected and analyzed for cyanide (amendable to chlorine) and metals (cadmium, chromium, copper, lead, and nickel). Grab-composite samples were collected and analyzed for non-volatile organic analytes (NVOAs), pesticides and polychlorinated biphenyls (PCBs). Multiple grab samples (3Xs) were collected for volatile organic analytes (VOAs) throughout the sampling day. The VOA grab samples were composited in the laboratory. A grab sample was collected and analyzed for Oil and Grease (O&G).

On-site grab samples of the pretreated effluent were collected and analyzed for pH, Temperature and Total Residual Chlorine (TRC).

All sample containers, preservation techniques and holding times were in accordance with USEPA requirements specified in 40 CFR Part 136. Signed and dated custody seals were placed across the lids and along the sides of the sample containers. The custody sealed sample containers were placed inside plastic sample bags and sealed up. All samples were transported on ice to the USEPA Laboratory in Edison, New Jersey for analysis.

Split samples were collected and given to the facility representative.

4.2 Inspection Activities

A Pretreatment Compliance Sampling Inspection at Standard Printed Circuits, Inc. was conducted on February 23, 2022. The inspectors met with Kevin Johnson; General Manager, Steve Lee; Wet Process Supervisor, David Baker; Pretreatment System Manager, and Duane Coughlin; Production Operator. Inspector's credentials were shown, and business cards were provided. The facility's representatives were informed that the inspection purpose with supporting on-site activities was to determine if Standard Printed Circuits, Inc. is in compliance with the General Pretreatment Regulations for Existing and New Sources of Pollution in 40 CFR Part 403, the Electroplating Point Source: Subpart H – Printed Circuit Board in 40 CFR Part 413.84(b), and the Village of Sherburne Wastewater Treatment Plant 2022 Standard Industrial User Discharge Permit.

Supporting on-site activities consist of collecting samples of the pretreated process wastewater effluent at the monitoring location, observing and evaluating the monitoring location, observing and evaluating the facility's sampling protocol, touring and evaluating

the manufacturing operation process, touring the On-Site Pretreatment System, reviewing and evaluating Microbac Laboratories, Inc. chain-of-custody, sample containers, sample preservation and holding time; and their analytical data, as well as interviewing the facility's representatives.

The facility's representatives were briefed on the inspection activities throughout the inspection and during the closing conference. On-site sample results and concerns discovered during the inspection were communicated and shown to the facility representatives so that they understand their responsibilities to comply with the federal regulations, as well as the conditions and limitations set forth in the Village of Sherburne Wastewater Treatment Plant 2022 Standard Industrial User Discharge Permit.

5.0 ANALYTICAL RESULTS

Standard Printed Circuits, Inc. Wednesday, February 23, 2022

Parameter	Units	40 CFR Part 413.84(b)	SIU Permit Limit	EPA Result
Flow	GPD	<10,000	----	481
Cadmium (Cd)	mg/l	1.2	1.00 (Daily Max.)	U
Chromium (Cr)	mg/l	----	2.00 (Daily Max.)	U
Copper (Cu)	mg/l	----	5.00 (Daily Max.)	1.31
Lead (Pb)	mg/l	0.6	----	0.0657
Nickel (Ni)	mg/l	----	2.00 (Daily Max.)	U
Cyanide, Amendable to Cl ₂	mg/l	5.0	----	U
pH	SU	=/> 5.0	>6.0 - <9.0	8.17
Temperature	°C (°F)	</= 40 (104)	----	15
O&G	mg/l	Cause for interference	50.00 (Daily Max.)	U
TTO	mg/l	4.57	----	U
VOAs	mg/l	----	----	U J
NVOAs	mg/l	----	----	U L
Pesticides/PCBs	mg/l	----	----	U

Notes: U- The analyte was not detected at or above the Reporting Limit.

J- The identification of the analyte is acceptable; the reported value is an estimate.

L- The identification of the analyte is acceptable; the reported value may be biased low.

6.0 FINDINGS

6.1 Sampling Result Findings

The EPA analytical results obtained during this inspection are within the acceptable limits.

6.2 Inspection Findings

In addition to the sampling, an inspection of the facility operation was conducted as discussed in Section 4.2 above. During this inspection the following observations were noted which may contravene the requirements of the permit or the applicable regulations:

6.2.1 Composite sample is manually collected through-out the workday. Each manually grabbed sample aliquot is collected every hour is transferred into the four clear glass jugs. At the end of the workday, the four clear glass jugs would be considered as an 8-hour manually composited sample. During the sampling process, the clear glass jugs are left on the ground between the Lamella clarifier and the monitoring tank unrefrigerated. According to footnote #2 of Table II – Required Containers, Preservation Techniques, and Holding Times under 40 CFR Part 136, it states, “*For a composite sample collected with an automated sample (e.g. using a 24-hour composite sample; see 40 CFR 122.21(g)(7)(i) or 40 CFR part 403, appendix E), refrigerate the sample at $\leq 6^{\circ}\text{C}$ during collection unless specified otherwise in this table II or in the method(s).*”

6.2.2 According to the Microbac Laboratory analytical package dated Thursday, June 10, 2021, compliance pH sample was collected on April 30th and analyzed on May 6th. This is incorrect. According to 40 CFR Part 136 Table II – Required Containers, Preservation Techniques, and Holding Times, hydrogen ion (pH) must be “*analyze within 15 minutes.*”

6.2.3 Temperature is not being monitored. According to the General Pretreatment Regulations for New and Existing Sources under 40 CFR Part 403.5(b)(5), it states, “*... in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40°C (104°F) unless the Approval Authority, upon request of the POTW, approves alternate temperature limit.*” Furthermore, in accordance with 40 CFR Part 136 Table II – Required Containers, Preservation Techniques, and Holding Times, temperature must be “*analyzed within 15 minutes.*”

7.0 ATTACHMENTS

Attachment #1. The facility layout shows where operation processes are located.

Attachment #2. On-Site Pretreatment System treats process wastewater before discharging into the Village of Sherburne sewer collection system.

Attachment #3. Samples with the chain of custody were checked into the USEPA Region 2 Laboratory on Thursday, February 24, 2022.

Attachment #4. The USEPA Analytical Data Package for the Standard Printed Circuits, Inc. sampling inspection was received on March 15, 2022.

8.0 PHOTOGRAPHS

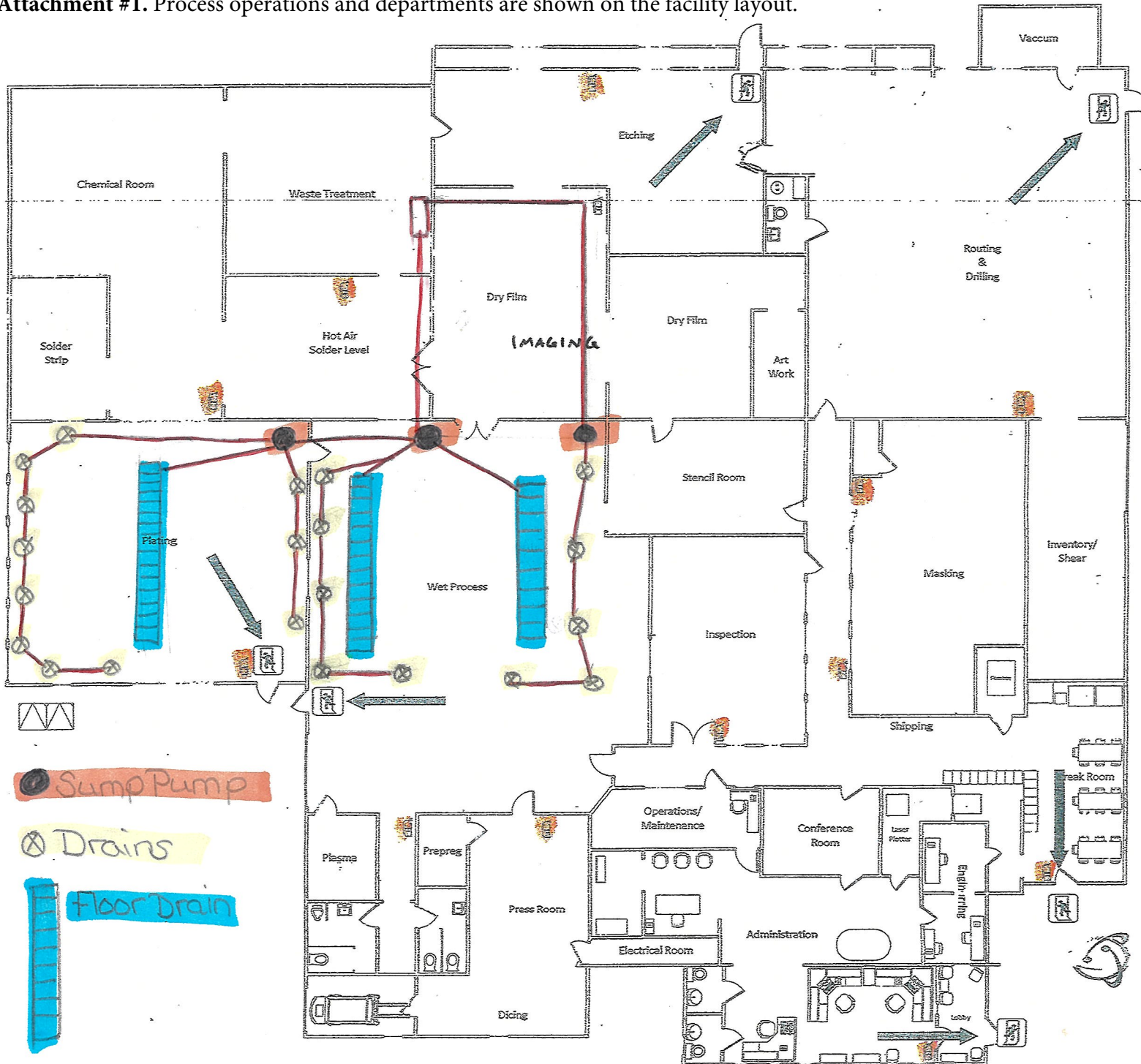
Photo #1. Generated process wastewater is directed into the final sump pit in the waste treatment room before pumping into Equalization Tank #1.

Photo #2. Compliance samples are collected of the pretreated effluent in the Discharge Tank.

7.0 Attachments

FACILITY LAYOUT

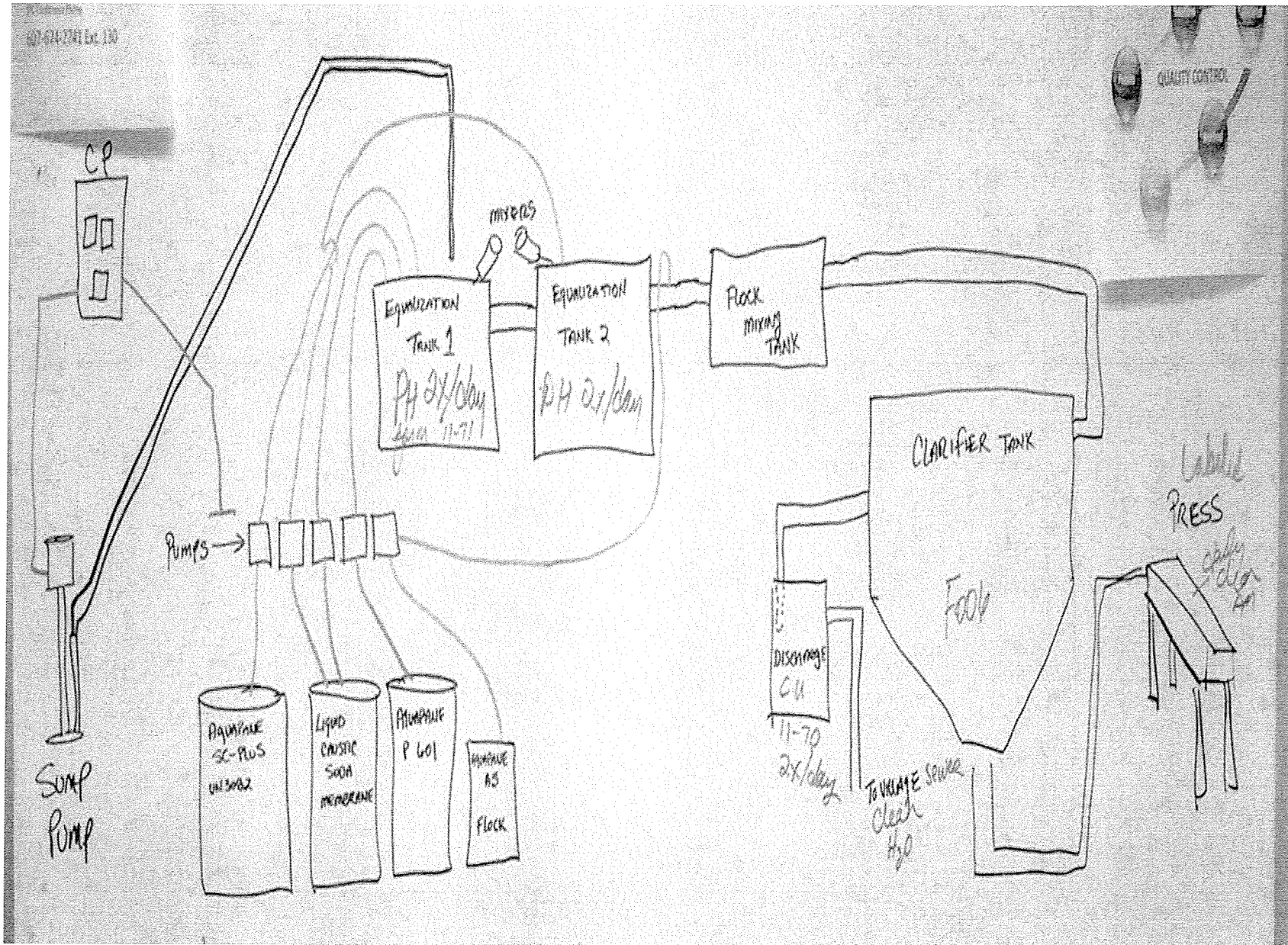
Attachment #1. Process operations and departments are shown on the facility layout.



SPC
Standard Printed Circuits, Inc.
Building today for the needs of tomorrow

44 South Main Street
Sherburne, NY 13460
607-674-2741

Attachment #2. Generated process wastewater is pretreated by the On-Site Pretreatment System before discharging into the sewer collection system.



US EPA REGION 2 LABORATORY
CHAIN OF CUSTODY/ FIELD DATA FORM

SURVEY NAME & LOCALITY Standard Printed Circuits, Inc.

PROJECT LEADER Thuan Tran

PROGRAM: SF :

SITE ID _____

OPERABLE UNIT _____

PROGRAM RESULTS CODE _____

Decision Unit Code Y206 RCRA D210 RCRA ENF D307 NPDES B304 SDWA C215 AM B224 CAA A305 TSCA L306 OD B253 FIFRA CRIMINAL ENF

LAB ID/ FIELD ID	CONTERS # OF	MATRIX	CHECK IF SPLIT SAMPLE	DESCRIPTION & INSTRUCTIONS INCLUDING LOCATION, ESTIMATED CONCENTRATIONS, SPECIAL REPORTING LIMITS,	Res CL Checked	Preservative (circle)	Collection Time (24hr clock)		Collection Date mm/dd/yy
							Begin	End	
Pretreated Discharge - Comp	2	A	<input checked="" type="checkbox"/>	1,250-ml plastic bottle: Metals* 8-Hr Comp <u>220210-01</u>	<input checked="" type="checkbox"/>	02	8:00AM	3:30PM	2/23/2022
		A	<input checked="" type="checkbox"/>	1,250-ml plastic bottle: Cyanide* 8-Hr Comp <u>-01</u>	<input checked="" type="checkbox"/>	05	8:00AM	3:30PM	2/23/2022
Pretreated Discharge - G-C	6	A	<input checked="" type="checkbox"/>	3, 1-liter amber jars: PCBs/Pest. Grab-Comp <u>-02</u>	<input checked="" type="checkbox"/>	0	8:35AM	2:40PM	2/23/2022
		A	<input checked="" type="checkbox"/>	3, 1-liter amber jars: NVOAs Grab-Comp <u>-02</u>	<input checked="" type="checkbox"/>	0	8:35AM	2:40PM	2/23/2022
Pretreated Discharge - Grab	12	A	<input checked="" type="checkbox"/>	3, 40-ml glass vials: VOA Grab #1 <u>-03</u>	<input checked="" type="checkbox"/>	0	8:35AM		2/23/2022
		A	<input checked="" type="checkbox"/>	3, 40-ml glass vials: VOA Grab #2 <u>-04</u>	<input checked="" type="checkbox"/>	0	11:15AM		2/23/2022
		A	<input checked="" type="checkbox"/>	3, 40-ml glass vials: VOA Grab #3 <u>-05</u>	<input checked="" type="checkbox"/>	0	2:40PM		2/23/2022
		A	<input checked="" type="checkbox"/>	3, 1-L WM clear glasses: O&G Grab <u>-05</u>	<input checked="" type="checkbox"/>	03	2:40PM		2/23/2022
TRIP BLANK	3	A	<input type="checkbox"/>	3, 40-ml glass vials: VOA Grab <u>-06</u>	<input type="checkbox"/>	0	9:38AM		2/22/2022
				<u>Lab Composite Grab #1 thru Grab #3 - VOA</u>	<input type="checkbox"/>	012345678910			

COMMENTS & SPECIAL REQUIREMENTS:

NOTES: Metals* : Cd, Cr, Cu, Pb & Ni.

Cyanide*: Amendable to Chlorine

VOA Grab #1 thru Grab #3 samples are to be laboratory composite.

Preservative Added & Checked
 0=ice 7=FAS
 1=H2SO4 pH<2 8=ZnAc
 2=HNO3 pH<2 9=NaOH pH>12
 3=HCl pH<2 10=NH4Cl
 4=Na2S2O3
 5=NaOH pH>9
 6=Ascorbic Acid

Person Assuming Responsibility for Sample(s):	Time	Date
<i>[Signature]</i>	2:46 pm	2/23/22
<i>[Signature]</i>	14:40	2/24/22
Relinquished By:		
Received By:		
Relinquished By:		
Received By:		
Relinquished By:		
Received By:		

Matrix:
 A=aqueous F=multiphasic
 B=aqueous (chlorinated) G=solvent
 C=soil H=biota
 D=sediment I=oil
 E=sludge J=other

Survey Complete? Y N

Dissect from sampling, chain initiated. 2/24/22

Attachment #4. The USEPA Analytical Data Package was received on March 15, 2022.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**Region 2 Laboratory
2890 Woodbridge Avenue
Edison , New Jersey 08837
732-906-6886 Phone
732-906-6165 Fax**

March 14, 2022

Thuan Tran
Monitoring & Assessment Branch
LSASD/MAB
Edison, NJ 08837

RE: Standard Printed Circuits, Inc - 2202010

Enclosed are the results of analyses for samples received by the laboratory on 02/24/2022. The signature below reflects the laboratory's approval of the reported results. If you have any questions concerning this report, please refer to Project Number 2202010 and contact the laboratory.

Sincerely,

A handwritten signature in black ink that reads "James Ferretti". The signature is written in a cursive style.

James Ferretti
Acting Chief, LSASD/LB



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Project Narrative:

The National Environmental Laboratory Accreditation Conference Institute (TNI) is a voluntary environmental laboratory accreditation association of State and Federal agencies. TNI established and promoted a National Environmental Laboratory Accreditation Program (NELAP) that provides a uniform set of standards for the generation of environmental data that are of known and defensible quality. The EPA Region 2 Laboratory is NELAP accredited. The Laboratory tests that are accredited have met all the requirements established under the TNI Standards.

Condition Comments

None

Comment(s):

The "Sample Analysis Date and Time" is included in the results section for any analyte with a prescribed holding time of 72 hours or less.

Sample 2202010-01 was analyzed for **Cyanide Amenable To Chlorination**. The result of the first analysis was a negative value. This was due to a higher cyanide result for the chlorinated aliquot than for the unchlorinated aliquot. A second aliquot of sample was distilled and analyzed for Cyanide Amenable To Chlorination and a negative value was obtained for this aliquot as well. Method 4500-CN- G states "Some unidentified organic chemicals may oxidize or form breakdown products during chlorination, giving higher results for cyanide after chlorination than before chlorination. This may lead to a negative value for cyanides amenable to chlorination after distillation for wastes from, for example, the steel industry, petroleum refining, and pulp and paper processing. Where such interferences are encountered use Method 4500-CN- I for determining dissociable cyanide."

The Laboratory reported the "negative" result for the Cyanide Amenable To Chlorination as not detected at a reporting limit of 5 ug/L.

Data Qualifier(s):

- U- The analyte was not detected at or above the Reporting Limit.
- J- The identification of the analyte is acceptable; the reported value is an estimate.
- K- The identification of the analyte is acceptable; the reported value may be biased high.
- L- The identification of the analyte is acceptable; the reported value may be biased low.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NJ- There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
The reported value is an estimate.

Reporting Limit(s):

The Laboratory was able to achieve the standard laboratory reporting limits, where applicable, for each analyte requested except for the following analyte(s):

NVOA GCMS

The reporting level of 5.00 ug/L was raised to 10 ug/L for the following analyte(s):

Pentachlorophenol

for the following samples:

2202010-02

The reporting level of 5.00 ug/L was raised to 30 ug/L for the following analyte(s):

4,6-Dinitro-2-Methylphenol

for the following samples:

2202010-02

The reporting level of 5.00 ug/L was raised to 50 ug/L for the following analyte(s):

2,4-Dinitrophenol

for the following samples:

2202010-02



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
Pretreated Discharge - Comp	2202010-01	Aqueous	02/23/2022 15:30	02/24/2022 14:00
Pretreated Discharge - G-C	2202010-02	Aqueous	02/23/2022 14:40	02/24/2022 14:00
Pretreated Discharge - Grab#3	2202010-05	Aqueous	02/23/2022 14:40	02/24/2022 14:00
TRIP BLANK	2202010-06	Aqueous	02/23/2022 09:38	02/24/2022 14:00
Lab Composite-Grab#1 thru Grab#3	2202010-07	Aqueous	02/24/2022 00:00	02/24/2022 14:00



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

SUMMARY REPORT FOR METHODS

Analysis	Method	Certification	Matrix
608.3 Pesticides/PCBs-NPDES	EPA 608.3 SOP C-91 Rev 4.3	NELAP	Aqueous
624.1 VOA EPA-NPDES	EPA 624.1 SOP C-89 Rev 3.6	NELAP	Aqueous
625.1 SVOA NPDES	EPA 625.1 SOP C-90 Rev 3.8	NELAP	Aqueous
Cyanide Amenable To Chlorination	EPA 335.4 SOP C-28 Rev 2.7		Aqueous
Metals ICP TAL NPDES/DW	EPA 200.7 SOP C-109 Rev 3.6	NELAP	Aqueous
Oil & Grease	EPA 1664A SOP C-126 Rev 1.6	NELAP	Aqueous



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Analyte	Result	Qualifier	Reporting Limit	Units	Batch	Date and Time of Analysis*
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Field ID: Pretreated Discharge - Comp

Sample ID: 2202010-01

Metals ICP

Cadmium	---	U	3.00	ug/L	B202100	
Chromium	---	U	5.00	ug/L	B202100	
Copper	1310		10.0	ug/L	B202100	
Lead	65.7		8.00	ug/L	B202100	
Nickel	---	U	20.0	ug/L	B202100	

Sanitary

Cyanide Amenable To Chlorination	---	U	10.0	ug/L	B202098	
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Field ID: Pretreated Discharge - G-C

Sample ID: 2202010-02

NVOA GCMS

Acenaphthene	---	U	5.15	ug/L	B202101	
Acenaphthylene	---	U	5.15	ug/L	B202101	
Anthracene	---	U	5.15	ug/L	B202101	
Benzo(A)Anthracene	---	U	5.15	ug/L	B202101	
Benzo(A)Pyrene	---	U	5.15	ug/L	B202101	
Benzo(B)Fluoranthene	---	U	5.15	ug/L	B202101	
Benzo(G,H,I)Perylene	---	U	5.15	ug/L	B202101	
Benzo(K)Fluoranthene	---	U	5.15	ug/L	B202101	
Chrysene	---	U	5.15	ug/L	B202101	
Dibenzo(A,H)Anthracene	---	U	5.15	ug/L	B202101	
Fluoranthene	---	U	5.15	ug/L	B202101	
Fluorene	---	U	5.15	ug/L	B202101	
Indeno(1,2,3-Cd)Pyrene	---	U	5.15	ug/L	B202101	
Naphthalene	---	U	5.15	ug/L	B202101	
Phenanthrene	---	U	5.15	ug/L	B202101	
1,2,4-Trichlorobenzene	---	U	5.15	ug/L	B202101	
2,4,6-Trichlorophenol	---	U L	5.15	ug/L	B202101	
2,4-Dichlorophenol	---	U L	5.15	ug/L	B202101	
2,4-Dimethylphenol	---	U L	5.15	ug/L	B202101	
2,4-Dinitrotoluene	---	U	5.15	ug/L	B202101	



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Analyte	Result	Qualifier	Reporting Limit	Units	Batch	Date and Time of Analysis*
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Field ID: Pretreated Discharge - G-C

Sample ID: 2202010-02

NVOA GCMS

2,6-Dinitrotoluene	---	U	5.15	ug/L	B202101	
2,4-Dinitrophenol	---	U	51.5	ug/L	B202101	
2-Chloronaphthalene	---	U	5.15	ug/L	B202101	
2-Chlorophenol	---	U L	5.15	ug/L	B202101	
2-Nitrophenol	---	U L	5.15	ug/L	B202101	
3,3'- Dichlorobenzidine	---	U	5.15	ug/L	B202101	
4,6-Dinitro-2-Methylphenol	---	U	30.9	ug/L	B202101	
4-Bromophenyl-Phenylether	---	U	5.15	ug/L	B202101	
4-Chloro-3-Methylphenol	---	U L	5.15	ug/L	B202101	
4-Chlorophenyl-Phenylether	---	U	5.15	ug/L	B202101	
4-Nitrophenol	---	U	5.15	ug/L	B202101	
Bis(-2-Chloroethoxy)Methane	---	U	5.15	ug/L	B202101	
Bis(2-Chloroethyl)Ether	---	U	5.15	ug/L	B202101	
Bis(2-Chloroisopropyl)Ether	---	U	5.15	ug/L	B202101	
Bis(2-Ethylhexyl)Phthalate	---	U	5.15	ug/L	B202101	
Butylbenzylphthalate	---	U	5.15	ug/L	B202101	
Azobenzene	---	U	5.15	ug/L	B202101	
Diethylphthalate	---	U	5.15	ug/L	B202101	
Dimethyl Phthalate	---	U	5.15	ug/L	B202101	
Di-N-Butyl Phthalate	---	U	5.15	ug/L	B202101	
Di-N-Octyl Phthalate	---	U	5.15	ug/L	B202101	
Hexachlorobenzene	---	U	5.15	ug/L	B202101	
Hexachlorobutadiene	---	U	5.15	ug/L	B202101	
Hexachlorocyclopentadiene	---	U	5.15	ug/L	B202101	
Hexachloroethane	---	U	5.15	ug/L	B202101	
Isophorone	---	U	5.15	ug/L	B202101	
Nitrobenzene	---	U	5.15	ug/L	B202101	
N-Nitrosodimethylamine	---	U	5.15	ug/L	B202101	
N-Nitroso-Di-N-Propylamine	---	U	5.15	ug/L	B202101	



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Project: Standard Printed Circuits, Inc - 2202010

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Analyte	Result	Qualifier	Reporting Limit	Units	Batch	Date and Time of Analysis*
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Field ID: Pretreated Discharge - G-C

Sample ID: 2202010-02

NVOA GCMS

N-Nitrosodiphenylamine	---	U	5.15	ug/L	B202101	
Pentachlorophenol	---	U	10.3	ug/L	B202101	
Phenol	---	U L	5.15	ug/L	B202101	
Pyrene	---	U	5.15	ug/L	B202101	

Pest/PCBs GC

alpha-BHC	---	U	0.002	ug/L	B202103	
gamma-BHC (Lindane)	---	U	0.002	ug/L	B202103	
beta-BHC	---	U	0.002	ug/L	B202103	
delta-BHC	---	U	0.002	ug/L	B202103	
Heptachlor	---	U	0.002	ug/L	B202103	
Aldrin	---	U	0.002	ug/L	B202103	
Heptachlor epoxide	---	U	0.002	ug/L	B202103	
Endosulfan I	---	U	0.002	ug/L	B202103	
4,4'-DDE	---	U	0.005	ug/L	B202103	
Dieldrin	---	U	0.005	ug/L	B202103	
Endrin	---	U	0.005	ug/L	B202103	
4,4'-DDD	---	U	0.005	ug/L	B202103	
Endosulfan II	---	U	0.005	ug/L	B202103	
4,4'-DDT	---	U	0.005	ug/L	B202103	
Endrin aldehyde	---	U	0.005	ug/L	B202103	
Endosulfan sulfate	---	U	0.005	ug/L	B202103	
Toxaphene	---	U	0.188	ug/L	B202103	
Chlordane	---	U	0.062	ug/L	B202103	
Aroclor 1016	---	U	0.031	ug/L	B202103	
Aroclor 1221	---	U	0.062	ug/L	B202103	
Aroclor 1232	---	U	0.031	ug/L	B202103	
Aroclor 1242	---	U	0.031	ug/L	B202103	
Aroclor 1248	---	U	0.031	ug/L	B202103	
Aroclor 1254	---	U	0.031	ug/L	B202103	



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Field ID: Pretreated Discharge - G-C

Sample ID: 2202010-02

Pest/PCBs GC

Aroclor 1260	---	U	0.031	ug/L	B202103	
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Field ID: Pretreated Discharge - Grab#3

Sample ID: 2202010-05

GC - Sanitary

Oil & Grease	---	U	6.70	mg/L	B202095	
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Field ID: TRIP BLANK

Sample ID: 2202010-06

VOA GCMS

Chloromethane	---	U	5.00	ug/L	B202099	
Vinyl Chloride	---	U	5.00	ug/L	B202099	
Bromomethane	---	U	5.00	ug/L	B202099	
Chloroethane	---	U	5.00	ug/L	B202099	
Trichlorofluoromethane	---	U	5.00	ug/L	B202099	
1,1-Dichloroethene	---	U	5.00	ug/L	B202099	
Methylene Chloride	---	U	5.00	ug/L	B202099	
Acrylonitrile	---	U	5.00	ug/L	B202099	
trans-1,2-Dichloroethene	---	U	5.00	ug/L	B202099	
1,1-Dichloroethane	---	U	5.00	ug/L	B202099	
Chloroform	---	U	5.00	ug/L	B202099	
1,1,1-Trichloroethane	---	U	5.00	ug/L	B202099	
Carbon Tetrachloride	---	U	5.00	ug/L	B202099	
1,2-Dichloroethane	---	U	5.00	ug/L	B202099	
Benzene	---	U	5.00	ug/L	B202099	
Trichloroethene	---	U	5.00	ug/L	B202099	
1,2-Dichloropropane	---	U	5.00	ug/L	B202099	
Bromodichloromethane	---	U	5.00	ug/L	B202099	
cis-1,3-Dichloropropene	---	U	5.00	ug/L	B202099	
Toluene	---	U	5.00	ug/L	B202099	
trans-1,3-Dichloropropene	---	U	5.00	ug/L	B202099	
1,1,2-Trichloroethane	---	U	5.00	ug/L	B202099	



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Project Number: 2202010

Analyte	Result	Qualifier	Reporting Limit	Units	Batch	Date and Time of Analysis*
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Field ID: TRIP BLANK

Sample ID: 2202010-06

VOA GCMS

Tetrachloroethene	---	U	5.00	ug/L	B202099	
Dibromochloromethane	---	U	5.00	ug/L	B202099	
Chlorobenzene	---	U	5.00	ug/L	B202099	
Ethylbenzene	---	U	5.00	ug/L	B202099	
Bromoform	---	U	5.00	ug/L	B202099	
1,1,2,2-Tetrachloroethane	---	U	5.00	ug/L	B202099	
1,3-Dichlorobenzene	---	U	5.00	ug/L	B202099	
1,4-Dichlorobenzene	---	U	5.00	ug/L	B202099	
1,2-Dichlorobenzene	---	U	5.00	ug/L	B202099	

Field ID: Lab Composite-Grab#1 thru Grab#3

Sample ID: 2202010-07

VOA GCMS

Chloromethane	---	U	5.00	ug/L	B202099	
Vinyl Chloride	---	U J	5.00	ug/L	B202099	
Bromomethane	---	U	5.00	ug/L	B202099	
Chloroethane	---	U	5.00	ug/L	B202099	
Trichlorofluoromethane	---	U J	5.00	ug/L	B202099	
1,1-Dichloroethene	---	U	5.00	ug/L	B202099	
Methylene Chloride	---	U	5.00	ug/L	B202099	
Acrylonitrile	---	U	5.00	ug/L	B202099	
trans-1,2-Dichloroethene	---	U	5.00	ug/L	B202099	
1,1-Dichloroethane	---	U	5.00	ug/L	B202099	
Chloroform	---	U	5.00	ug/L	B202099	
1,1,1-Trichloroethane	---	U	5.00	ug/L	B202099	
Carbon Tetrachloride	---	U	5.00	ug/L	B202099	
1,2-Dichloroethane	---	U	5.00	ug/L	B202099	
Benzene	---	U	5.00	ug/L	B202099	
Trichloroethene	---	U	5.00	ug/L	B202099	
1,2-Dichloropropane	---	U	5.00	ug/L	B202099	
Bromodichloromethane	---	U	5.00	ug/L	B202099	



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Project Number: 2202010

Analyte	Result	Qualifier	Reporting Limit	Units	Batch	Date and Time of Analysis*
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Field ID: Lab Composite-Grab#1 thru Grab#3

Sample ID: 2202010-07

VOA GCMS

cis-1,3-Dichloropropene	---	U	5.00	ug/L	B202099	
Toluene	---	U	5.00	ug/L	B202099	
trans-1,3-Dichloropropene	---	U	5.00	ug/L	B202099	
1,1,2-Trichloroethane	---	U	5.00	ug/L	B202099	
Tetrachloroethene	---	U	5.00	ug/L	B202099	
Dibromochloromethane	---	U	5.00	ug/L	B202099	
Chlorobenzene	---	U	5.00	ug/L	B202099	
Ethylbenzene	---	U	5.00	ug/L	B202099	
Bromoform	---	U	5.00	ug/L	B202099	
1,1,2,2-Tetrachloroethane	---	U	5.00	ug/L	B202099	
1,3-Dichlorobenzene	---	U	5.00	ug/L	B202099	
1,4-Dichlorobenzene	---	U	5.00	ug/L	B202099	
1,2-Dichlorobenzene	---	U	5.00	ug/L	B202099	



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Project Number: 2202010

VOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202099

Blank (B202099-BLK1)

Chloromethane	--- U	5.00	ug/L						
Vinyl Chloride	--- U	5.00	ug/L						
Bromomethane	--- U	5.00	ug/L						
Chloroethane	--- U	5.00	ug/L						
Trichlorofluoromethane	--- U	5.00	ug/L						
1,1-Dichloroethene	--- U	5.00	ug/L						
Methylene Chloride	--- U	5.00	ug/L						
Acrylonitrile	--- U	5.00	ug/L						
trans-1,2-Dichloroethene	--- U	5.00	ug/L						
1,1-Dichloroethane	--- U	5.00	ug/L						
Chloroform	--- U	5.00	ug/L						
1,1,1-Trichloroethane	--- U	5.00	ug/L						
Carbon Tetrachloride	--- U	5.00	ug/L						
1,2-Dichloroethane	--- U	5.00	ug/L						
Benzene	--- U	5.00	ug/L						
Trichloroethene	--- U	5.00	ug/L						
1,2-Dichloropropane	--- U	5.00	ug/L						
Bromodichloromethane	--- U	5.00	ug/L						
cis-1,3-Dichloropropene	--- U	5.00	ug/L						
Toluene	--- U	5.00	ug/L						
trans-1,3-Dichloropropene	--- U	5.00	ug/L						
1,1,2-Trichloroethane	--- U	5.00	ug/L						
Tetrachloroethene	--- U	5.00	ug/L						
Dibromochloromethane	--- U	5.00	ug/L						
Chlorobenzene	--- U	5.00	ug/L						
Ethylbenzene	--- U	5.00	ug/L						
Bromoform	--- U	5.00	ug/L						
1,1,2,2-Tetrachloroethane	--- U	5.00	ug/L						
1,3-Dichlorobenzene	--- U	5.00	ug/L						
1,4-Dichlorobenzene	--- U	5.00	ug/L						
1,2-Dichlorobenzene	--- U	5.00	ug/L						
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>ND</i>		<i>ug/L</i>	<i>100.0</i>		<i>99.4</i>	<i>60-140</i>		
<i>Surrogate: 2-Bromo-1-Chloropropane</i>	<i>ND</i>		<i>ug/L</i>	<i>100.0</i>		<i>99.1</i>	<i>60-140</i>		
<i>Surrogate: 1,4-Dichlorobutane</i>	<i>106</i>		<i>ug/L</i>	<i>100.0</i>		<i>106</i>	<i>60-140</i>		

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Project Number: 2202010

VOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202099									
LCS (B202099-BS1)									
Chloromethane	71.8		ug/L	50.00		144	19-205		
Vinyl Chloride	54.6		ug/L	50.00		109	5-195		
Bromomethane	62.6		ug/L	50.00		125	15-185		
Chloroethane	65.4		ug/L	50.00		131	40-160		
Trichlorofluoromethane	57.4		ug/L	50.00		115	50-150		
1,1-Dichloroethene	60.4		ug/L	50.00		121	50-150		
Methylene Chloride	56.5		ug/L	50.00		113	60-140		
Acrylonitrile	55.8		ug/L	50.00		112	60-140		
trans-1,2-Dichloroethene	57.2		ug/L	50.00		114	70-130		
1,1-Dichloroethane	56.7		ug/L	50.00		113	70-130		
Chloroform	57.8		ug/L	50.00		116	70-135		
1,1,1-Trichloroethane	55.6		ug/L	50.00		111	70-130		
Carbon Tetrachloride	57.0		ug/L	50.00		114	70-130		
1,2-Dichloroethane	53.6		ug/L	50.00		107	70-130		
Benzene	55.0		ug/L	50.00		110	65-135		
Trichloroethene	58.0		ug/L	50.00		116	65-135		
1,2-Dichloropropane	58.5		ug/L	50.00		117	35-165		
Bromodichloromethane	54.2		ug/L	50.00		108	65-135		
cis-1,3-Dichloropropene	56.0		ug/L	50.00		112	25-175		
Toluene	55.6		ug/L	50.00		111	70-130		
trans-1,3-Dichloropropene	58.8		ug/L	50.00		118	50-150		
1,1,2-Trichloroethane	54.4		ug/L	50.00		109	70-130		
Tetrachloroethene	53.3		ug/L	50.00		107	70-130		
Dibromochloromethane	53.8		ug/L	50.00		108	70-135		
Chlorobenzene	55.8		ug/L	50.00		112	65-135		
Ethylbenzene	56.3		ug/L	50.00		113	60-140		
Bromoform	49.8		ug/L	50.00		99.6	70-130		
1,1,2,2-Tetrachloroethane	52.8		ug/L	50.00		106	60-140		
1,3-Dichlorobenzene	55.4		ug/L	50.00		111	70-130		
1,4-Dichlorobenzene	53.7		ug/L	50.00		107	65-135		
1,2-Dichlorobenzene	53.7		ug/L	50.00		107	65-135		
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>99.3</i>		<i>ug/L</i>	<i>100.0</i>		<i>99.3</i>	<i>60-140</i>		
<i>Surrogate: 2-Bromo-1-Chloropropane</i>	<i>104</i>		<i>ug/L</i>	<i>100.0</i>		<i>104</i>	<i>60-140</i>		
<i>Surrogate: 1,4-Dichlorobutane</i>	<i>103</i>		<i>ug/L</i>	<i>100.0</i>		<i>103</i>	<i>60-140</i>		



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VOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202099									
LCS Dup (B202099-BSD1)									
Chloromethane	72.4		ug/L	50.00		145	19-205	0.693	20
Vinyl Chloride	54.5		ug/L	50.00		109	5-195	0.147	20
Bromomethane	64.9		ug/L	50.00		130	15-185	3.53	20
Chloroethane	67.1		ug/L	50.00		134	40-160	2.61	20
Trichlorofluoromethane	58.5		ug/L	50.00		117	50-150	1.90	20
1,1-Dichloroethene	62.0		ug/L	50.00		124	50-150	2.56	20
Methylene Chloride	57.3		ug/L	50.00		115	60-140	1.41	20
Acrylonitrile	56.4		ug/L	50.00		113	60-140	1.12	20
trans-1,2-Dichloroethene	58.8		ug/L	50.00		118	70-130	2.84	20
1,1-Dichloroethane	58.1		ug/L	50.00		116	70-130	2.42	20
Chloroform	58.4		ug/L	50.00		117	70-135	1.15	20
1,1,1-Trichloroethane	56.7		ug/L	50.00		113	70-130	1.98	20
Carbon Tetrachloride	58.6		ug/L	50.00		117	70-130	2.75	20
1,2-Dichloroethane	53.6		ug/L	50.00		107	70-130	0.00	20
Benzene	56.0		ug/L	50.00		112	65-135	1.69	20
Trichloroethene	59.9		ug/L	50.00		120	65-135	3.09	20
1,2-Dichloropropane	59.1		ug/L	50.00		118	35-165	1.00	20
Bromodichloromethane	53.8		ug/L	50.00		108	65-135	0.667	20
cis-1,3-Dichloropropene	56.8		ug/L	50.00		114	25-175	1.47	20
Toluene	56.6		ug/L	50.00		113	70-130	1.75	20
trans-1,3-Dichloropropene	59.1		ug/L	50.00		118	50-150	0.560	20
1,1,2-Trichloroethane	56.1		ug/L	50.00		112	70-130	2.91	20
Tetrachloroethene	55.6		ug/L	50.00		111	70-130	4.15	20
Dibromochloromethane	55.0		ug/L	50.00		110	70-135	2.15	20
Chlorobenzene	56.9		ug/L	50.00		114	65-135	1.94	20
Ethylbenzene	57.4		ug/L	50.00		115	60-140	1.90	20
Bromoform	49.8		ug/L	50.00		99.6	70-130	0.0602	20
1,1,2,2-Tetrachloroethane	52.9		ug/L	50.00		106	60-140	0.227	20
1,3-Dichlorobenzene	55.1		ug/L	50.00		110	70-130	0.615	20
1,4-Dichlorobenzene	54.5		ug/L	50.00		109	65-135	1.44	20
1,2-Dichlorobenzene	54.2		ug/L	50.00		108	65-135	0.909	20
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>99.2</i>		<i>ug/L</i>	<i>100.0</i>		<i>99.2</i>	<i>60-140</i>		
<i>Surrogate: 2-Bromo-1-Chloropropane</i>	<i>104</i>		<i>ug/L</i>	<i>100.0</i>		<i>104</i>	<i>60-140</i>		
<i>Surrogate: 1,4-Dichlorobutane</i>	<i>103</i>		<i>ug/L</i>	<i>100.0</i>		<i>103</i>	<i>60-140</i>		



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VOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202099

Matrix Spike (B202099-MS1)

Source: 2202010-07

Chloromethane	53.4		ug/L	50.00	0.00	107	19-273		
Vinyl Chloride	52.0		ug/L	50.00	0.00	104	49-251		
Bromomethane	51.5		ug/L	50.00	0.00	103	21-242		
Chloroethane	58.9		ug/L	50.00	0.00	118	14-230		
Trichlorofluoromethane	57.5		ug/L	50.00	0.00	115	17-181		
1,1-Dichloroethene	56.6		ug/L	50.00	0.00	113	52-234		
Methylene Chloride	54.3		ug/L	50.00	0.00	109	69-221		
Acrylonitrile	55.3		ug/L	50.00	0.00	111	40-160		
trans-1,2-Dichloroethene	55.5		ug/L	50.00	0.00	111	54-156		
1,1-Dichloroethane	56.7		ug/L	50.00	0.00	113	59-155		
Chloroform	56.1		ug/L	50.00	0.00	112	51-138		
1,1,1-Trichloroethane	56.4		ug/L	50.00	0.00	113	52-162		
Carbon Tetrachloride	56.5		ug/L	50.00	0.00	113	70-140		
1,2-Dichloroethane	53.3		ug/L	50.00	0.00	107	49-155		
Benzene	57.4		ug/L	50.00	0.00	115	37-151		
Trichloroethene	58.2		ug/L	50.00	0.00	116	70-157		
1,2-Dichloropropane	57.3		ug/L	50.00	0.00	115	74-210		
Bromodichloromethane	56.6		ug/L	50.00	0.00	113	35-155		
cis-1,3-Dichloropropene	57.0		ug/L	50.00	0.00	114	80-227		
Toluene	56.9		ug/L	50.00	0.00	114	47-150		
trans-1,3-Dichloropropene	56.5		ug/L	50.00	0.00	113	17-183		
1,1,2-Trichloroethane	55.0		ug/L	50.00	0.00	110	52-150		
Tetrachloroethene	55.5		ug/L	50.00	0.00	111	64-148		
Dibromochloromethane	55.1		ug/L	50.00	0.00	110	53-149		
Chlorobenzene	55.1		ug/L	50.00	0.00	110	37-160		
Ethylbenzene	57.7		ug/L	50.00	0.00	115	37-162		
Bromoform	51.9		ug/L	50.00	0.00	104	45-169		
1,1,2,2-Tetrachloroethane	55.5		ug/L	50.00	0.00	111	46-157		
1,3-Dichlorobenzene	55.5		ug/L	50.00	0.00	111	59-156		
1,4-Dichlorobenzene	54.8		ug/L	50.00	0.00	110	18-190		
1,2-Dichlorobenzene	54.3		ug/L	50.00	0.00	109	18-190		
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>99.5</i>		<i>ug/L</i>	<i>100.0</i>		<i>99.5</i>	<i>60-140</i>		
<i>Surrogate: 2-Bromo-1-Chloropropane</i>	<i>104</i>		<i>ug/L</i>	<i>100.0</i>		<i>104</i>	<i>60-140</i>		
<i>Surrogate: 1,4-Dichlorobutane</i>	<i>104</i>		<i>ug/L</i>	<i>100.0</i>		<i>104</i>	<i>60-140</i>		



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

VOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202099

Matrix Spike Dup (B202099-MSD1)

Source: 2202010-07

Chloromethane	43.9		ug/L	50.00	0.00	87.8	19-273	19.5	28
Vinyl Chloride	39.0		ug/L	50.00	0.00	78.0	49-251	28.7	28
Bromomethane	44.4		ug/L	50.00	0.00	88.8	21-242	14.7	28
Chloroethane	48.2		ug/L	50.00	0.00	96.3	14-230	20.0	28
Trichlorofluoromethane	43.3		ug/L	50.00	0.00	86.7	17-181	28.1	28
1,1-Dichloroethene	44.6		ug/L	50.00	0.00	89.2	52-234	23.7	28
Methylene Chloride	49.4		ug/L	50.00	0.00	98.7	69-221	9.48	28
Acrylonitrile	56.3		ug/L	50.00	0.00	113	40-160	1.83	28
trans-1,2-Dichloroethene	45.8		ug/L	50.00	0.00	91.6	54-156	19.2	28
1,1-Dichloroethane	48.1		ug/L	50.00	0.00	96.1	59-155	16.4	28
Chloroform	49.8		ug/L	50.00	0.00	99.6	51-138	11.8	28
1,1,1-Trichloroethane	44.8		ug/L	50.00	0.00	89.7	52-162	22.8	28
Carbon Tetrachloride	43.8		ug/L	50.00	0.00	87.6	70-140	25.3	28
1,2-Dichloroethane	50.8		ug/L	50.00	0.00	102	49-155	4.69	28
Benzene	48.2		ug/L	50.00	0.00	96.3	37-151	17.4	28
Trichloroethene	47.5		ug/L	50.00	0.00	95.1	70-157	20.1	28
1,2-Dichloropropane	51.0		ug/L	50.00	0.00	102	74-210	11.5	28
Bromodichloromethane	51.3		ug/L	50.00	0.00	103	35-155	9.71	28
cis-1,3-Dichloropropene	52.1		ug/L	50.00	0.00	104	80-227	8.91	28
Toluene	48.1		ug/L	50.00	0.00	96.3	47-150	16.6	28
trans-1,3-Dichloropropene	53.6		ug/L	50.00	0.00	107	17-183	5.38	28
1,1,2-Trichloroethane	52.6		ug/L	50.00	0.00	105	52-150	4.44	28
Tetrachloroethene	43.1		ug/L	50.00	0.00	86.2	64-148	25.2	28
Dibromochloromethane	51.5		ug/L	50.00	0.00	103	53-149	6.87	28
Chlorobenzene	48.1		ug/L	50.00	0.00	96.1	37-160	13.6	28
Ethylbenzene	47.6		ug/L	50.00	0.00	95.1	37-162	19.3	28
Bromoform	49.9		ug/L	50.00	0.00	99.7	45-169	4.07	28
1,1,2,2-Tetrachloroethane	54.0		ug/L	50.00	0.00	108	46-157	2.85	28
1,3-Dichlorobenzene	49.0		ug/L	50.00	0.00	98.0	59-156	12.5	28
1,4-Dichlorobenzene	48.8		ug/L	50.00	0.00	97.7	18-190	11.5	28
1,2-Dichlorobenzene	49.4		ug/L	50.00	0.00	98.9	18-190	9.35	28
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>98.4</i>		<i>ug/L</i>	<i>100.0</i>		<i>98.4</i>	<i>60-140</i>		
<i>Surrogate: 2-Bromo-1-Chloropropane</i>	<i>103</i>		<i>ug/L</i>	<i>100.0</i>		<i>103</i>	<i>60-140</i>		
<i>Surrogate: 1,4-Dichlorobutane</i>	<i>103</i>		<i>ug/L</i>	<i>100.0</i>		<i>103</i>	<i>60-140</i>		



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202101

Blank (B202101-BLK1)

Acenaphthene	--- U	5.00	ug/L						
Acenaphthylene	--- U	5.00	ug/L						
Anthracene	--- U	5.00	ug/L						
Benzo(A)Anthracene	--- U	5.00	ug/L						
Benzo(A)Pyrene	--- U	5.00	ug/L						
Benzo(B)Fluoranthene	--- U	5.00	ug/L						
Benzo(G,H,I)Perylene	--- U	5.00	ug/L						
Benzo(K)Fluoranthene	--- U	5.00	ug/L						
Chrysene	--- U	5.00	ug/L						
Dibenzo(A,H)Anthracene	--- U	5.00	ug/L						
Fluoranthene	--- U	5.00	ug/L						
Fluorene	--- U	5.00	ug/L						
Indeno(1,2,3-Cd)Pyrene	--- U	5.00	ug/L						
Naphthalene	--- U	5.00	ug/L						
Phenanthrene	--- U	5.00	ug/L						
1,2,4-Trichlorobenzene	--- U	5.00	ug/L						
2,4,6-Trichlorophenol	--- U	5.00	ug/L						
2,4-Dichlorophenol	--- U	5.00	ug/L						
2,4-Dimethylphenol	--- U	5.00	ug/L						
2,4-Dinitrotoluene	--- U	5.00	ug/L						
2,6-Dinitrotoluene	--- U	5.00	ug/L						
2,4-Dinitrophenol	--- U	5.00	ug/L						
2-Chloronaphthalene	--- U	5.00	ug/L						
2-Chlorophenol	--- U	5.00	ug/L						
2-Nitrophenol	--- U	5.00	ug/L						
3,3'- Dichlorobenzidine	--- U	5.00	ug/L						
4,6-Dinitro-2-Methylphenol	--- U	5.00	ug/L						
4-Bromophenyl-Phenylether	--- U	5.00	ug/L						
4-Chloro-3-Methylphenol	--- U	5.00	ug/L						
4-Chlorophenyl-Phenylether	--- U	5.00	ug/L						
4-Nitrophenol	--- U	5.00	ug/L						
Bis(-2-Chloroethoxy)Methane	--- U	5.00	ug/L						
Bis(2-Chloroethyl)Ether	--- U	5.00	ug/L						
Bis(2-Chloroisopropyl)Ether	--- U	5.00	ug/L						
Bis(2-Ethylhexyl)Phthalate	--- U	5.00	ug/L						

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202101

Blank (B202101-BLK1)

Butylbenzylphthalate	--- U	5.00	ug/L						
Azobenzene	--- U	5.00	ug/L						
Diethylphthalate	--- U	5.00	ug/L						
Dimethyl Phthalate	--- U	5.00	ug/L						
Di-N-Butyl Phthalate	--- U	5.00	ug/L						
Di-N-Octyl Phthalate	--- U	5.00	ug/L						
Hexachlorobenzene	--- U	5.00	ug/L						
Hexachlorobutadiene	--- U	5.00	ug/L						
Hexachlorocyclopentadiene	--- U	5.00	ug/L						
Hexachloroethane	--- U	5.00	ug/L						
Isophorone	--- U	5.00	ug/L						
Nitrobenzene	--- U	5.00	ug/L						
N-Nitrosodimethylamine	--- U	5.00	ug/L						
N-Nitroso-Di-N-Propylamine	--- U	5.00	ug/L						
N-Nitrosodiphenylamine	--- U	5.00	ug/L						
Pentachlorophenol	--- U	5.00	ug/L						
Phenol	--- U	5.00	ug/L						
Pyrene	--- U	5.00	ug/L						
<i>Surrogate: 2-Fluoroaniline</i>	36.3		ug/L	50.00		72.6	60-140		
<i>Surrogate: Phenol-D6</i>	ND		ug/L	50.00		39.6	60-140		
<i>Surrogate: Naphthalene-D8</i>	37.2		ug/L	50.00		74.4	60-140		
<i>Surrogate: 1-Fluoronaphthalene</i>	35.8		ug/L	50.00		71.6	60-140		
<i>Surrogate: 2,4-Dibromophenol</i>	39.7		ug/L	50.00		79.3	60-140		
<i>Surrogate: Anthracene-D10</i>	37.4		ug/L	50.00		74.8	60-140		
<i>Surrogate: Chrysene-D12</i>	48.0		ug/L	50.00		96.0	60-140		

LCS (B202101-BS1)

Acenaphthene	37.5	5.00	ug/L	50.00		75.0	47-145		
Acenaphthylene	38.4	5.00	ug/L	50.00		76.8	33-145		
Anthracene	40.4	5.00	ug/L	50.00		80.9	27-133		
Benzo(A)Anthracene	41.4	5.00	ug/L	50.00		82.9	33-143		
Benzo(A)Pyrene	45.8	5.00	ug/L	50.00		91.6	17-163		
Benzo(B)Fluoranthene	44.5	5.00	ug/L	50.00		88.9	24-159		
Benzo(G,H,I)Perylene	44.3	5.00	ug/L	50.00		88.5	35-219		
Benzo(K)Fluoranthene	41.4	5.00	ug/L	50.00		82.8	11-162		

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202101									
LCS (B202101-BS1)									
Chrysene	41.1	5.00	ug/L	50.00		82.1	17-168		
Dibenzo(A,H)Anthracene	42.3	5.00	ug/L	50.00		84.6	33-227		
Fluoranthene	42.0	5.00	ug/L	50.00		84.0	26-137		
Fluorene	39.1	5.00	ug/L	50.00		78.2	59-121		
Indeno(1,2,3-Cd)Pyrene	43.4	5.00	ug/L	50.00		86.8	39-171		
Naphthalene	33.3	5.00	ug/L	50.00		66.6	21-133		
Phenanthrene	41.5	5.00	ug/L	50.00		83.0	54-120		
1,2,4-Trichlorobenzene	33.4	5.00	ug/L	50.00		66.8	44-142		
2,4,6-Trichlorophenol	38.4	5.00	ug/L	50.00		76.7	37-144		
2,4-Dichlorophenol	38.0	5.00	ug/L	50.00		76.0	39-135		
2,4-Dimethylphenol	41.5	5.00	ug/L	50.00		83.0	32-120		
2,4-Dinitrotoluene	45.2	5.00	ug/L	50.00		90.3	39-139		
2,6-Dinitrotoluene	44.0	5.00	ug/L	50.00		88.0	50-158		
2,4-Dinitrophenol	34.6	5.00	ug/L	50.00		69.1	21-191		
2-Chloronaphthalene	35.6	5.00	ug/L	50.00		71.1	60-120		
2-Chlorophenol	34.7	5.00	ug/L	50.00		69.5	23-134		
2-Nitrophenol	37.5	5.00	ug/L	50.00		75.1	29-182		
3,3'- Dichlorobenzidine	48.3	5.00	ug/L	50.00		96.7	38-262		
4,6-Dinitro-2-Methylphenol	44.7	5.00	ug/L	50.00		89.4	17-181		
4-Bromophenyl-Phenylether	40.2	5.00	ug/L	50.00		80.4	53-127		
4-Chloro-3-Methylphenol	40.3	5.00	ug/L	50.00		80.6	22-147		
4-Chlorophenyl-Phenylether	39.4	5.00	ug/L	50.00		78.8	25-158		
4-Nitrophenol	20.3	5.00	ug/L	50.00		40.7	9-132		
Bis(-2-Chloroethoxy)Methane	36.3	5.00	ug/L	50.00		72.7	33-184		
Bis(2-Chloroethyl)Ether	35.3	5.00	ug/L	50.00		70.6	12-158		
Bis(2-Chloroisopropyl)Ether	32.3	5.00	ug/L	50.00		64.5	36-166		
Bis(2-Ethylhexyl)Phthalate	49.3	5.00	ug/L	50.00		98.5	8-158		
Butylbenzylphthalate	36.6	5.00	ug/L	50.00		73.1	38-152		
Azobenzene	41.3	5.00	ug/L	50.00		82.7	60-115		
Diethylphthalate	32.9	5.00	ug/L	50.00		65.8	31-114		
Dimethyl Phthalate	18.4	5.00	ug/L	50.00		36.7	28-120		
Di-N-Butyl Phthalate	40.6	5.00	ug/L	50.00		81.2	1-120		
Di-N-Octyl Phthalate	51.0	5.00	ug/L	50.00		102	4-146		
Hexachlorobenzene	39.5	5.00	ug/L	50.00		78.9	35-152		
Hexachlorobutadiene	28.6	5.00	ug/L	50.00		57.3	24-120		

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202101

LCS (B202101-BS1)

Hexachlorocyclopentadiene	29.6	5.00	ug/L	50.00		59.3	15-76		
Hexachloroethane	28.5	5.00	ug/L	50.00		57.0	40-120		
Isophorone	40.8	5.00	ug/L	50.00		81.7	21-196		
Nitrobenzene	36.6	5.00	ug/L	50.00		73.2	35-180		
N-Nitrosodimethylamine	24.7	5.00	ug/L	50.00		49.4	17-127		
N-Nitroso-Di-N-Propylamine	38.2	5.00	ug/L	50.00		76.3	43-230		
N-Nitrosodiphenylamine	47.2	5.00	ug/L	50.00		94.4	79-139		
Pentachlorophenol	44.3	5.00	ug/L	50.00		88.6	14-176		
Phenol	16.7	5.00	ug/L	50.00		33.5	5-120		
Pyrene	41.6	5.00	ug/L	50.00		83.2	52-120		
<i>Surrogate: 2-Fluoroaniline</i>	<i>36.4</i>		<i>ug/L</i>	<i>50.00</i>		<i>72.9</i>	<i>60-140</i>		
<i>Surrogate: Phenol-D6</i>	<i>17.6</i>		<i>ug/L</i>	<i>50.00</i>		<i>35.3</i>	<i>60-140</i>		
<i>Surrogate: Naphthalene-D8</i>	<i>34.6</i>		<i>ug/L</i>	<i>50.00</i>		<i>69.2</i>	<i>60-140</i>		
<i>Surrogate: 1-Fluoronaphthalene</i>	<i>31.7</i>		<i>ug/L</i>	<i>50.00</i>		<i>63.3</i>	<i>60-140</i>		
<i>Surrogate: 2,4-Dibromophenol</i>	<i>41.8</i>		<i>ug/L</i>	<i>50.00</i>		<i>83.5</i>	<i>60-140</i>		
<i>Surrogate: Anthracene-D10</i>	<i>37.6</i>		<i>ug/L</i>	<i>50.00</i>		<i>75.2</i>	<i>60-140</i>		
<i>Surrogate: Chrysene-D12</i>	<i>44.3</i>		<i>ug/L</i>	<i>50.00</i>		<i>88.6</i>	<i>60-140</i>		

LCS Dup (B202101-BSD1)

Acenaphthene	35.7	5.00	ug/L	50.00		71.3	47-145	5.00	30
Acenaphthylene	36.9	5.00	ug/L	50.00		73.7	33-145	4.09	30
Anthracene	41.6	5.00	ug/L	50.00		83.2	27-133	2.85	30
Benzo(A)Anthracene	48.8	5.00	ug/L	50.00		97.7	33-143	16.4	30
Benzo(A)Pyrene	48.5	5.00	ug/L	50.00		96.9	17-163	5.69	30
Benzo(B)Fluoranthene	48.3	5.00	ug/L	50.00		96.5	24-159	8.20	30
Benzo(G,H,I)Perylene	48.0	5.00	ug/L	50.00		95.9	35-219	7.98	30
Benzo(K)Fluoranthene	44.9	5.00	ug/L	50.00		89.8	11-162	8.11	30
Chrysene	48.4	5.00	ug/L	50.00		96.7	17-168	16.3	30
Dibenzo(A,H)Anthracene	45.2	5.00	ug/L	50.00		90.4	33-227	6.56	30
Fluoranthene	43.6	5.00	ug/L	50.00		87.2	26-137	3.81	30
Fluorene	38.7	5.00	ug/L	50.00		77.3	59-121	1.13	30
Indeno(1,2,3-Cd)Pyrene	47.6	5.00	ug/L	50.00		95.1	39-171	9.10	30
Naphthalene	33.2	5.00	ug/L	50.00		66.3	21-133	0.512	30
Phenanthrene	42.3	5.00	ug/L	50.00		84.6	54-120	1.93	30
1,2,4-Trichlorobenzene	33.4	5.00	ug/L	50.00		66.7	44-142	0.150	30

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 220210

Project Number: 220210

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202101									
LCS Dup (B202101-BSD1)									
2,4,6-Trichlorophenol	38.7	5.00	ug/L	50.00		77.5	37-144	0.986	30
2,4-Dichlorophenol	39.0	5.00	ug/L	50.00		78.1	39-135	2.67	30
2,4-Dimethylphenol	41.0	5.00	ug/L	50.00		82.1	32-120	1.07	30
2,4-Dinitrotoluene	47.6	5.00	ug/L	50.00		95.2	39-139	5.20	30
2,6-Dinitrotoluene	45.0	5.00	ug/L	50.00		90.1	50-158	2.34	30
2,4-Dinitrophenol	36.4	5.00	ug/L	50.00		72.9	21-191	5.29	30
2-Chloronaphthalene	34.0	5.00	ug/L	50.00		68.1	60-120	4.37	30
2-Chlorophenol	36.6	5.00	ug/L	50.00		73.1	23-134	5.11	30
2-Nitrophenol	39.1	5.00	ug/L	50.00		78.2	29-182	4.10	30
3,3'- Dichlorobenzidine	55.6	5.00	ug/L	50.00		111	38-262	14.0	30
4,6-Dinitro-2-Methylphenol	47.0	5.00	ug/L	50.00		94.0	17-181	4.97	30
4-Bromophenyl-Phenylether	40.9	5.00	ug/L	50.00		81.7	53-127	1.65	30
4-Chloro-3-Methylphenol	40.6	5.00	ug/L	50.00		81.2	22-147	0.643	30
4-Chlorophenyl-Phenylether	38.5	5.00	ug/L	50.00		77.1	25-158	2.23	30
4-Nitrophenol	20.4	5.00	ug/L	50.00		40.9	9-132	0.540	30
Bis(-2-Chloroethoxy)Methane	37.2	5.00	ug/L	50.00		74.5	33-184	2.45	30
Bis(2-Chloroethyl)Ether	37.2	5.00	ug/L	50.00		74.4	12-158	5.24	30
Bis(2-Chloroisopropyl)Ether	33.2	5.00	ug/L	50.00		66.4	36-166	2.87	30
Bis(2-Ethylhexyl)Phthalate	60.0	5.00	ug/L	50.00		120	8-158	19.6	30
Butylbenzylphthalate	37.1	5.00	ug/L	50.00		74.1	38-152	1.41	30
Azobenzene	41.2	5.00	ug/L	50.00		82.4	60-115	0.339	30
Diethylphthalate	34.1	5.00	ug/L	50.00		68.2	31-114	3.64	30
Dimethyl Phthalate	18.8	5.00	ug/L	50.00		37.5	28-120	2.21	30
Di-N-Butyl Phthalate	42.6	5.00	ug/L	50.00		85.1	1-120	4.67	30
Di-N-Octyl Phthalate	59.4	5.00	ug/L	50.00		119	4-146	15.1	30
Hexachlorobenzene	40.4	5.00	ug/L	50.00		80.8	35-152	2.28	30
Hexachlorobutadiene	30.1	5.00	ug/L	50.00		60.2	24-120	4.90	30
Hexachlorocyclopentadiene	30.8	5.00	ug/L	50.00		61.5	15-76	3.68	30
Hexachloroethane	29.9	5.00	ug/L	50.00		59.9	40-120	4.89	30
Isophorone	41.4	5.00	ug/L	50.00		82.7	21-196	1.24	30
Nitrobenzene	37.8	5.00	ug/L	50.00		75.7	35-180	3.30	30
N-Nitrosodimethylamine	25.4	5.00	ug/L	50.00		50.7	17-127	2.64	30
N-Nitroso-Di-N-Propylamine	39.1	5.00	ug/L	50.00		78.2	43-230	2.41	30
N-Nitrosodiphenylamine	48.4	5.00	ug/L	50.00		96.9	79-139	2.61	30
Pentachlorophenol	48.0	5.00	ug/L	50.00		96.0	14-176	8.06	30

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202101

LCS Dup (B202101-BSD1)

Phenol	17.2	5.00	ug/L	50.00		34.4	5-120	2.59	30
Pyrene	42.9	5.00	ug/L	50.00		85.8	52-120	3.08	30
<i>Surrogate: 2-Fluoroaniline</i>	<i>37.9</i>		<i>ug/L</i>	<i>50.00</i>		<i>75.8</i>	<i>60-140</i>		
<i>Surrogate: Phenol-D6</i>	<i>18.2</i>		<i>ug/L</i>	<i>50.00</i>		<i>36.3</i>	<i>60-140</i>		
<i>Surrogate: Naphthalene-D8</i>	<i>34.2</i>		<i>ug/L</i>	<i>50.00</i>		<i>68.3</i>	<i>60-140</i>		
<i>Surrogate: 1-Fluoronaphthalene</i>	<i>31.5</i>		<i>ug/L</i>	<i>50.00</i>		<i>63.1</i>	<i>60-140</i>		
<i>Surrogate: 2,4-Dibromophenol</i>	<i>42.0</i>		<i>ug/L</i>	<i>50.00</i>		<i>84.1</i>	<i>60-140</i>		
<i>Surrogate: Anthracene-D10</i>	<i>38.5</i>		<i>ug/L</i>	<i>50.00</i>		<i>77.0</i>	<i>60-140</i>		
<i>Surrogate: Chrysene-D12</i>	<i>52.3</i>		<i>ug/L</i>	<i>50.00</i>		<i>105</i>	<i>60-140</i>		

Matrix Spike (B202101-MS1)

Source: 2202010-02

Acenaphthene	37.6	5.15	ug/L	51.55	ND	72.9	47-145		
Acenaphthylene	38.0	5.15	ug/L	51.55	ND	73.7	33-145		
Anthracene	43.8	5.15	ug/L	51.55	ND	85.0	27-133		
Benzo(A)Anthracene	47.5	5.15	ug/L	51.55	ND	92.2	33-143		
Benzo(A)Pyrene	45.8	5.15	ug/L	51.55	ND	88.9	17-163		
Benzo(B)Fluoranthene	45.2	5.15	ug/L	51.55	ND	87.6	24-159		
Benzo(G,H,I)Perylene	55.0	5.15	ug/L	51.55	ND	107	35-219		
Benzo(K)Fluoranthene	44.2	5.15	ug/L	51.55	ND	85.8	11-162		
Chrysene	46.6	5.15	ug/L	51.55	ND	90.4	17-168		
Dibenzo(A,H)Anthracene	53.1	5.15	ug/L	51.55	ND	103	33-227		
Fluoranthene	43.1	5.15	ug/L	51.55	ND	83.5	26-137		
Fluorene	46.0	5.15	ug/L	51.55	ND	89.2	59-121		
Indeno(1,2,3-Cd)Pyrene	55.8	5.15	ug/L	51.55	ND	108	39-171		
Naphthalene	33.7	5.15	ug/L	51.55	ND	65.3	21-133		
Phenanthrene	45.8	5.15	ug/L	51.55	ND	88.9	54-120		
1,2,4-Trichlorobenzene	32.4	5.15	ug/L	51.55	ND	62.8	44-142		
2,4,6-Trichlorophenol	40.4	5.15	ug/L	51.55	ND	78.4	37-144		
2,4-Dichlorophenol	41.2	5.15	ug/L	51.55	ND	80.0	39-135		
2,4-Dimethylphenol	41.5	5.15	ug/L	51.55	ND	80.5	32-120		
2,4-Dinitrotoluene	50.2	5.15	ug/L	51.55	ND	97.4	39-139		
2,6-Dinitrotoluene	42.0	5.15	ug/L	51.55	ND	81.5	50-158		
2,4-Dinitrophenol	36.0	5.15	ug/L	51.55	ND	69.9	21-191		
2-Chloronaphthalene	36.6	5.15	ug/L	51.55	ND	71.0	60-120		
2-Chlorophenol	35.1	5.15	ug/L	51.55	ND	68.0	23-134		

U.S.E.P.A Region 2 Laboratory

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Reported: 3/14/2022



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202101

Matrix Spike (B202101-MS1)

Source: 2202010-02

2-Nitrophenol	37.9	5.15	ug/L	51.55	ND	73.5	29-182		
3,3'- Dichlorobenzidine	41.1	5.15	ug/L	51.55	ND	79.8	38-262		
4,6-Dinitro-2-Methylphenol	47.1	5.15	ug/L	51.55	ND	91.3	17-181		
4-Bromophenyl-Phenylether	48.2	5.15	ug/L	51.55	ND	93.5	53-127		
4-Chloro-3-Methylphenol	41.7	5.15	ug/L	51.55	ND	80.9	22-147		
4-Chlorophenyl-Phenylether	47.7	5.15	ug/L	51.55	ND	92.5	25-158		
4-Nitrophenol	19.0	5.15	ug/L	51.55	ND	36.8	9-132		
Bis(-2-Chloroethoxy)Methane	36.6	5.15	ug/L	51.55	ND	70.9	33-184		
Bis(2-Chloroethyl)Ether	32.8	5.15	ug/L	51.55	ND	63.7	12-158		
Bis(2-Chloroisopropyl)Ether	32.8	5.15	ug/L	51.55	ND	63.6	36-166		
Bis(2-Ethylhexyl)Phthalate	62.2	5.15	ug/L	51.55	ND	121	8-158		
Butylbenzylphthalate	41.4	5.15	ug/L	51.55	ND	80.3	38-152		
Azobenzene	47.4	5.15	ug/L	51.55	ND	91.9	61-106		
Diethylphthalate	45.2	5.15	ug/L	51.55	ND	87.7	31-114		
Dimethyl Phthalate	34.7	5.15	ug/L	51.55	ND	67.3	28-120		
Di-N-Butyl Phthalate	47.6	5.15	ug/L	51.55	ND	92.4	1-120		
Di-N-Octyl Phthalate	55.3	5.15	ug/L	51.55	ND	107	4-146		
Hexachlorobenzene	45.7	5.15	ug/L	51.55	ND	88.7	35-152		
Hexachlorobutadiene	30.6	5.15	ug/L	51.55	ND	59.3	24-120		
Hexachlorocyclopentadiene	29.7	5.15	ug/L	51.55	ND	57.7	15-76		
Hexachloroethane	29.7	5.15	ug/L	51.55	ND	57.7	40-120		
Isophorone	38.0	5.15	ug/L	51.55	ND	73.7	21-196		
Nitrobenzene	36.4	5.15	ug/L	51.55	ND	70.7	35-180		
N-Nitrosodimethylamine	21.4	5.15	ug/L	51.55	ND	41.5	17-127		
N-Nitroso-Di-N-Propylamine	37.2	5.15	ug/L	51.55	ND	72.2	43-230		
N-Nitrosodiphenylamine	46.6	5.15	ug/L	51.55	ND	90.4	79-139		
Pentachlorophenol	49.2	5.15	ug/L	51.55	ND	95.4	14-176		
Phenol	18.1	5.15	ug/L	51.55	ND	35.2	5-120		
Pyrene	42.1	5.15	ug/L	51.55	ND	81.6	52-120		
<i>Surrogate: 2-Fluoroaniline</i>	<i>32.5</i>		<i>ug/L</i>	<i>51.55</i>		<i>63.1</i>	<i>60-140</i>		
<i>Surrogate: Phenol-D6</i>	<i>18.7</i>		<i>ug/L</i>	<i>51.55</i>		<i>36.3</i>	<i>60-140</i>		
<i>Surrogate: Naphthalene-D8</i>	<i>36.1</i>		<i>ug/L</i>	<i>51.55</i>		<i>69.9</i>	<i>60-140</i>		
<i>Surrogate: 1-Fluoronaphthalene</i>	<i>35.0</i>		<i>ug/L</i>	<i>51.55</i>		<i>67.8</i>	<i>60-140</i>		
<i>Surrogate: 2,4-Dibromophenol</i>	<i>42.7</i>		<i>ug/L</i>	<i>51.55</i>		<i>82.8</i>	<i>60-140</i>		
<i>Surrogate: Anthracene-D10</i>	<i>40.2</i>		<i>ug/L</i>	<i>51.55</i>		<i>78.1</i>	<i>60-140</i>		

U.S.E.P.A Region 2 Laboratory

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 Reported: 3/14/2022



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202101

Matrix Spike (B202101-MS1)

Source: 2202010-02

<i>Surrogate: Chrysene-D12</i>	49.3		ug/L	51.55		95.6	60-140		
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Matrix Spike Dup (B202101-MSD1)

Source: 2202010-02

Acenaphthene	39.4	5.21	ug/L	52.08	ND	75.6	47-145	4.67	24
Acenaphthylene	39.5	5.21	ug/L	52.08	ND	75.8	33-145	3.76	24
Anthracene	45.8	5.21	ug/L	52.08	ND	88.0	27-133	4.48	24
Benzo(A)Anthracene	50.6	5.21	ug/L	52.08	ND	97.1	33-143	6.17	24
Benzo(A)Pyrene	47.0	5.21	ug/L	52.08	ND	90.2	17-163	2.55	24
Benzo(B)Fluoranthene	47.4	5.21	ug/L	52.08	ND	91.1	24-159	4.89	24
Benzo(G,H,I)Perylene	54.7	5.21	ug/L	52.08	ND	105	35-219	0.550	24
Benzo(K)Fluoranthene	44.9	5.21	ug/L	52.08	ND	86.2	11-162	1.52	24
Chrysene	49.6	5.21	ug/L	52.08	ND	95.3	17-168	6.29	24
Dibenzo(A,H)Anthracene	52.7	5.21	ug/L	52.08	ND	101	33-227	0.648	24
Fluoranthene	45.6	5.21	ug/L	52.08	ND	87.5	26-137	5.71	24
Fluorene	46.7	5.21	ug/L	52.08	ND	89.7	59-121	1.64	24
Indeno(1,2,3-Cd)Pyrene	57.4	5.21	ug/L	52.08	ND	110	39-171	2.70	24
Naphthalene	35.3	5.21	ug/L	52.08	ND	67.8	21-133	4.82	24
Phenanthrene	46.9	5.21	ug/L	52.08	ND	90.1	54-120	2.31	24
1,2,4-Trichlorobenzene	34.0	5.21	ug/L	52.08	ND	65.3	44-142	4.94	24
2,4,6-Trichlorophenol	41.7	5.21	ug/L	52.08	ND	80.0	37-144	3.03	24
2,4-Dichlorophenol	41.8	5.21	ug/L	52.08	ND	80.3	39-135	1.34	24
2,4-Dimethylphenol	41.9	5.21	ug/L	52.08	ND	80.4	32-120	0.912	24
2,4-Dinitrotoluene	52.6	5.21	ug/L	52.08	ND	101	39-139	4.62	24
2,6-Dinitrotoluene	44.0	5.21	ug/L	52.08	ND	84.5	50-158	4.65	24
2,4-Dinitrophenol	38.2	5.21	ug/L	52.08	ND	73.3	21-191	5.79	24
2-Chloronaphthalene	38.2	5.21	ug/L	52.08	ND	73.3	60-120	4.31	24
2-Chlorophenol	36.1	5.21	ug/L	52.08	ND	69.3	23-134	2.90	24
2-Nitrophenol	39.2	5.21	ug/L	52.08	ND	75.2	29-182	3.32	24
3,3'- Dichlorobenzidine	44.0	5.21	ug/L	52.08	ND	84.4	38-262	6.64	24
4,6-Dinitro-2-Methylphenol	49.1	5.21	ug/L	52.08	ND	94.2	17-181	4.18	24
4-Bromophenyl-Phenylether	49.1	5.21	ug/L	52.08	ND	94.2	53-127	1.85	24
4-Chloro-3-Methylphenol	42.5	5.21	ug/L	52.08	ND	81.6	22-147	1.95	24
4-Chlorophenyl-Phenylether	48.2	5.21	ug/L	52.08	ND	92.6	25-158	1.17	24
4-Nitrophenol	20.7	5.21	ug/L	52.08	ND	39.7	9-132	8.61	24
Bis(-2-Chloroethoxy)Methane	37.9	5.21	ug/L	52.08	ND	72.8	33-184	3.71	24

U.S.E.P.A Region 2 Laboratory

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 Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

NVOA GCMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202101

Matrix Spike Dup (B202101-MSD1)

Source: 2202010-02

Bis(2-Chloroethyl)Ether	34.6	5.21	ug/L	52.08	ND	66.5	12-158	5.34	24
Bis(2-Chloroisopropyl)Ether	34.6	5.21	ug/L	52.08	ND	66.4	36-166	5.28	24
Bis(2-Ethylhexyl)Phthalate	67.2	5.21	ug/L	52.08	ND	129	8-158	7.64	24
Butylbenzylphthalate	45.6	5.21	ug/L	52.08	ND	87.6	38-152	9.71	24
Azobenzene	48.7	5.21	ug/L	52.08	ND	93.5	61-106	2.81	24
Diethylphthalate	45.8	5.21	ug/L	52.08	ND	87.8	31-114	1.24	24
Dimethyl Phthalate	34.4	5.21	ug/L	52.08	ND	66.1	28-120	0.823	24
Di-N-Butyl Phthalate	49.9	5.21	ug/L	52.08	ND	95.7	1-120	4.63	24
Di-N-Octyl Phthalate	59.5	5.21	ug/L	52.08	ND	114	4-146	7.37	24
Hexachlorobenzene	46.7	5.21	ug/L	52.08	ND	89.7	35-152	2.16	24
Hexachlorobutadiene	32.6	5.21	ug/L	52.08	ND	62.6	24-120	6.51	24
Hexachlorocyclopentadiene	28.3	5.21	ug/L	52.08	ND	54.4	15-76	4.82	24
Hexachloroethane	31.0	5.21	ug/L	52.08	ND	59.5	40-120	4.11	24
Isophorone	39.2	5.21	ug/L	52.08	ND	75.3	21-196	3.18	24
Nitrobenzene	38.1	5.21	ug/L	52.08	ND	73.1	35-180	4.40	24
N-Nitrosodimethylamine	23.3	5.21	ug/L	52.08	ND	44.7	17-127	8.36	24
N-Nitroso-Di-N-Propylamine	39.1	5.21	ug/L	52.08	ND	75.1	43-230	4.92	24
N-Nitrosodiphenylamine	47.2	5.21	ug/L	52.08	ND	90.6	79-139	1.35	24
Pentachlorophenol	49.9	5.21	ug/L	52.08	ND	95.9	14-176	1.52	24
Phenol	18.3	5.21	ug/L	52.08	ND	35.1	5-120	0.922	24
Pyrene	44.6	5.21	ug/L	52.08	ND	85.6	52-120	5.84	24
<i>Surrogate: 2-Fluoroaniline</i>	<i>34.9</i>		<i>ug/L</i>	<i>52.08</i>		<i>67.1</i>	<i>60-140</i>		
<i>Surrogate: Phenol-D6</i>	<i>19.5</i>		<i>ug/L</i>	<i>52.08</i>		<i>37.5</i>	<i>60-140</i>		
<i>Surrogate: Naphthalene-D8</i>	<i>38.7</i>		<i>ug/L</i>	<i>52.08</i>		<i>74.2</i>	<i>60-140</i>		
<i>Surrogate: 1-Fluoronaphthalene</i>	<i>37.3</i>		<i>ug/L</i>	<i>52.08</i>		<i>71.6</i>	<i>60-140</i>		
<i>Surrogate: 2,4-Dibromophenol</i>	<i>45.4</i>		<i>ug/L</i>	<i>52.08</i>		<i>87.1</i>	<i>60-140</i>		
<i>Surrogate: Anthracene-D10</i>	<i>43.6</i>		<i>ug/L</i>	<i>52.08</i>		<i>83.7</i>	<i>60-140</i>		
<i>Surrogate: Chrysene-D12</i>	<i>54.1</i>		<i>ug/L</i>	<i>52.08</i>		<i>104</i>	<i>60-140</i>		



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202103									
Blank (B202103-BLK1)									
alpha-BHC	--- U	0.002	ug/L						
gamma-BHC (Lindane)	--- U	0.002	ug/L						
beta-BHC	--- U	0.002	ug/L						
delta-BHC	--- U	0.002	ug/L						
Heptachlor	--- U	0.002	ug/L						
Aldrin	--- U	0.002	ug/L						
Heptachlor epoxide	--- U	0.002	ug/L						
Endosulfan I	--- U	0.002	ug/L						
4,4'-DDE	--- U	0.005	ug/L						
Dieldrin	--- U	0.005	ug/L						
Endrin	--- U	0.005	ug/L						
4,4'-DDD	--- U	0.005	ug/L						
Endosulfan II	--- U	0.005	ug/L						
4,4'-DDT	--- U	0.005	ug/L						
Endrin aldehyde	--- U	0.005	ug/L						
Methoxychlor	--- U	0.025	ug/L						
Endosulfan sulfate	--- U	0.005	ug/L						
Endrin ketone	--- U	0.005	ug/L						
Toxaphene	--- U	0.188	ug/L						
Chlordane	--- U	0.062	ug/L						
Aroclor 1016	--- U	0.031	ug/L						
Aroclor 1221	--- U	0.062	ug/L						
Aroclor 1232	--- U	0.031	ug/L						
Aroclor 1242	--- U	0.031	ug/L						
Aroclor 1248	--- U	0.031	ug/L						
Aroclor 1254	--- U	0.031	ug/L						
Aroclor 1260	--- U	0.031	ug/L						
Aroclor 1262	--- U	0.031	ug/L						
Aroclor 1268	--- U	0.031	ug/L						
<i>Surrogate: TCMX</i>	<i>0.0387</i>		ug/L	<i>0.06000</i>		<i>64.5</i>	<i>23-101</i>		
<i>Surrogate: TCMX [2C]</i>	<i>0.0402</i>		ug/L	<i>0.06000</i>		<i>67.0</i>	<i>23-101</i>		
<i>Surrogate: DCB</i>	<i>0.0287</i>		ug/L	<i>0.06000</i>		<i>47.9</i>	<i>25-107</i>		
<i>Surrogate: DCB [2C]</i>	<i>0.0226</i>		ug/L	<i>0.06000</i>		<i>37.6</i>	<i>25-107</i>		



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202103									
LCS (B202103-BS1)									
alpha-BHC	0.02	0.002	ug/L	0.02000		78.6	37-140		
alpha-BHC [2C]	0.01	0.002	ug/L	0.02000		68.1	37-140		
gamma-BHC (Lindane)	0.01	0.002	ug/L	0.02000		75.0	32-140		
gamma-BHC (Lindane) [2C]	0.01	0.002	ug/L	0.02000		60.9	32-140		
beta-BHC	0.01	0.002	ug/L	0.02000		67.5	17-147		
beta-BHC [2C]	0.01	0.002	ug/L	0.02000		71.8	17-147		
delta-BHC	0.02	0.002	ug/L	0.02000		91.2	19-140		
delta-BHC [2C]	0.01	0.002	ug/L	0.02000		72.1	19-140		
Heptachlor	--- U	0.002	ug/L	0.02000			34-140		
Heptachlor [2C]	0.01	0.002	ug/L	0.02000		47.9	34-140		
Aldrin	0.02	0.002	ug/L	0.02000		82.0	42-140		
Aldrin [2C]	0.01	0.002	ug/L	0.02000		73.2	42-140		
Heptachlor epoxide	0.02	0.002	ug/L	0.02000		104	37-142		
Heptachlor epoxide [2C]	0.01	0.002	ug/L	0.02000		67.0	37-142		
Endosulfan I	0.01	0.002	ug/L	0.02000		64.2	45-153		
Endosulfan I [2C]	0.01	0.002	ug/L	0.02000		72.6	45-153		
4,4'-DDE	0.03	0.005	ug/L	0.04000		81.9	30-145		
4,4'-DDE [2C]	0.03	0.005	ug/L	0.04000		67.3	30-145		
Dieldrin	0.03	0.005	ug/L	0.04000		80.8	36-146		
Dieldrin [2C]	0.03	0.005	ug/L	0.04000		74.3	36-146		
Endrin	0.04	0.005	ug/L	0.04000		91.8	30-147		
Endrin [2C]	0.03	0.005	ug/L	0.04000		80.7	30-147		
4,4'-DDD	0.04	0.005	ug/L	0.04000		88.6	31-141		
4,4'-DDD [2C]	0.03	0.005	ug/L	0.04000		76.3	31-141		
Endosulfan II	0.03	0.005	ug/L	0.04000		77.9	50-202		
Endosulfan II [2C]	0.03	0.005	ug/L	0.04000		68.1	50-202		
4,4'-DDT	0.04	0.005	ug/L	0.04000		92.4	25-160		
4,4'-DDT [2C]	0.02	0.005	ug/L	0.04000		61.0	25-160		
Endrin aldehyde	0.03	0.005	ug/L	0.04000		83.0	10-154		
Endrin aldehyde [2C]	0.03	0.005	ug/L	0.04000		75.7	10-154		
Endosulfan sulfate	0.04	0.005	ug/L	0.04000		87.8	26-144		
Endosulfan sulfate [2C]	0.03	0.005	ug/L	0.04000		74.3	26-144		
Surrogate: TCMX	0.0382		ug/L	0.06000		63.7	23-101		
Surrogate: TCMX [2C]	0.0401		ug/L	0.06000		66.9	23-101		



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202103									
LCS (B202103-BS1)									
<i>Surrogate: DCB</i>	0.0260		ug/L	0.06000		43.3	25-107		
<i>Surrogate: DCB [2C]</i>	0.0217		ug/L	0.06000		36.1	25-107		
LCS (B202103-BS2)									
Aroclor 1016	0.27	0.031	ug/L	0.2500		107	50-140		
Aroclor 1016 [2C]	0.27	0.031	ug/L	0.2500		110	50-140		
Aroclor 1260	0.29	0.031	ug/L	0.2500		114	8-140		
Aroclor 1260 [2C]	0.24	0.031	ug/L	0.2500		97.0	8-140		
<i>Surrogate: TCMX</i>	0.0522		ug/L	0.06000		87.1	23-101		
<i>Surrogate: TCMX [2C]</i>	0.0461		ug/L	0.06000		76.9	23-101		
<i>Surrogate: DCB</i>	0.0365		ug/L	0.06000		60.8	25-107		
<i>Surrogate: DCB [2C]</i>	0.0284		ug/L	0.06000		47.3	25-107		
LCS Dup (B202103-BSD1)									
alpha-BHC	0.02	0.002	ug/L	0.02000		80.1	37-140	1.86	36
alpha-BHC [2C]	0.01	0.002	ug/L	0.02000		72.8	37-140	6.62	36
gamma-BHC (Lindane)	0.01	0.002	ug/L	0.02000		74.9	32-140	0.127	39
gamma-BHC (Lindane) [2C]	0.01	0.002	ug/L	0.02000		65.3	32-140	6.97	39
beta-BHC	0.01	0.002	ug/L	0.02000		66.9	17-147	0.937	44
beta-BHC [2C]	0.02	0.002	ug/L	0.02000		77.0	17-147	7.02	44
delta-BHC	0.02	0.002	ug/L	0.02000		92.2	19-140	1.11	52
delta-BHC [2C]	0.02	0.002	ug/L	0.02000		77.7	19-140	7.40	52
Heptachlor	--- U	0.002	ug/L	0.02000			34-140		43
Heptachlor [2C]	0.01	0.002	ug/L	0.02000		50.8	34-140	5.91	43
Aldrin	0.02	0.002	ug/L	0.02000		83.4	42-140	1.78	35
Aldrin [2C]	0.02	0.002	ug/L	0.02000		78.2	42-140	6.65	35
Heptachlor epoxide	0.02	0.002	ug/L	0.02000		101	37-142	2.50	26
Heptachlor epoxide [2C]	0.01	0.002	ug/L	0.02000		67.4	37-142	0.700	26
Endosulfan I	0.01	0.002	ug/L	0.02000		65.7	45-153	2.37	28
Endosulfan I [2C]	0.02	0.002	ug/L	0.02000		77.8	45-153	6.87	28
4,4'-DDE	0.03	0.005	ug/L	0.04000		84.3	30-145	2.89	35
4,4'-DDE [2C]	0.03	0.005	ug/L	0.04000		72.1	30-145	6.87	35
Dieldrin	0.03	0.005	ug/L	0.04000		82.7	36-146	2.35	49
Dieldrin [2C]	0.03	0.005	ug/L	0.04000		79.5	36-146	6.81	49
Endrin	0.04	0.005	ug/L	0.04000		93.8	30-147	2.24	48



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202103

LCS Dup (B202103-BSD1)

Endrin [2C]	0.03	0.005	ug/L	0.04000		86.6	30-147	6.96	48
4,4'-DDD	0.04	0.005	ug/L	0.04000		90.3	31-141	1.93	39
4,4'-DDD [2C]	0.03	0.005	ug/L	0.04000		81.9	31-141	7.12	39
Endosulfan II	0.03	0.005	ug/L	0.04000		79.5	50-202	2.08	53
Endosulfan II [2C]	0.03	0.005	ug/L	0.04000		72.8	50-202	6.73	53
4,4'-DDT	0.04	0.005	ug/L	0.04000		94.0	25-160	1.67	42
4,4'-DDT [2C]	0.03	0.005	ug/L	0.04000		65.4	25-160	6.99	42
Endrin aldehyde	0.03	0.005	ug/L	0.04000		83.5	10-154	0.610	30
Endrin aldehyde [2C]	0.03	0.005	ug/L	0.04000		81.7	10-154	7.64	30
Endosulfan sulfate	0.04	0.005	ug/L	0.04000		87.7	26-144	0.0741	38
Endosulfan sulfate [2C]	0.03	0.005	ug/L	0.04000		82.9	26-144	11.0	38
<i>Surrogate: TCMX</i>	<i>0.0394</i>		ug/L	<i>0.06000</i>		<i>65.7</i>	<i>23-101</i>		
<i>Surrogate: TCMX [2C]</i>	<i>0.0436</i>		ug/L	<i>0.06000</i>		<i>72.6</i>	<i>23-101</i>		
<i>Surrogate: DCB</i>	<i>0.0285</i>		ug/L	<i>0.06000</i>		<i>47.5</i>	<i>25-107</i>		
<i>Surrogate: DCB [2C]</i>	<i>0.0235</i>		ug/L	<i>0.06000</i>		<i>39.1</i>	<i>25-107</i>		

LCS Dup (B202103-BSD2)

Aroclor 1016	0.25	0.031	ug/L	0.2500		101	50-140	5.04	36
Aroclor 1016 [2C]	0.26	0.031	ug/L	0.2500		106	50-140	3.59	36
Aroclor 1260	0.27	0.031	ug/L	0.2500		106	8-140	7.46	38
Aroclor 1260 [2C]	0.24	0.031	ug/L	0.2500		95.3	8-140	1.75	38
<i>Surrogate: TCMX</i>	<i>0.0523</i>		ug/L	<i>0.06000</i>		<i>87.2</i>	<i>23-101</i>		
<i>Surrogate: TCMX [2C]</i>	<i>0.0463</i>		ug/L	<i>0.06000</i>		<i>77.2</i>	<i>23-101</i>		
<i>Surrogate: DCB</i>	<i>0.0374</i>		ug/L	<i>0.06000</i>		<i>62.4</i>	<i>25-107</i>		
<i>Surrogate: DCB [2C]</i>	<i>0.0281</i>		ug/L	<i>0.06000</i>		<i>46.9</i>	<i>25-107</i>		

Matrix Spike (B202103-MS1)

Source: 2202010-02

alpha-BHC	0.04	0.005	ug/L	0.04016	ND	92.8	37-140		
alpha-BHC [2C]	0.03	0.005	ug/L	0.04016	ND	71.0	37-140		
gamma-BHC (Lindane)	0.04	0.005	ug/L	0.04016	ND	101	32-140		
gamma-BHC (Lindane) [2C]	0.02	0.005	ug/L	0.04016	ND	59.6	32-140		
beta-BHC	--- U	0.005	ug/L	0.04016	ND		17-147		
beta-BHC [2C]	0.03	0.005	ug/L	0.04016	ND	79.9	17-147		
delta-BHC	0.04	0.005	ug/L	0.04016	ND	92.7	19-140		
delta-BHC [2C]	0.02	0.005	ug/L	0.04016	ND	61.3	19-140		

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted

Reported: 3/14/2022



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202103

Matrix Spike (B202103-MS1)

Source: 2202010-02

Heptachlor	0.03	0.005	ug/L	0.04016	ND	76.0	34-140		
Heptachlor [2C]	0.02	0.005	ug/L	0.04016	ND	60.1	34-140		
Aldrin	0.02	0.005	ug/L	0.04016	ND	59.0	42-140		
Aldrin [2C]	0.03	0.005	ug/L	0.04016	ND	69.1	42-140		
Heptachlor epoxide	0.03	0.005	ug/L	0.04016	ND	77.7	37-142		
Heptachlor epoxide [2C]	0.03	0.005	ug/L	0.04016	ND	73.2	37-142		
Endosulfan I	0.03	0.005	ug/L	0.04016	ND	71.6	45-153		
Endosulfan I [2C]	0.03	0.005	ug/L	0.04016	ND	84.6	45-153		
4,4'-DDE	0.07	0.010	ug/L	0.08032	ND	86.6	30-145		
4,4'-DDE [2C]	0.04	0.010	ug/L	0.08032	ND	53.4	30-145		
Dieldrin	0.06	0.010	ug/L	0.08032	ND	73.7	36-146		
Dieldrin [2C]	0.07	0.010	ug/L	0.08032	ND	81.5	36-146		
Endrin	0.07	0.010	ug/L	0.08032	ND	90.7	30-147		
Endrin [2C]	0.07	0.010	ug/L	0.08032	ND	89.4	30-147		
4,4'-DDD	0.07	0.010	ug/L	0.08032	ND	92.8	31-141		
4,4'-DDD [2C]	0.07	0.010	ug/L	0.08032	ND	89.8	31-141		
Endosulfan II	0.07	0.010	ug/L	0.08032	ND	87.3	50-202		
Endosulfan II [2C]	0.06	0.010	ug/L	0.08032	ND	75.0	50-202		
4,4'-DDT	0.07	0.010	ug/L	0.08032	ND	86.7	25-160		
4,4'-DDT [2C]	0.06	0.010	ug/L	0.08032	ND	69.5	25-160		
Endrin aldehyde	0.05	0.010	ug/L	0.08032	ND	67.1	10-154		
Endrin aldehyde [2C]	0.04	0.010	ug/L	0.08032	ND	49.4	10-154		
Endosulfan sulfate	0.07	0.010	ug/L	0.08032	ND	84.3	26-144		
Endosulfan sulfate [2C]	0.05	0.010	ug/L	0.08032	ND	56.6	26-144		
<i>Surrogate: TCMX</i>	<i>0.0942</i>		ug/L	<i>0.1205</i>		<i>78.2</i>	<i>23-101</i>		
<i>Surrogate: TCMX [2C]</i>	<i>0.0886</i>		ug/L	<i>0.1205</i>		<i>73.5</i>	<i>23-101</i>		
<i>Surrogate: DCB</i>	<i>0.0945</i>		ug/L	<i>0.1205</i>		<i>78.5</i>	<i>25-107</i>		
<i>Surrogate: DCB [2C]</i>	<i>0.0892</i>		ug/L	<i>0.1205</i>		<i>74.1</i>	<i>25-107</i>		



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Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202103

Matrix Spike (B202103-MS2)

Source: 2202010-02

Aroclor 1016	0.48	0.063	ug/L	0.5020	ND	95.0	50-140		
Aroclor 1016 [2C]	0.41	0.063	ug/L	0.5020	ND	82.0	50-140		
Aroclor 1260	0.53	0.063	ug/L	0.5020	ND	106	8-140		
Aroclor 1260 [2C]	0.35	0.063	ug/L	0.5020	ND	69.0	8-140		
<i>Surrogate: TCMX</i>	<i>0.0894</i>		ug/L	<i>0.1205</i>		<i>74.2</i>	<i>23-101</i>		
<i>Surrogate: TCMX [2C]</i>	<i>0.0807</i>		ug/L	<i>0.1205</i>		<i>67.0</i>	<i>23-101</i>		
<i>Surrogate: DCB</i>	<i>0.0974</i>		ug/L	<i>0.1205</i>		<i>80.9</i>	<i>25-107</i>		
<i>Surrogate: DCB [2C]</i>	<i>0.0784</i>		ug/L	<i>0.1205</i>		<i>65.1</i>	<i>25-107</i>		

Matrix Spike Dup (B202103-MSD1)

Source: 2202010-02

alpha-BHC	0.04	0.005	ug/L	0.04016	ND	98.2	37-140	5.70	36
alpha-BHC [2C]	0.03	0.005	ug/L	0.04016	ND	73.4	37-140	3.32	36
gamma-BHC (Lindane)	0.04	0.005	ug/L	0.04016	ND	106	32-140	5.09	39
gamma-BHC (Lindane) [2C]	0.03	0.005	ug/L	0.04016	ND	77.0	32-140	25.5	39
beta-BHC	--- U	0.005	ug/L	0.04016	ND		17-147		44
beta-BHC [2C]	0.03	0.005	ug/L	0.04016	ND	83.7	17-147	4.68	44
delta-BHC	0.04	0.005	ug/L	0.04016	ND	103	19-140	10.6	52
delta-BHC [2C]	0.03	0.005	ug/L	0.04016	ND	69.6	19-140	12.7	52
Heptachlor	0.03	0.005	ug/L	0.04016	ND	68.5	34-140	10.4	43
Heptachlor [2C]	0.02	0.005	ug/L	0.04016	ND	59.0	34-140	1.75	43
Aldrin	0.03	0.005	ug/L	0.04016	ND	62.5	42-140	5.75	35
Aldrin [2C]	0.03	0.005	ug/L	0.04016	ND	75.6	42-140	9.09	35
Heptachlor epoxide	0.03	0.005	ug/L	0.04016	ND	86.6	37-142	10.8	26
Heptachlor epoxide [2C]	0.03	0.005	ug/L	0.04016	ND	85.0	37-142	14.9	26
Endosulfan I	0.03	0.005	ug/L	0.04016	ND	84.3	45-153	16.4	28
Endosulfan I [2C]	0.03	0.005	ug/L	0.04016	ND	86.0	45-153	1.58	28
4,4'-DDE	0.07	0.010	ug/L	0.08032	ND	89.7	30-145	3.48	35
4,4'-DDE [2C]	0.04	0.010	ug/L	0.08032	ND	55.3	30-145	3.54	35
Dieldrin	0.07	0.010	ug/L	0.08032	ND	83.4	36-146	12.3	49
Dieldrin [2C]	0.07	0.010	ug/L	0.08032	ND	83.2	36-146	2.09	49
Endrin	0.08	0.010	ug/L	0.08032	ND	98.3	30-147	8.06	48
Endrin [2C]	0.07	0.010	ug/L	0.08032	ND	92.2	30-147	3.09	48
4,4'-DDD	0.08	0.010	ug/L	0.08032	ND	101	31-141	7.97	39
4,4'-DDD [2C]	0.07	0.010	ug/L	0.08032	ND	91.6	31-141	1.90	39
Endosulfan II	0.07	0.010	ug/L	0.08032	ND	84.9	50-202	2.77	53

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
Reported: 3/14/2022



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B202103

Matrix Spike Dup (B202103-MSD1)

Source: 2202010-02

Endosulfan II [2C]	0.06	0.010	ug/L	0.08032	ND	76.5	50-202	1.99	53
4,4'-DDT	0.08	0.010	ug/L	0.08032	ND	93.5	25-160	7.64	42
4,4'-DDT [2C]	0.06	0.010	ug/L	0.08032	ND	74.4	25-160	6.85	42
Endrin aldehyde	0.06	0.010	ug/L	0.08032	ND	70.4	10-154	4.76	30
Endrin aldehyde [2C]	0.04	0.010	ug/L	0.08032	ND	52.1	10-154	5.26	30
Endosulfan sulfate	0.07	0.010	ug/L	0.08032	ND	90.6	26-144	7.21	38
Endosulfan sulfate [2C]	0.05	0.010	ug/L	0.08032	ND	58.0	26-144	2.48	38
<i>Surrogate: TCMX</i>	<i>0.0865</i>		ug/L	<i>0.1205</i>		<i>71.8</i>	<i>23-101</i>		
<i>Surrogate: TCMX [2C]</i>	<i>0.0898</i>		ug/L	<i>0.1205</i>		<i>74.5</i>	<i>23-101</i>		
<i>Surrogate: DCB</i>	<i>0.0988</i>		ug/L	<i>0.1205</i>		<i>82.0</i>	<i>25-107</i>		
<i>Surrogate: DCB [2C]</i>	<i>0.0831</i>		ug/L	<i>0.1205</i>		<i>69.0</i>	<i>25-107</i>		

Matrix Spike Dup (B202103-MSD2)

Source: 2202010-02

Aroclor 1016	0.48	0.063	ug/L	0.5020	ND	94.8	50-140	0.285	36
Aroclor 1016 [2C]	0.43	0.063	ug/L	0.5020	ND	86.4	50-140	5.31	36
Aroclor 1260	0.51	0.063	ug/L	0.5020	ND	103	8-140	3.21	38
Aroclor 1260 [2C]	0.37	0.063	ug/L	0.5020	ND	74.0	8-140	6.98	38
<i>Surrogate: TCMX</i>	<i>0.0796</i>		ug/L	<i>0.1205</i>		<i>66.0</i>	<i>23-101</i>		
<i>Surrogate: TCMX [2C]</i>	<i>0.0802</i>		ug/L	<i>0.1205</i>		<i>66.6</i>	<i>23-101</i>		
<i>Surrogate: DCB</i>	<i>0.0930</i>		ug/L	<i>0.1205</i>		<i>77.2</i>	<i>25-107</i>		
<i>Surrogate: DCB [2C]</i>	<i>0.0735</i>		ug/L	<i>0.1205</i>		<i>61.0</i>	<i>25-107</i>		

Batch S203003

Performance Mix (S203003-PEM1)

4,4'-DDE	1.90		ug/L				0-200		
4,4'-DDE [2C]	1.48		ug/L				0-200		
Endrin	101		ug/L	80.00		126	0-200		
Endrin [2C]	89.9		ug/L	80.00		112	0-200		
4,4'-DDD	1.32		ug/L				0-200		
4,4'-DDD [2C]	0.76		ug/L				0-200		
4,4'-DDT	99.1		ug/L	80.00		124	0-200		
4,4'-DDT [2C]	79.1		ug/L	80.00		98.8	0-200		
Endrin aldehyde	0.48		ug/L				0-200		
Endrin aldehyde [2C]	0.27		ug/L				0-200		
Endrin ketone	1.69		ug/L				0-200		

U.S.E.P.A Region 2 Laboratory

NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted
 Reported: 3/14/2022



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Pest/PCBs GC - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch S203003									
Performance Mix (S203003-PEM1)									
Endrin ketone [2C]	1.31		ug/L				0-200		
Surrogate: DCB	0.00		ug/L				0-200		
Surrogate: DCB [2C]	0.00		ug/L				0-200		



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory**

Final Report

Project: Standard Printed Circuits, Inc - 2202010

Project Number: 2202010

Metals ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B202100									
Blank (B202100-BLK1)									
Cadmium	--- U	3.00	ug/L						
Chromium	--- U	5.00	ug/L						
Copper	--- U	10.0	ug/L						
Lead	--- U	8.00	ug/L						
Nickel	--- U	20.0	ug/L						
LCS (B202100-BS1)									
Cadmium	195	3.00	ug/L	200.0		97.5	85-115		
Chromium	196	5.00	ug/L	200.0		98.2	85-115		
Copper	193	10.0	ug/L	200.0		96.5	85-115		
Lead	196	8.00	ug/L	200.0		98.0	85-115		
Nickel	196	20.0	ug/L	200.0		98.2	85-115		
LCS Dup (B202100-BSD1)									
Cadmium	194	3.00	ug/L	200.0		97.1	85-115	0.426	20
Chromium	196	5.00	ug/L	200.0		98.0	85-115	0.250	20
Copper	193	10.0	ug/L	200.0		96.3	85-115	0.213	20
Lead	194	8.00	ug/L	200.0		96.9	85-115	1.19	20
Nickel	196	20.0	ug/L	200.0		98.2	85-115	0.0306	20
Matrix Spike (B202100-MS1) Source: 2202010-01									
Cadmium	186	3.00	ug/L	200.0	ND	92.8	80-120		
Chromium	188	5.00	ug/L	200.0	ND	94.2	80-120		
Copper	1450	10.0	ug/L	200.0	1310	71.2	80-120		
Lead	249	8.00	ug/L	200.0	65.7	91.8	80-120		
Nickel	194	20.0	ug/L	200.0	3.94	94.9	80-120		
Matrix Spike Dup (B202100-MSD1) Source: 2202010-01									
Cadmium	192	15.0	ug/L	200.0	ND	95.9	80-120	3.24	10
Chromium	196	25.0	ug/L	200.0	ND	98.0	80-120	3.96	10
Copper	1460	50.0	ug/L	200.0	1310	72.1	80-120	0.132	10
Lead	262	40.0	ug/L	200.0	65.7	98.4	80-120	5.19	10
Nickel	196	100	ug/L	200.0	ND	98.0	80-120	1.16	10

8.0 Photographs

Photo #1. Generated process wastewater is pumped into the On-Site Pretreatment System from the final sump pit.



Photo #2. Compliance samples were collected from the monitoring location before discharging into the Village of Sherburne sewer collection system.

