

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N728943805

FACILITY: Sonoco Protective Solutions, Inc.		SRN / ID: N7289
LOCATION: 123 NORTH CHIPMAN ST., OWOSSO		DISTRICT: Lansing
CITY: OWOSSO		COUNTY: SHIAWASSEE
CONTACT: Phillip E. Abney , Maintenance Supervisor		ACTIVITY DATE: 03/20/2018
STAFF: Julie Brunner	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: PCE and compliance evaluation for PTI 278-02C.		
RESOLVED COMPLAINTS:		

On March 20, 2018, I conducted a scheduled inspection of Sonoco Protective Solutions, Inc. located at 123 N. Chipman St, Owosso, Michigan 48867. The last compliance inspection of the facility was on January 8, 2015.

Arrived: 10:38 am

Departed: 1:20 pm

Weather: 30°F, NE@14 MPH, UV 2 Low

No visible emissions (VEs) were observed from any of the facility exhaust stacks upon arrival. No odors were identified surrounding the facility.

Facility Contacts:

Mr. Phillip Abney, Maintenance Supervisor, 989-666-3394, phillip.abney@sonoco.com

Mr. Tom Mims, Plant Manager, 989-729-2780 x 106, tom.mims@sonoco.com

Facility Description:

This facility produces expanded foam products. They started production of custom-shape molding of polymeric materials in 2003 as Tuscarora Incorporated. They have operated under the names SCA Packing North America, Inc., Tegrant Diversified Brands, and for the last 12 years as Sonoco Protective Solutions, Inc. (Sonoco). They mold both pre-expanded polypropylene, and expand and mold polystyrene. SPS is a second tier supplier to the auto industry. They make forms for trunks, doors, headrests, and other parts of vehicles. Many of these components are impact absorbers, which are designed to protect vehicle occupants. They also make foam parts for child safety seats, coolers for catering, and some packaging materials for shipping various products in boxes. About 20% of the business is non-automotive.

Plastics Used

EPS beads are expandable polystyrene beads. These are white in color, and arrive at the plant in raw, unexpanded form, looking somewhat like salt.

ARCEL beads are a type of expandable polystyrene bead composed of a copolymer of styrene and ethylene, and marketed under the ARCEL brand name.

EPP beads are pre-expanded polypropylene. They are black in color, and arrive at the plant already having been pre-expanded.

The facility is permitted as a synthetic minor source with enforceable restrictions on volatile organic compounds (VOC) and five (5) hazardous air pollutants (HAPs) to less than major source thresholds to opt-out of the Title V – Renewable Operating Permit (ROP) program.

Plant Capacity: Expanded products are at 80% capacity and general production (pre-expanded products) is around 88% to 90%.

Staff #: 190 Shifts/Day: 3

Days of Operation/Week: 6 days/week

List of Active Air Use Permits and Exempt Equipment:

Permit to Install (PTI) No. 278-02C was issued under the former facility name of Tegrant Diversified Brands, Inc. for plastic expansion and molding. The following emission units are at the facility including exempt equipment:

Emission Unit (EU)	Description	PTI & Applicable Regs
EUEPSPROCESSES	The processes include finished goods storage and all the steps taken to create finished goods from expandable polystyrene beads. Major steps include partially expanding the beads with steam in the pre-expanders, pre-puff storage, and molding the pre-puff into finished goods.	PTI 278-02C
EUPUPROCESS	A rotating, multi-station polyurethane molding unit. Ingredients are stored separately in totes until being routed to the mixhead. Once combined, the resulting mixture is immediately injected into the mold cavities. The only stack associated with this process is for the purpose of venting mold release emissions from the spray station.	PTI 278-02C, Equipment removed April 2014
EUBOILER1	Natural gas-fired Johnston boiler, 600 horsepower (hp), 24.354 MMBtu/hr, Manuf. Date 1997	Rule 282(2)(b)(i); 40 CFR Part 60, Subpart Dc
EUBOILER2	Natural gas-fired Johnston boiler, 300 hp steam, 12.560 MMBtu/hr, Manuf. Date 1989	Rule 282(2)(b)(i); 40 CFR Part 60, Subpart Dc
EUBOILER3	Natural gas-fired Cleaver Brooks 700 hp process steam boiler rated at 29.291 MMBtu/hr, Manuf. Date 1993	Rule 282(2)(b)(i); 40 CFR Part 60, Subpart Dc
Drying Rooms/Ovens	Series of steam heated drying rooms used to dry any remaining water from the finished product	Rule 281(2)(e)
Recycle grinder	Grinds rejected plastic parts for recycle in the process.	Rule 285(2)(l)(vi)(B)

The three (3) natural gas-fired boilers are subject to New Source Performance Standard (NSPS), 40 CFR 60, Subpart Dc which applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than or equal to 10 MMBtu/hr.

The natural gas-fired boilers are not subject to 40 CFR 63, Subpart JJJJJJ—National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources because they meet the definition of a gas-fired boiler.

Michigan Air Emissions Reporting System (MAERS):

The facility reports to MAERS as an SM Opt-Out, Category II fee subject.

Inspection:

A pre-inspection meeting was conducted with Mr. Phillip Abney (Maintenance Supervisor) and Mr. Tom Mims (Plant Manager). The facility operations were discussed. There are no emergency generators or parts washers at the facility. The facility has an HVAC system on the roof for heating and air conditioning.

The general manufacturing process starts with expanding the The EPP black beads arrive pre-expanded, are loaded into the feed hoppers that go to the mold presses.

PTI 278-02C for plastic expansion and molding –

EUEPSPROCESS includes the pre-expansion of the EPS and ARCEL white beads and the molding of the pre-expanded polystyrene and polypropylene (EPP, black beads). The EPS and ARCEL polystyrene beads are pre-expanded in one (1) expander and go to storage hoppers that feed the molding presses. The expander uses steam to pre-expand the beads. Expanding the polystyrene beads result in emissions of VOC and HAPs. The VOC content and the amount of EPS and ARCEL processed is limited in PTI 278-02C. Pre-expansion has two stack IDs: SVPE1 and SVPE2.

The permit requires that Sonoco monitor the daily throughput of EPS and ARCEL beads that are pre-expanded. The "Daily Report of Expanded Bead" log sheet for 3-20-18 was in the area. The written record includes the type of beads processed, VOC contents (per lot number), VOC content determinations (e.g. Certification of Analysis) and additional information. The daily ARCEL and EPS bead throughput and all information is entered into the electronic program (FIT program) for generation of the monthly reports. Sonoco is in compliance with Special Condition (SC) VI.2, SC VI.3, SC VI.4, and SC VI.5.

A second expander is currently stored in place and uninstalled (as in not connected). The expander is to pre-expand ARCEL black beads. A permit application will be submitted, and the unit will then be installed. The timing of the permit application is currently uncertain.

The EPP black beads arrive pre-expanded and are stored in hoppers on the opposite end of the line of molding presses from the pre-expander area. Any emissions of VOC and HAP are negligible because the beads are pre-expanded by the supplier. There are no permit limits on the amount of EPP black beads that can be processed.

Sonoco has a total of 26 presses that are used to mold the pre-expanded beads. (There were 24 mold presses at the time of last inspection.) The mold presses use steam (produced from the onsite boilers) to melt and adhere the beads together. No mold release agents are used in the presses. Four (4) of the 26 presses are used for molding the EPS and ARCEL beads, the remaining presses are used for the EPP beads. The beads are blown with steam heat to the molding units from the storage hoppers. The steam and press emissions are vented to eighteen (18) press drain vents that are connected by a common drainage pipe in the floor. The drainage pipe conveys the condensate from the process to the wet well outside. The eighteen (18) press drain vents are represented by stack ID SVDVENTS1-16 which implies that there are sixteen (16) drain vents. A common drainage pipe is a 24 in. diameter pipe in the floor, and the wet well outside has two (2) doors in the lid in which steam escapes and is about two (2) foot above ground. This should probably be clarified when the permit application comes in that this is not a stack, but a condensate drain that has some steam emissions from the wet well outside. The guess during the inspection was that the drainage pipe was SVPPS1. Looking at the permit application, SVPPS1 is supposed to be a pre-puff storage vent.

The list of mold presses, what type of plastic is processed, and drain vents in the order they sit in the floor of the facility is listed below:

Molding Press	Material and Pressure	Press Drain Stack Vents
Press #1	EPS and ARCEL, low pressure (50 lb steam)	shared #1 & #4
Press #4	EPS and ARCEL, low pressure (50 lb steam)	shared #1 & #4
Press #26	EPS and ARCEL, low pressure (50 lb steam)	#26
Press #3	EPS and ARCEL, low pressure (50 lb steam)	#3
Press #8	EPP, high pressure (100 lb steam)	shared #8 & #25
Press #25	EPP, high pressure (100 lb steam)	shared #8 & #25
Press #24	EPP, high pressure (100 lb steam)	shared #24 & #6
Press #6	EPP, high pressure (100 lb steam)	shared #24 & #6
Press #7	EPP, high pressure (100 lb steam)	#7
Press #7A	EPP, high pressure (100 lb steam)	#7A
Press #7B	EPP, high pressure (100 lb steam)	#7B
Press #9	EPP, high pressure (100 lb steam)	shared #9 & #19
Press #19	EPP, high pressure (100 lb steam)	shared #9 & #19
Press #10	EPP, high pressure (100 lb steam)	shared #10 & #11
Press #11	EPP, high pressure (100 lb steam)	shared #10 & #11
Press #12	EPP, high pressure (100 lb steam)	shared #12 & #23
Press #23	EPP, high pressure (100 lb steam)	shared #12 & #23
Press #13	EPP, high pressure (100 lb steam)	#13
Press #14	EPP, high pressure (100 lb steam)	shared #14 & #22
Press #22	EPP, high pressure (100 lb steam)	shared #14 & #22
Press #15	EPP, high pressure (100 lb steam)	#15
Press #16	EPP, high pressure (100 lb steam)	#16
Press #17	EPP, high pressure (100 lb steam)	#17
Press #21	EPP, high pressure (100 lb steam)	#21
Press #18	EPP, high pressure (100 lb steam)	shared #18 & #20
Press #20	EPP, high pressure (100 lb steam)	shared #18 & #20

Exempt Equipment -

Sonoco also has three (3) drying rooms/ovens that are used to dry off any remaining water from the finished product. They are used to mainly dry EPP parts. A very small percentage (<10%) of EPS and ARCEL parts are dried. The ovens are heated via steam generated from the boilers to temperatures between 160°F to 180°F. Oven #3 was operating at 176°F the day of the inspection. The drying ovens are exempt per Rule 281(2)(e).

Parts that are rejects are recycled. A grinder with dust collection is located by the expander. It vents internally, and collected dust is disposed of properly. The grinder is exempt per Rule 285(2)(l)(vi)(B).

Sonoco has three (3) natural gas-fired boilers that provide process steam. The boilers are exempt per Rule 282(2)(b)(i), and subject to NSPS 40 CFR Part 60, Subpart Dc. Consumers Energy provides the natural gas and specifications of the pipeline quality gas are maintained by Consumers Energy.

Records of natural gas use in each boiler for 2017 was provided (see attached). In 2017, a total of 240.5 MM cubic feet of natural gas was combusted for the 12-month time period. Pipeline quality gas

and recordkeeping are the only NSPS requirements. The NSPS does not contain usage restrictions for these boilers.

Records Review:

Sonoco has a material limit on PTI 278-02C for plastic expansion and molding that requires they never exceed 177,000 pounds of VOC (88.5 tons) per 12-month rolling time period. The 12-month rolling VOC emission reports for 2016, 2017, and from Apr. 2017 – March 20, 2018 were provided (see attached). Based on this record, the total pounds VOC for the rolling calendar year is 35,779 lbs (17.9 tons), 35,216 lbs (17.6 tons), and 35,314 lbs (17.6 tons minus 11 days), respectively. Sonoco is in compliance with the emission limits in SC I.3 and the material limits in SC II.1 for EUEPSPROCESS, and the facility-wide VOC limit of 89.5 tpy.

Weighted averages of VOC content for EPS and ARCEL beads are required to be calculated for each month. Based on VOC emission reports for 2016, 2017, and from Apr. 2017 – March 20, 2018, Sonoco calculates their weighted average VOC content for EPS and ARCEL beads consistent with the Appendix A formulas. The highest monthly VOC average for the EPS beads from the records provided is 4.4 lbs VOC/100 lbs in Nov. 2017. Sonoco is in compliance with the 4.5 lbs VOC/100 lbs EPS beads processed emission limit in SC I.1.

Sonoco is limited to 10.25 lbs of VOC/100 lbs of ARCEL beads processed on a 12-month rolling time period. The 12-month rolling average VOC content based on the reports for 2016, 2017, and from Apr. 2017 – March 20, 2018 was 8.56 lbs/100 lbs, 8.86 lbs/100 lbs, and 8.87 lbs/100 lbs of ARCEL beads processed, respectively. Sonoco is in compliance with SC I.2 for EUEPSPROCESS.

Sonoco also keeps facility-wide 12-month rolling records of specific HAP emissions (benzene, cumene, ethyl benzene, styrene, benzaldehyde) as determined at the end of each calendar month.

The summary of 12-month rolling HAP emissions are in the following table:

Pollutant	2016 Mass Emissions (lb)	2017 Mass Emissions (lb)	Apr. 2017 – 3/20/2018 Mass Emissions (lb)	Emission Limit
Benzene	2	2	2	480 lb/yr
Cumene	26	26	25	480 lb/yr
Ethylbenzene	22.0	21.7	21.2	7.2 tpy
Styrene	257.1	251.7	249.1	4.0 tpy
Benzaldehyde	56	54	55	1920 lb/yr

Summary:

The facility appeared to be in compliance with PTI 278-02C, and all applicable rules and regulations. For the application to modify PTI 278-02C, I recommend checking and updating the stack information as the number of process stack vents may not match what is permitted.



Image 1(20) : Pre-expander

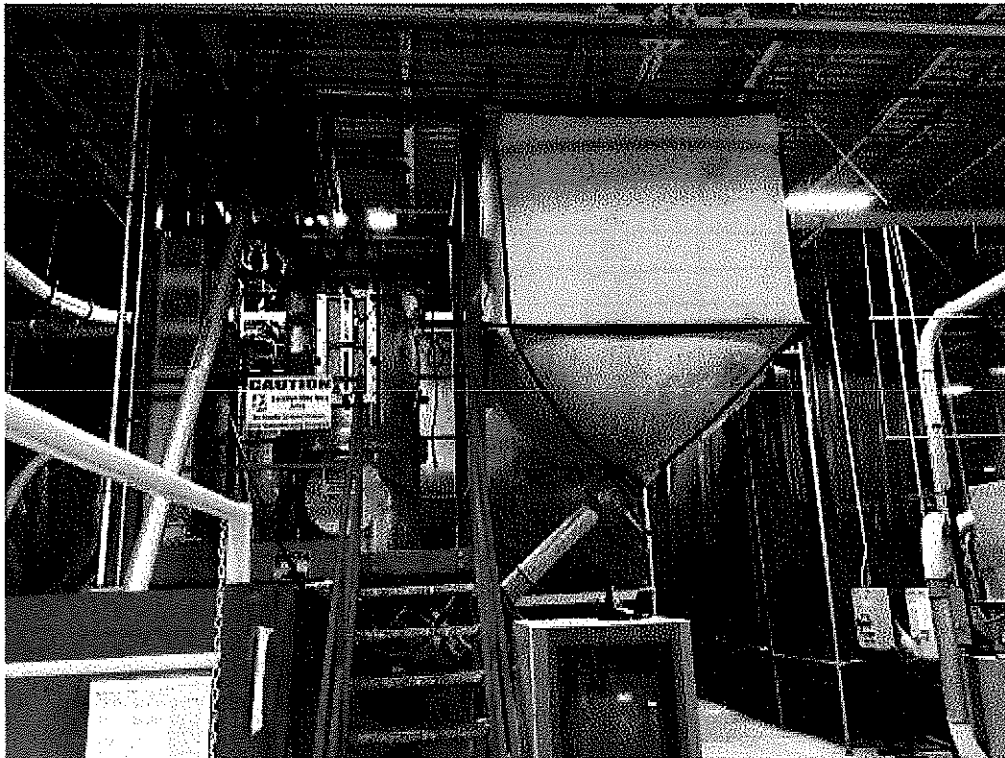


Image 2(21) : Pre-expander (side view)

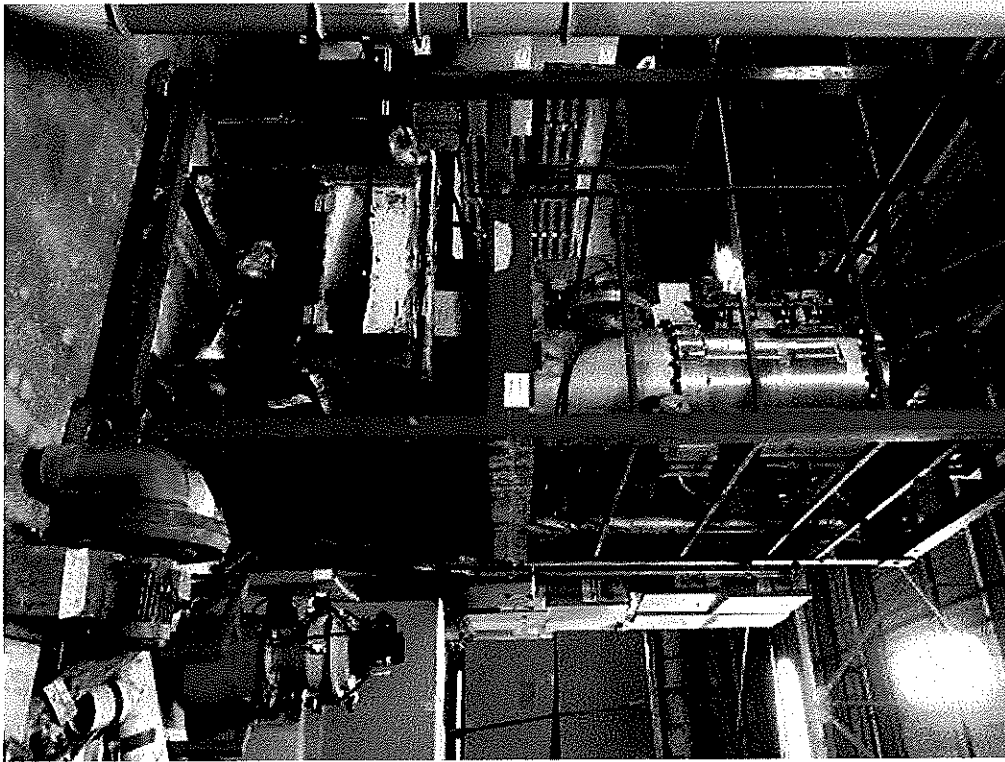


Image 3(22) : Pre-expander, stored in place awaiting permit mod for installation

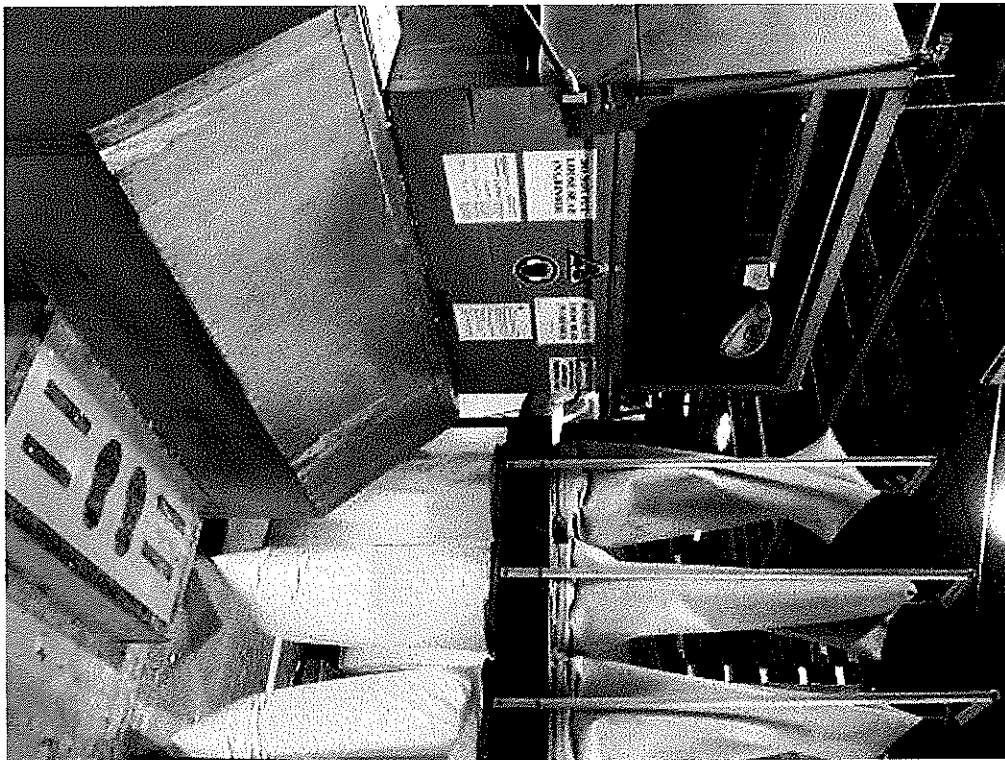


Image 4(23) : Recycle grinder

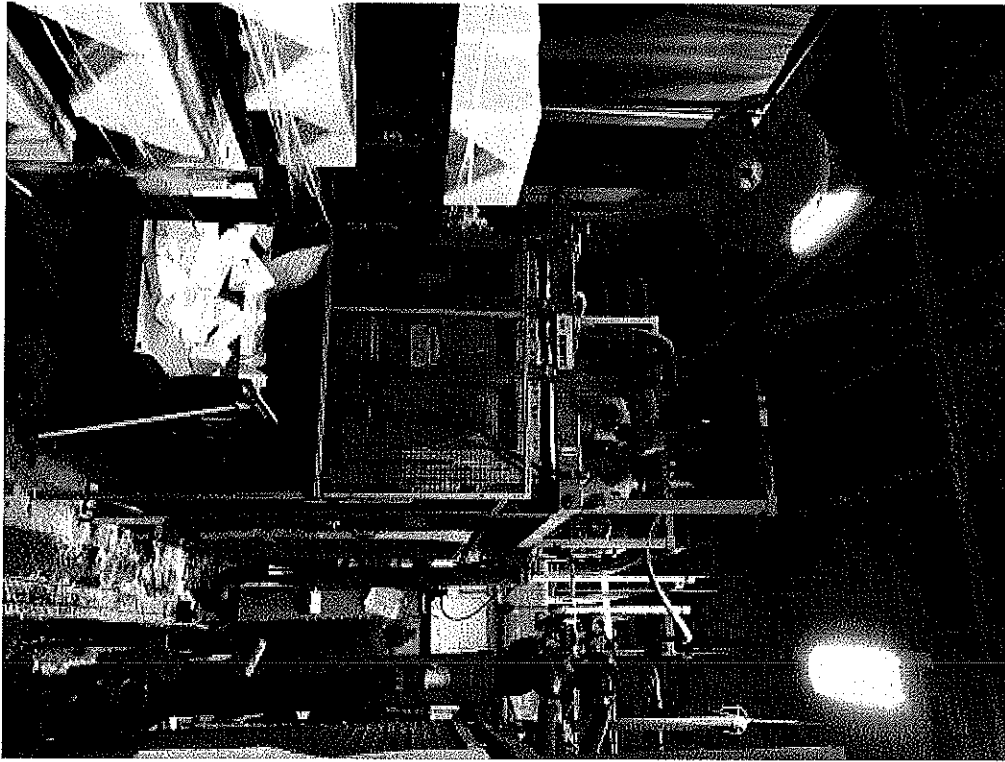


Image 5(24) : Molding press #1

Daily Report of Expanded Bead

DATE	TIME	OPERATOR	SHIFT	START	END	PRODUCTION	REMARKS
4/3/2018	11:15
4/3/2018	11:30
4/3/2018	11:45
4/3/2018	12:00
4/3/2018	12:15
4/3/2018	12:30
4/3/2018	12:45
4/3/2018	13:00
4/3/2018	13:15
4/3/2018	13:30
4/3/2018	13:45
4/3/2018	14:00
4/3/2018	14:15
4/3/2018	14:30
4/3/2018	14:45
4/3/2018	15:00
4/3/2018	15:15
4/3/2018	15:30
4/3/2018	15:45
4/3/2018	16:00
4/3/2018	16:15
4/3/2018	16:30
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4/3/2018	17:15
4/3/2018	17:30
4/3/2018	17:45
4/3/2018	18:00
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4/3/2018	21:15
4/3/2018	21:30
4/3/2018	21:45
4/3/2018	22:00
4/3/2018	22:15
4/3/2018	22:30
4/3/2018	22:45
4/3/2018	23:00
4/3/2018	23:15
4/3/2018	23:30
4/3/2018	23:45
4/3/2018	24:00

Image 6(19) : Daily Log Sheet

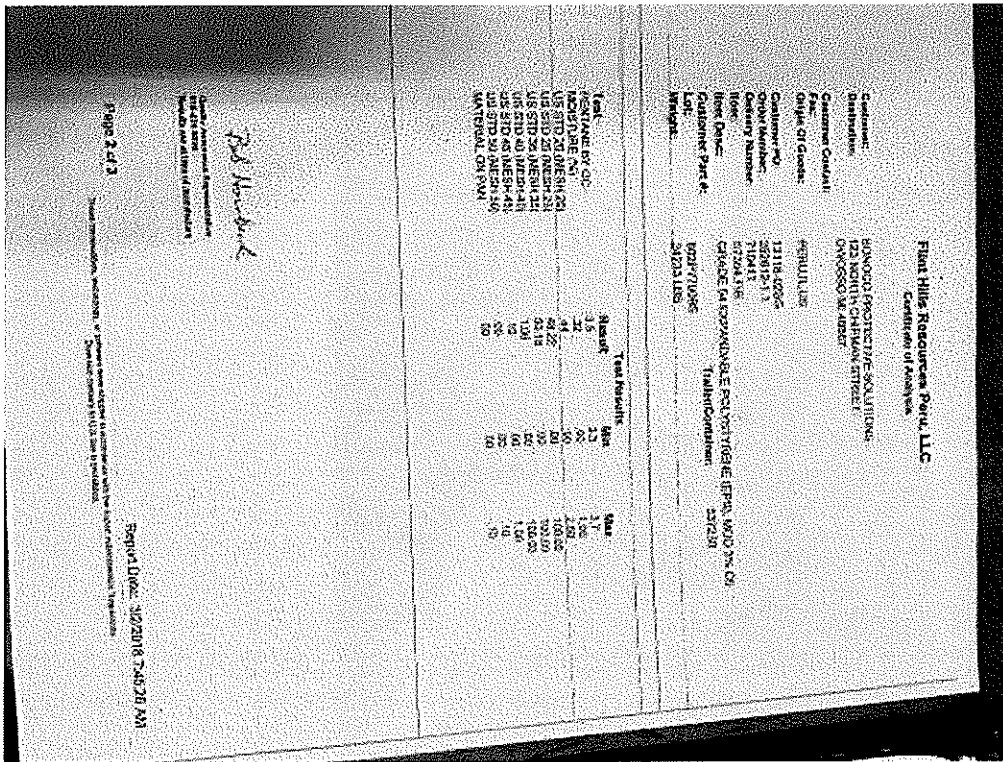


Image 7(18) : Certificate of Analysis

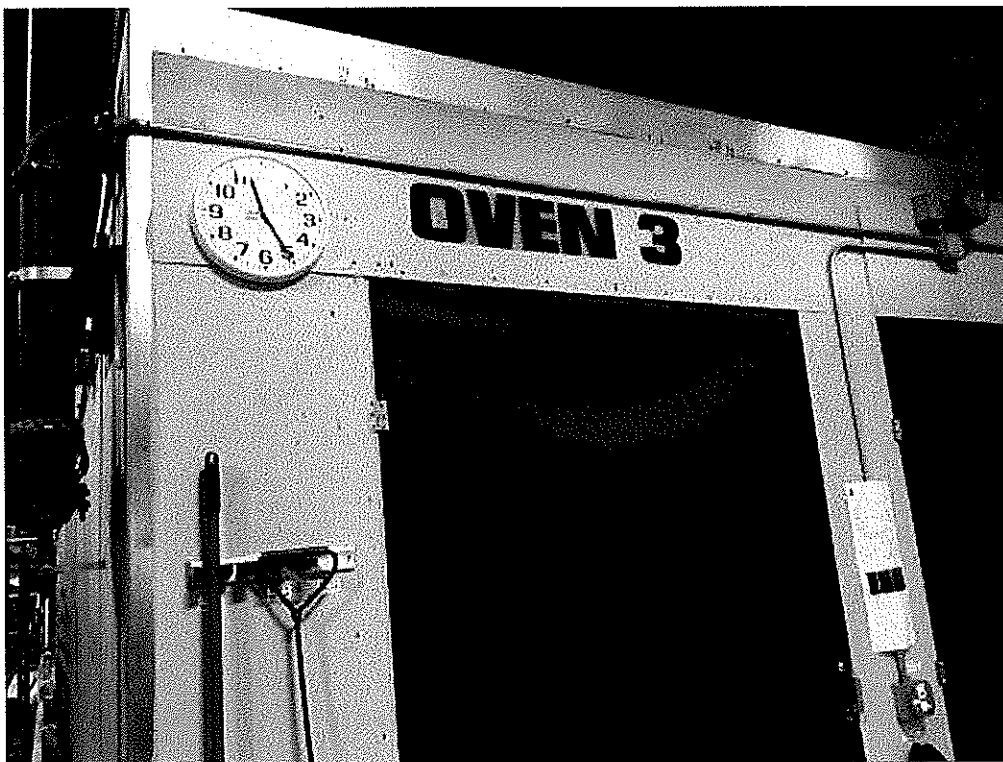


Image 8(14) : Drying oven

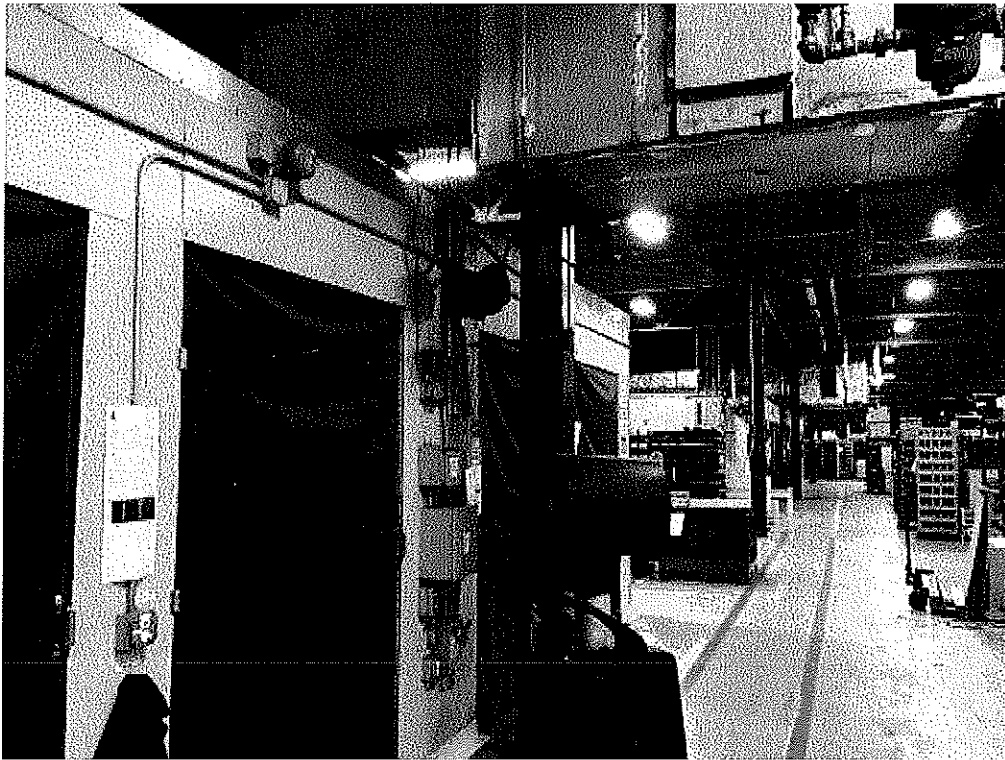


Image 9(16) : Drying ovens

NAME Johi P. Banner

DATE 4/3/18

SUPERVISOR B.M.