BB&E
CONSULTING ENGINEERS & PROFESSIONALS

April 10, 2024

Mr. Daniel McGeen
Environmental Quality Analyst
Lansing District Office
Air Quality Division
525 West Allegan Street, 1st Floor South
Lansing, Michigan 48933

RE: Diamond Chrome Plating, Inc. Response to March 20, 2024 Violation Notice

Dear Mr. McGeen,

On behalf of Diamond Chrome Plating, Inc. (DCP), BB&E, Inc. (BB&E) is providing this letter in response to the items listed in the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD) Violation Notice (VN) dated March 20, 2024. The alleged violations were received following EGLE AQD's on-site inspection at the DCP facility. The purpose of the inspection was to determine DCP's compliance with the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the Air Pollution Control Rules; 40 Code of Federal Regulations (CFR) Part 63, Subpart T, National Emissions Standards for Halogenated Solvent Cleaning, and the First Amended Consent Decree (FACD), Case No. 03-1862 CE.

The following summary table presents EGLE's observations and alleged rule/permit violations; additional information pertaining to EGLE's observations/alleged violations from the VN is provided below, along with DCP's responses.

EGLE Observation No.	Process Description	Alleged Rule/Permit Condition Violated	Comments
1	Nickel plating process	PTI 673-88, Special Condition (SC) 18, and Rules 370 and 910	Pale green stains on the outside of the nickel scrubber were indicative of nickel oxide and indicated past release(s) of collected air contaminants.
2	Chrome redox process	PTI 672-88, SC 18	Bisulfite and acid were said to be added to the process, in place of one of the original raw materials, Sulfur Dioxide.

EGLE Observation 1

The AQD staff observed pale, green stains on the side of the scrubber which appeared to have been from two access panels. The color of the dried material was consistent with that of nickel oxide.

The nickel oxide stains on the outside of the scrubber indicate a violation of PTI 673-88, SC 18 and of Rule 370 of the administrative rules promulgated under Act 451, which both require that the disposal of collected air contaminants shall be performed in a manner which minimizes the introduction of air contaminants to the outer air. This also constitutes a violation of Rule 910 of the administrative rules promulgated under Act 451, which requires that an air-cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the administrative rules and existing law.

DCP Response 1

DCP has taken immediate steps to ensure that the scrubber device is installed, maintained, and operated in a satisfactory manner and in accordance with the administrative rules and existing law. DCP initiated activities to identify any potential current source or cause of the stains on the side of the scrubber; however, a source has not been able to be identified. The gaskets, piping, etc. all appear to be operating correctly and in good condition.

DCP believes that at some unknown point in time, maintenance was conducted on the scrubber unit, and the material incidentally leaked out of the open panel. The material was not sufficiently cleaned up, and over time, caused oxidation to occur on the exterior of the device. DCP has cleaned the scrubber unit and re-painted the scrubber device to ensure that the stains do not come back, and to aid in identifying a potential source. Photos of the scrubber unit following painting are shown in **Attachment 1**; DCP will continue to evaluate, and if a source of the stain is identified, DCP will take prompt action to address the issue.

In summary, no release of materials is occurring at this time (nor does appear to have occurred recently) and corrective action as described above has been performed. Photos of the scrubber unit from 2016 timeframe and following the on-going repainting (March 2024) are included in **Attachment 1**.

EGLE Observation 2

The AQD was informed on February 7, 2024, that the chrome redox process has undergone changes in the way it is operated since PTI 672-88 was issued. Specifically, bisulfite and acid were said to be added to the process, in place of one of the original raw materials, Sulfur Dioxide. PTI 672-88, SC 18 states:

"Applicant shall not substitute any raw materials or process for those described in this permit application which would result in an appreciable change in the quality or any appreciable increase in the quantity of the emission of an air contaminant without prior notification to and approval by the Air Quality Division."

DCP Response 2

DCP has reviewed the available chromium reduction oxidation (Redox) wastewater treatment tank (Tank 1) information in Air Permit to Install (PTI) 672-88 and has determined that the apparent substitution of the Chrome reduction agent Sulfur Dioxide with Sodium Bisulfite (and resultant Sodium Bisulfate) is exempt from permit modification as the substitution does not appear to meet the "meaningful change" criteria under MAPC Rule 285(3)(a) or (b).

BACKGROUND

During a routine EGLE AQD, Air Compliance Inspection on February 7 and 29, 2024 at DCP (referred to herein as the "Air Compliance Inspection"), it was noted that the material used in Tank 1 did not appear to be as contained in Air PTI 672-88, approved in 1988. The Chrome reducing agent that PTI 672-88 was based on appears to be Sulfur Dioxide (Chemical Abstract Service (CAS) number 7446-09-5).

According to National Metal Finishing Resource Center (NMFRC)[1] the chrome Redox equation using Sulfur Dioxide is as follows:

$SO_2 + 2H_2CrO_4 > Cr_2(SO_4)3 + 2\ H_2O$ where:
SO_2 = Sulfur Dioxide gas
H_2CrO_4 = Chromic Acid
$Cr_2(SO_4)$ = Chromic Sulfate
HOH = Water

PTI 672-88 is contained as **Attachment 2**. On October 26, 1988, DCP provided additional information regarding the materials used in each tank listed in PTI 672-88 (**Attachment 3**). Safety Data Sheet (SDS) information is included in **Attachment 4** and **Attachment 5.**

During the Air Compliance Inspection, it was noted that the chrome reduction agent was Sodium Bisulfite (CAS 7631-90-5). According to NMFRC the chrome Redox equation using Sodium Bisulfite is as follows:

$3NaHSO_3 + 2H_2CrO_4 + 3H_2SO_4 > Cr_2(SO_4)3 + 5H_2O + NaHSO_4$ where:
$NaHSO_3$ = Sodium Bisulfite Liquid
H_2CrO_4 = Chromic Acid (Cr^{6+})
H_2SO_4 = Sulfuric Acid
$Cr_2(SO_4)$ = Chromic Sulfate (Cr^{3+})
HOH = Water
$NaHSO_4$= Sodium Bisulfate

[1] http://www.appliedmechtech.com/wp-content/uploads/2016/08/INFO-Cr-reduction-NMFRC.pdf

Note: Chrome reduction reactions tend to progress rapidly between pH of 2 and 3. As such, it is typical to use Sulfuric Acid as pH control to speed up the reaction time. Sulfuric Acid was identified in PTI 672-88. It can be used to achieve the desired pH with either Sulfur Dioxide or Sodium Bisulfite as the Chrome reduction agent. During the Chrome reduction the Sodium Bisulfite is not emitted but converted to Sodium Bisulfate (CAS 7681-38-1) as indicated in the Redox equation above.

According to NMFRC, Sulfur Dioxide gas usage is restricted mostly to large treatment plants and Sodium Bisulfite is used at most small and medium-sized systems. The drawbacks to Sulfur Dioxide gas include the potential health hazard it presents because of its toxic nature. NMFRC further reports that the results of a "Users Survey indicate that approximately 6% of all respondents use Sulfur Dioxide and approximately 60% of all respondents use Sodium Bisulfite (approximately 34% do not have a chromium treatment process or use an alternative chemical). Shops using Sulfur Dioxide had average and median industrial wastewater flow rates of 153,814 gallons per day (gpd) and 55,000 gpd, respectively. For all shops surveyed, the average and median flows were 34,600 gpd and 14,000 gpd." Considering DCP's on-site wastewater only, DCP has an average flow of 346 gpd and creates a Redox batch every 2 – 3 days at 1,200 gallons. When DCP is processing on-site groundwater for treatment, in conjunction with process wastewater, DCP prepares a Redox batch every day at 1,200 gallons.

Historically, DCP used Sulfur Dioxide when its wastewater had a higher solids content. Historically, solids content was in the 90% range which resulted in smaller more frequent wastewater treatment batches (1,000 gallons) and usage of more wastewater treatment chemicals, which aligns with the NMFRC reference. Additionally, the Redox process at DCP took place at 120-150 degrees Fahrenheit (**Attachment 3**).

DCP has continually improved its processes to reduce solids content, including working with EGLE, to reduce their wastewater solids content down to approximately 10-20%. This allows DCP to run larger less frequent batches up to 2,600 gallons. For example, in the past five years, process improvements included working with EGLE's Materials Management Division (MMD) to cease the storage of Chromic Acid in pits. Checking the pits daily and keeping them dry results in less solids content to wastewater treatment. Process improvements such as this have helped reduce the solids content and the amount of wastewater treatment, which results in less use of Redox Tank 1 and associated chemicals. While the wastewater treatment process does receive an occasional slug (approximately twice per year) where solids content may increase, the Sodium Bisulfite can manage the process effectively and at ambient temperature. In summary, the net result of DCPs process improvements has been more effective wastewater treatment, using less chemicals, less equipment, with no potential exposure risk from Sulfur Dioxide gas usage.

To determine whether the material substitution may have been exempt from PTI modification, two parts of the Michigan Air Pollution Control (MAPC) need to be assessed, the first part is **MAPC Rule 285(2)(c),** which exempts changes in a process or process equipment that do not involve installing, constructing, or reconstructing an emission unit and that do not involve a

meaningful change in the quality and nature or a meaningful increase in the quantity of the emission of an air contaminant resulting from any of the following:

MAPC Rule 285(2)(c)(i) Changes in the supplier or supply of the same type of virgin fuel, such as coal, no. 2 fuel oil, no. 6 fuel oil, or natural gas. **MAPC Rule 285(2)(c)(i) does not apply.**

MAPC Rule 285(2)(c)(ii) Changes in the location, within the storage area, or configuration of a material storage pile or material handling equipment. **MAPC Rule 285(2)(c)(ii) does not apply.**

MAPC Rule 285(2)(c)(iii) Changes in a process or process equipment to the extent that such changes do not alter the quality and nature, or increase the quantity, of the emission of the air contaminant beyond the level which has been described in and allowed by an approved PTI, permit to operate, or order of the department. **Requires evaluation of "Meaningful Change".**

For the purposes of **MAPC Rule 285(3)**, "meaningful" with respect to toxic air contaminant emissions is defined as follows:

MAPC Rule 285(3)(a): "Meaningful change in the quality and nature" means a change in the toxic air contaminants emitted that results in an increase in the cancer or non-cancer hazard potential that is 10% or greater, or which causes an exceedance of a permit limit. The hazard potential is the value calculated for each toxic air contaminant involved in the proposed change, before and after the proposed change, and it is the potential to emit (hourly averaging time) divided by the initial risk screening level or the adjusted annual initial threshold screening level (ITSL), for each toxic air contaminant and screening level involved in the proposed change. The adjusted annual ITSL is the ITSL that has been adjusted as needed to an annual averaging time utilizing averaging time conversion factors in accordance with the models and procedures in 40 C.F.R §51.160(f) and Appendix W, adopted by reference in R 336.1902. The percent increase in the hazard potential is determined from the highest cancer and non-cancer hazard potential before and after the proposed change. The potential to emit before the proposed change is the baseline potential to emit established in an approved permit to install application on or after April 17, 1992, that has not been voided or revoked, unless it has been voided due to incorporation into a renewable operating permit.

MAPC Rule 285(3)(b): "Meaningful increase in the quantity of the emission" means an increase in the potential to emit (hourly averaging time) of a toxic air contaminant that is 10% or greater compared to a baseline potential to emit, or which results in an increase in the cancer or non-cancer hazard potential that is 10% or greater, or which causes an exceedance of a permit limit. The baseline is the potential to emit established in an approved permit to install application on or after April 17, 1992 that has not been voided or revoked, unless it has been voided due to incorporation into a renewable operating permit.

ANALYSIS

Chrome reduction from Hexavalent Chromium to a less harmful Trivalent Chromium in plating is a common first step in Chrome Plating Wastewater Treatment Trains. As such, the process

step did not change. As indicated above, Sodium Bisulfite (a liquid or solid (Sodium Metabisulfite)) is the most readily used reducing agent among Chrome Platers. During the reaction, there is no Sodium Bisulfite emission as it is converted to Sodium Bisulfate which is not a volatile organic compound (VOC), hazardous air pollutant (HAP), Michigan Air Toxic, Criteria Air Pollutant, or Emergency Planning Community Right To Know (EPCRA) Extremely Hazardous Substance (EHS). Conversely, the previously used Sulfur Dioxide is a Criteria Air Pollutant and EPCRA EHS but not a VOC, HAP, or Michigan Air Toxic with a defined ITSL. When Sulfur Dioxide was used it was in the gas phase, and the reaction temperature was elevated. As such, some air emission was expected, which is why a mist eliminator was also specified in PTI 672-88.

Table 1 below provides an evaluation of the difference between Sulfur Dioxide and the resultant Sodium Bisulfate.

	Sulfur Dioxide	**Sodium Bisulfate**
Michigan/USEPA Criteria Air Pollutant	YES	NO
EPCRA Section 302 Extremely Hazardous Substance	YES	NO
Hazardous Air Pollutant	NO	NO
Michigan Air Toxics ITSL	NOT LISTED	NOT LISTED
Volatile Organic Compound	NO	NO
Physical State	Gas	Liquid
Redox Temperature	120-150 Degrees Fahrenheit	Ambient

There are no ITSLs to compare Sulfur Dioxide and the resultant Sodium Bisulfate as specified in the MAPC Rule 285(3)(a) or (b). However, based on **Table 1**, the resultant Sodium Bisulfate appears to be widely recognized as less harmful than Sulfur Dioxide.

DCP and BB&E appreciate the Department's willingness to work with us on addressing and correcting these matters. If you have any questions regarding this information or wish to discuss any of our responses further, please do not hesitate to contact me.

Sincerely,

BB&E, Inc.

Celeste M. Holtz
Project Manager

Attachments

Attachment 1 – Photographic Log
Attachment 2 – PTI 672-88
Attachment 3 – Supplemental Information to PTI 672-88
Attachment 4 – Bisulfite Safety Data Sheet
Attachment 5 – Sulfuric Acid Safety Data Sheet

cc (electronic copy):
Mr. Todd Fracassi, Pepper Hamilton
Mr. James Colmer, BB&E, Inc.
Mr. Scott Wright, Diamond Chrome Plating, Inc.
Ms. Emily Peabody, EGLE, RRD
Ms. Carla Davidson, EGLE, WRD
Mr. Bryan Grochowski, EGLE MMD

Attachments

Attachment 1 – Photographic Log

Attachment 1
Photographic Log – Diamond Chrome Scrubber and Ductwork

Photo 1: View of scrubber for the nickel plating process and its ductwork, and the south exterior wall (2016).

Photo 2: View of scrubber for the nickel plating process and its ductwork, and the south exterior wall (2016).

Attachment 1
Photographic Log – Diamond Chrome Scrubber and Ductwork

Photo 3: View of scrubber for the nickel plating process, and the south exterior wall (March 2024) following painting.

Photo 4: View of scrubber ductwork, and the south exterior wall (March 2024) following painting.

Attachment 2 – PTI 672-88

spare copy

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

~~XXXXXXXXXXXXXXXXXXXX~~
David F. Hales, Director

March 20, 1989

WWTU Tank Vents - e.g. Chrome redox tank, et. al.

Mr. John C. Beatty III
General Manager
Diamond Chrome Plating, Inc.
P.O. Box 557
Howell, Michigan 48844

Dear Mr. Beatty:

This letter is in reference to your Permit to Install applications for fume scrubbers, degreasers, a chrome strip operation and a cooling tower, located at 604 S. Michigan Avenue, Howell, Michigan.

These applications, identified as Nos. 672-88, 673-88, 674-88, 675-88, 676-88 and 677-88, respectively, have been evaluated and approved by the Air Quality Division, pursuant to the delegation of authority from the Michigan Air Pollution Control Commission.

This approval is based upon and subject to compliance with all administrative rules of the Commission and conditions stipulated in the attached supplements. Please review these conditions thoroughly so that you may plan for and take the actions necessary to ensure compliance with all of these conditions. Also note that Condition No. 1 of each permit requires you to apply, in writing, for a permit to operate within 30 days after completion of construction.

You are advised that contaminants discharged to the surface waters and/or groundwaters; materials disposed of on land; hazardous waste storage, treatment, and disposal; and resource recovery facilities must be approved by other divisions of the Department of Natural Resources. Additionally, your plant environment must be in compliance with all applicable requirements of the Departments of Public Health and Labor.

Approval of these permits does not constitute a waiver by the State of Michigan of its right to bring appropriate legal action against the applicant for failing to obtain the required permits prior to the commencement of construction.

Thank you for your cooperation. Please contact me if you have any questions regarding these permits.

Sincerely,

Geoffrey Richardson, P.E.
Northwest Permit Unit
Air Quality Division
517-373-7082

GR:clp
Enclosure
cc: Mike Koryto

SUPPLEMENT TO PERMIT NO. 672-88

Diamond Chrome Plating, Inc.
Howell, Michigan

March 20, 1989

GENERAL CONDITIONS

1. Rule 208(2) - Not more than 30 days after completion of the installation, Applicant shall apply, in writing, for a Permit to Operate. Completion of the installation is deemed to occur not later than commencement of a trial operation pursuant to Rule 201(4). Written application should be sent to: Chief, Permit Unit, Air Quality Division, Department of Natural Resources, P.O. Box 30028, Lansing, Michigan 48909.

2. Rule 201(4) - Trial operation of the equipment is permitted until the Michigan Air Pollution Control Commission acts upon the Permit to Operate. Operation of the equipment shall permanently cease upon denial of the Permit to Operate by the Commission.

3. Rule 208(3)(a) and (c) - Applicant shall demonstrate compliance with all Commission rules and with all general and special conditions of this permit prior to issuance of the Permit to Operate.

4. Rule 201 - Applicant shall not reconstruct, alter, modify, expand, or relocate this equipment unless plans, specifications, and an application for a Permit to Install are submitted to and approved by the Commission.

5. Rule 901 - Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property.

6. Rule 208(3)(b) - Operation of this equipment shall not interfere with the attainment or maintenance of the air quality standard for any air contaminant.

7. Operation of this equipment shall not result in significant deterioration of air quality.

8. Rule 912 - Applicant shall provide notification of any abnormal conditions or malfunction of process or control equipment covered by this application, resulting in emissions in violation of the Commission rules or of any permit conditions for more than two hours, to the District Supervisor. Such notice shall be made as soon as reasonably possible, but not later than 9:00 a.m. of the next working day. Applicant shall also, within 10 days, submit to the District Supervisor, a written detailed report, including probable causes, duration of violation, remedial action taken, and the steps which are being undertaken to prevent a reoccurrence.

9. Approval of this application does not exempt the Applicant from complying with any future regulations which may be promulgated under Act 348, P.A. 1965, as amended.

10. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

11. Act No. 53 - Applicant shall notify any public utility of any excavation, tunneling and discharging of explosives or demolition of buildings which may affect said utility's facilities in accordance with Act 53 of the Public Acts of 1974, being sections 460.701 to 460.718 of the Michigan Compiled Laws and comply with each of the requirements of that Act.

12. The restrictions and conditions of this Permit to Install shall apply to any person or legal entity which now or shall hereafter own or operate the equipment for which this Permit to Install is issued. Any new owner or operator shall immediately notify the Chief of the Permit Unit, in writing, of such change in ownership or principal operator status of this equipment.

13. Rule 201(5) - If the installation, reconstruction, relocation, or alteration of the equipment for which this permit has been approved has not commenced within, or has been interrupted for, 18 months, this permit shall become void unless otherwise authorized by the Commission.

SPECIAL CONDITIONS

14. There shall be no visible emissions from the chrome redox operation, hereinafter, "equipment".

15. Applicant shall not operate the equipment unless the mist eliminator is installed and operating properly.

16. The disposal of collected air contaminants shall be performed in a manner which minimizes the introduction of air contaminants to the outer air.

17. The exhaust gases from the equipment shall be discharged unobstructed vertically upwards to the ambient air from a stack with a maximum diameter of 12 inches at an exit point not less than 28 feet above ground level.

18. Applicant shall not substitute any raw materials or process for those described in this permit application which would result in an appreciable change in the quality or any appreciable increase in the quantity of the emission of an air contaminant without prior notification to and approval by the Air Quality Division.

[illegible]MENT OF NATURAL RESOURCES
[illegible]ALITY DIVISION
[illegible]X 30028
[illegible]G, MICHIGAN 48909

GR

STATE OF MICHIGAN

AIR USE PERMIT

APPLICATION

~~7/??~~
L.a. log

APPLICATION NO. 672-88

[illegible] DIVISION
[illegible] - 5 1988
[illegible] SECTION

FOR AUTHORITY TO INSTALL, CONSTRUCT, RECONSTRUCT, RELOCATE, OR ALTER, AND OPERATE PROCESS, FUEL-BURNING, OR REFUSE-BURNING EQUIPMENT AND/OR CONTROL EQUIPMENT (PERMITS TO INSTALL AND OPERATE ARE REQUIRED BY ADMINISTRATIVE RULES PURSUANT TO ACT 348, P.A. 1965, AS AMENDED).

1. APPLICANT; Business License Name of Corporation, Partnership, Individual Owner, Government Agency
Diamond Chrome Plating Inc.

2. MAILING ADDRESS: Number and Street; City or Village; State; Zip Code
P.O. Box 557, Howell, MI 48844

3. EQUIPMENT OR PROCESS LOCATION: Number and Street; City, Village or Township
604 S. Michigan Ave., Howell
COUNTY: Livingston
ZIP CODE: 48843

4. GENERAL NATURE OF BUSINESS:
Hard Chrome Platers, electroplating job shop

5. EQUIPMENT OR PROCESS DESCRIPTION:

[illegible] scrubber [illegible] waste treatment area
[illegible] series 20 duct fan [illegible]
[illegible] cfm.
[illegible] chrome reduction, 5 x 7 ft. misc.
[illegible]/acid neutralization, [illegible] ft. cyanide redox, 2 x 8 ft. tank bottom
[illegible]
These processes do not normally need ventilation. There are, however, various combinations of acids and alkalies which do smell during neutralization. The [illegible] these smells [illegible] a few minutes to a few hours we have chosen to ventilate them [illegible]
[illegible] phosphoric, and chromic. Alkalies can include sodium hydroxide, [illegible] hydroxide, sodium cyanide, sodium hypochlorite, proprietary electrocleaners, tetra potassium ~~[illegible]~~ pyro phosphate.
[illegible]

ESTIMATED COST:

Air Pollution Control Equipment $ | Total Project $

7. ACTION AND TIMING:
existing equipment previsously assumed exempt under rule 285(h)

	ESTIMATED STARTING DATE	ESTIMATED COMPLETION DATE
☐ Installation, construction, reconstruction, or alteration	1984	July 1987 (addition of last tank)
☐ Relocation		
☐ Change of Ownership		

8. NAME OF PRIOR OWNER AS IN ITEM 1 ABOVE, AND PRIOR AIR USE PERMIT NUMBER, IF ANY:
NAME | PERMIT NO.

9. NAME AND TITLE OF OWNER OR AUTHORIZED MEMBER OF FIRM
Name: John C. Beatty, III
Signature: John C. Beatty
Title: General Manager
Date: 9/29/88
Phone No. ( )

10. CONTACT PERSON IF DIFFERENT THAN ITEM 9:
Name | Phone No. ( )

11. DISPOSITION OF APPLICATION: FOR DNR USE ONLY

Receipt of all information required by Rule 203 ____________

Permit to install approved * on ____________ Signature ____________

Permit to operate approved * on ____________ Signature ____________

Application/permit voided on ____________ Signature ____________

Application/permit denied on ____________ Signature ____________

*Subject to compliance with all Commission Rules and Conditions stipulated in the attached supplement.

A2931

STATE OF MICHIGAN

DEPARTMENT OF NATURAL RESOURCES
AIR QUALITY DIVISION
P.O. BOX 30028
LANSING, MICHIGAN 48909

AIR USE PERMIT APPLICATION

APPLICATION NO. 672-88

AIR QUALITY DIVISION

OCT - 5 1988

PERMIT SECTION

GR

FOR AUTHORITY TO INSTALL, CONSTRUCT, RECONSTRUCT, RELOCATE, OR ALTER, AND OPERATE PROCESS, FUEL-BURNING, OR REFUSE-BURNING EQUIPMENT AND/OR CONTROL EQUIPMENT (PERMITS TO INSTALL AND OPERATE ARE REQUIRED BY ADMINISTRATIVE RULES PURSUANT TO ACT 348, P.A. 1965, AS AMENDED).

1. APPLICANT: Business License Name of Corporation, Partnership, Individual Owner, Government Agency
Diamond Chrome Plating Inc.

2. MAILING ADDRESS: Number and Street; City or Village; State; Zip Code
P.O. Box 557, Howell, MI 48844

3. EQUIPMENT OR PROCESS LOCATION: Number and Street; City, Village or Township | COUNTY | ZIP CODE
604 S. Michigan Ave., Howell | Livingston | 48843

4. GENERAL NATURE OF BUSINESS:
Hard Chrome Platers, electroplating job shop

5. EQUIPMENT OR PROCESS DESCRIPTION:

Fume scrubber for waste treatment area
Mapco Mist Eliminator, 8000 cfm, with Hartzell series 34 duct fan, size 24, 1.5 hp air flow thru system presently set at 2000 cfm.
This scrubber ventilates 4 tanks: 2.5 x 6 ft. chrome redox, 3 x 7 ft. misc. alkaline-acid neutralization, 3 x 3 ft. cyanide redox, 2 x 2 ft. tank bottom redox.
These processes do not normally need ventilation. There are, however, various combinations of acids and alkalies which do smell during neutralization. The redox reactions also can smell under some condistions, since these smells can last for a few minutes to a few hours we have chosen to ventilate them for employee comfort. Acids present can include sulfuric, hydrochloric, nitric, acetic, phosphoric, and chromic. Alkalies can include sodium hydroxide, potassium hydroxide, sodium cyanide, sodium hypochlorite, proprietary electrocleaners, tetra potassium, ~~and~~ pyro phosphate.
Scrubber loading estimated at under .5 lb/week.

6. ESTIMATED COST:
Air Pollution Control Equipment $ | Total Project $

7. ACTION AND TIMING:

	ESTIMATED BEGINNING DATE	ESTIMATED COMPLETION DATE
☐ Installation, construction, reconstruction, or alteration	existing equipment previsously assumed exempt under rule 285(h) 1984	July 1987 (addition of last tan
☐ Relocation		
☐ Change of Ownership		

8. NAME OF PRIOR OWNER AS IN ITEM 1 ABOVE, AND PRIOR AIR USE PERMIT NUMBER, IF ANY:
NAME | PERMIT NO.

9. NAME AND TITLE OF OWNER OR AUTHORIZED MEMBER OF FIRM
Name: John C. Beatty, III | Signature: John C. Beatty
Title: General Manager | Date: ~~9/29/88~~ | Phone No. (517) 546-0150

10. CONTACT PERSON IF DIFFERENT THAN ITEM 9:
Name | Phone No. ( )

11. DISPOSITION OF APPLICATION: FOR DNR USE ONLY

Receipt of all information required by Rule 203	11-2-88 MAR 20 1989	
Permit to install approved * on		Signature: Robert Miller
Permit to operate approved * on		Signature
Application/permit voided on		Signature
Application/permit denied on		Signature

*Subject to compliance with all Commission Rules and Conditions stipulated in the attached supplement.

PERMIT EVALUATION SHEET

Application No. 672-88 | WMD notified? Yes (No)
E.I. No. A2931 | SWQ notified? Yes (No)
Const. Commenced? Yes (Reg. Egr. notified) (No) | Other ______
NSPS? Yes (Coord. notified) (No) | NESHAPS? Yes (Coord. notified) (No)

Source Description (Installation date July 1987) (Covered by Permit No. ______)

waste treatment – vents & tanks
2.5×6 ft – chrom redox, -0-8 gal/min & [illegible] g/gal, ~150°F tank
3×7 ft – misc. – alkaline-acid neutralization [illegible], 1-30 g/gal, 150°F, [illegible]
3×3 ft – cyanide redox – 1-10 oz/gal, 150 gal batch,
2×2 ft – Bottom Redox-20#/gal, -30 gal batch, 130°F,
From neutralization sulfuric, Hydrochloric, nitric acetic, phosphoric & chromic, alkalis include – sodium hydroxide, potassium & hydroxide, sodium cyanide, sodium hypochlorite

Control Description

Mapco mist eliminator – 0.5 #/cuft loading
91% eff. [illegible]

Attainment Status	TSP	SO_2	CO	O_3
Attainment	A	A	A	
Non Attainment				A

P - Primary | S - Secondary
A - All Standards | U - Unclassified
* Close to Non attainment

	Plant Totals (TPY)			Equipment covered by this permit					
	Potential	Δ Pot. (5 years)	Allowed) 12-21-76	Uncon. PPH	Expected PPH	Expected TPY	Allowable PPH	Allowable TPY	Limit
TSP									
SO_2									
CO									
NO_x						N/A			
VOC									

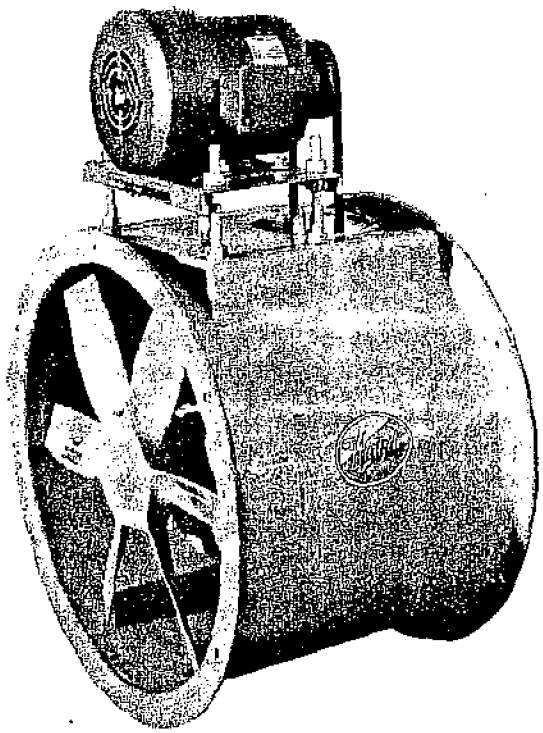
Basis for Recommendation; Comments

This process [illegible] by chemical reaction – no fuels used. Acids etc. are neutralized only.

EOP? Yes (No) | Emissions Logged? Yes (No) | PSD? Yes (No) | PCDS? (Yes) No?

Reviewed by: [signature] Date: 11-2-88

Fiberglass Duct Fan (Belt Drive)



Hartzell fiberglass belt drive duct fans are identical in design and performance to standard Hartzell duct fans. The fiberglass duct fan is the most economical air mover at static pressures from free air to 1¼". Propellers, duct section and bearing covers are constructed of special corrosion-resistant fiberglass resin.

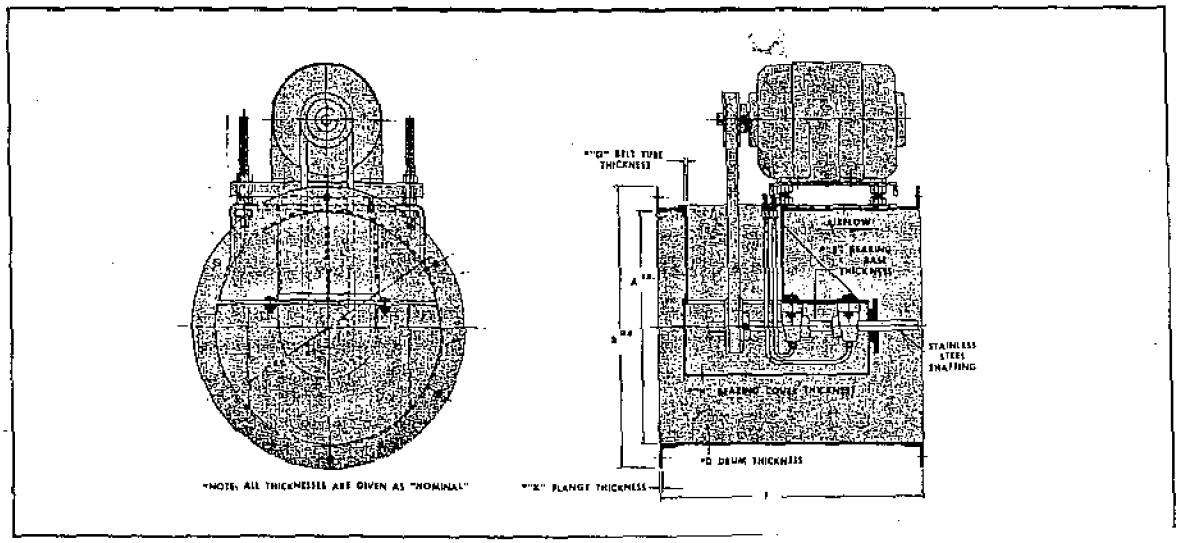
- **Stainless Steel Shaft** with neoprene slinger and fiberglass neoprene seal.
- **Internal bolts** are stainless steel and resin coated after assembly. Monel bolts and shaft are optional.
- **Variable pitch drives** are standard on most models. Belt adjustment is easy.
- **Lubrication fittings** outside the duct and tubes are standard and are not exposed to the main fan airstream.
- Fans contain bearings heavy enough to handle the largest motor cataloged for it.
- Bearings, belts and pulleys are on the intake or negative pressure side.
- Sealed bearing covers.
- Sizes from 12" to 60"

Series 34

Principal Dimensions

Fan Size	A	B	C	D*	E*	F	G*	H*	Hole Dia.	No. of Holes Std.	No. of Holes Hi-Cor	K*
12	12⅞	15½	14½	3/16	5/16	16	⅛	⅛	7/16	6	12	½
16	16⅞	19½	18½	3/16	5/16	16	⅛	⅛	7/16	6	12	½
18	18⅞	21½	20½	3/16	5/16	16	⅛	⅛	7/16	6	12	½
20	20⅞	24	22½	¼	⅜	23	⅛	⅛	7/16	6	18	½
24	24⅞	28	26⅝	¼	⅜	23	⅛	⅛	7/16	6	18	½
28	28⅞	32	30⅝	¼	⅜	23	⅛	⅛	7/16	6	24	½
32	33	36⅛	34⅜	¼	7/16	28	3/16	⅛	7/16	6	30	½
36	37	40⅛	38⅜	¼	7/16	28	3/16	⅛	7/16	6	30	½
44	45	48¼	47⅛	5/16	½	36	3/16	⅛	7/16	12	36	½
48	49⅛	53⅜	51⅝	5/16	½	36	3/16	⅛	7/16	12	36	½
54	55⅜	59⅝	57⅞	5/16	5/8	36	3/16	⅛	7/16	12	42	½
60	61⅜	65⅝	63⅝	5/16	⅝	40	3/16	⅛	7/16	12	42	½

*All thicknesses given as "nominal."



Rating Tables

Size	Type	No. of Blades	Motor HP (1750) RPM	Max. Load on Motor (BHP)*	Fan Speed Available with Std. VP Drive (RPM) Max. Min.**	Code Rating CFM	Cubic Feet Per Minute vs. Static Pressure (For Duct Installation) at Maximum Fan Speed								
							⅛"	¼"	⅜"	½"	¾"	1"	1¼"	1½"	1¾"
12	MD3	6	¼	.28	2530/1955	1800	1670	1510	1315	910	405	—	—	—	—
	ME3	6	⅓	.40	2850/2300	2025	1905	1780	1630	1425	785	395	—	—	—
	MF3	6	½	.57	3200/2640	2280	2170	2060	1940	1800	1270	795	450	—	
16	MD3	6	¼	.29	1725/1170	2540	2340	2020	1480	850	190	—	—	—	—
	MF3	6	½	.57	2170/1610	3180	3020	2875	2555	2100	1125	590	—	—	—
	MG3	6	¾	.79	2420/1970	3545	3400	3240	3050	2780	1850	1110	630	—	—
18	ME3	6	⅓	.35	1490/1050	3256	2960	2620	1900	1090	—	—	—	—	—
	MF3	6	½	.54	1760/1185	3846	3595	3330	3020	2580	1075	—	—	—	—
	MG3	6	¾	.82	2015/1400	4403	4195	3965	3715	3440	1965	1200	—	—	—
20	ME3	6	⅓	.44	1570/1025	4250	3920	3520	2950	1450	—	—	—	—	—
	MF3	6	½	.61	1725/1170	4700	4350	4030	3600	2250	1000	—	—	—	—
	MG3	6	¾	.90	1970/1455	5380	5100	4820	4480	4050	2000	1080	—	—	—
24	MF3	6	½	.61	1305/922	6200	5740	5200	4540	3660	1460	—	—	—	—
	MG3	6	¾	.94	1510/1173	7170	6790	6360	5850	5260	3340	1750	—	—	—
	MH3	6	1	1.21	1640/1210	7790	7420	7040	6610	6100	4900	2740	1600	—	—
	MI3	6	1½	1.78	1865/1510	8850	8530	8200	7850	7450	6540	5380	3350	2280	—
28	MH3	6	1	1.10	1370/1030	8980	8270	7480	6500	5100	2700	—	—	—	—
	MI3	6	1½	1.64	1570/1130	10300	9680	9000	8300	7350	4780	3030	—	—	—
	MJ3	6	2	2.18	1725/1295	11300	10730	10150	9520	8800	6800	4580	3000	—	—
	MK3	6	3	3.27	1960/1610	12900	12300	11900	11340	10850	9500	7560	5540	4100	2600
							¼"	½"	¾"	1"	1¼"	1½"	1¾"	2"	2½"
32	MJ3	6	2	2.15	1330/965	14185	12720	11050	8800	4430	3540	1880	—	—	—
	MK3	6	3	3.25	1525/1295	16260	15000	13640	12060	9775	6650	4930	3360	1930	—
	ML3	6	5	5.30	1795/1410	19140	18100	17000	15810	14430	12800	10000	7780	6275	2580
36	MJ3	6	2	2.22	1245/935	15670	13620	11570	8330	5550	2210	—	—	—	—
	MK3	6	3	3.30	1420/1130	17870	16100	14290	12220	9175	6810	4110	—	—	—
	ML3	6	5	5.57	1690/1455	21250	19810	18300	16760	15020	12700	10200	8300	6200	—
	MM3	6	7½	8.18	1920/1630	24170	22850	21610	20300	18900	17400	15530	13120	11200	7730
44	MK3	6	3	3.30	910/720	23200	20600	17100	11350	7200	—	—	—	—	—
	ML3	6	5	5.70	1090/875	27800	25700	23300	20100	14950	11800	7300	—	—	—
	MM3	6	7½	8.60	1245/1070	31800	29900	27900	25550	22500	18000	14100	11500	8200	—
48	MK3	6	3	3.20	794/668	28820	25000	20500	12750	6300	—	—	—	—	
	ML3	6	5	5.37	943/725	34230	30800	27350	23500	16950	10450	5900	—	—	—
	MM3	6	7½	8.09	1079/892	39170	36150	33200	30100	26800	21500	14300	10150	6400	—
	MN3	6	10	10.85	1188/1000	43120	40400	37600	34750	31900	29000	24300	17350	13050	5900
54	ML3	2	5	5.5	818/568	41486	34770	22500	—	—	—	—	—	—	—
	MM3	2	7½	8.3	938/765	47572	41870	34750	18050	—	—	—	—	—	—
	MM3	4	7½	8.2	780/†	46983	42120	37070	29500	16450	—	—	—	—	—
	MN3	4	10	10.9	857/680	51620	47200	42600	37850	23850	16750	—	—	—	—
60	ML3	2	5	5.5	743/608	48103	38900	20830	—	—	—	—	—	—	—
	MM3	2	7½	8.2	851/685	55094	47300	37730	15700	—	—	—	—	—	—
	MM3	4	7½	8.3	704/606	54461	48500	41800	25350	13000	—	—	—	—	—
	MN3	4	10	11.0	774/†	59876	54500	48630	39100	23550	—	—	—	—	—
	MO3	4	15	16.5	885/†	68463	63800	58870	53400	43300	29250	19500	—	—	—

*Includes all drive losses.
†VP Drive not available.

**CFM at lower speeds will be lower than figures shown in direct proportion to the decrease in RPM.

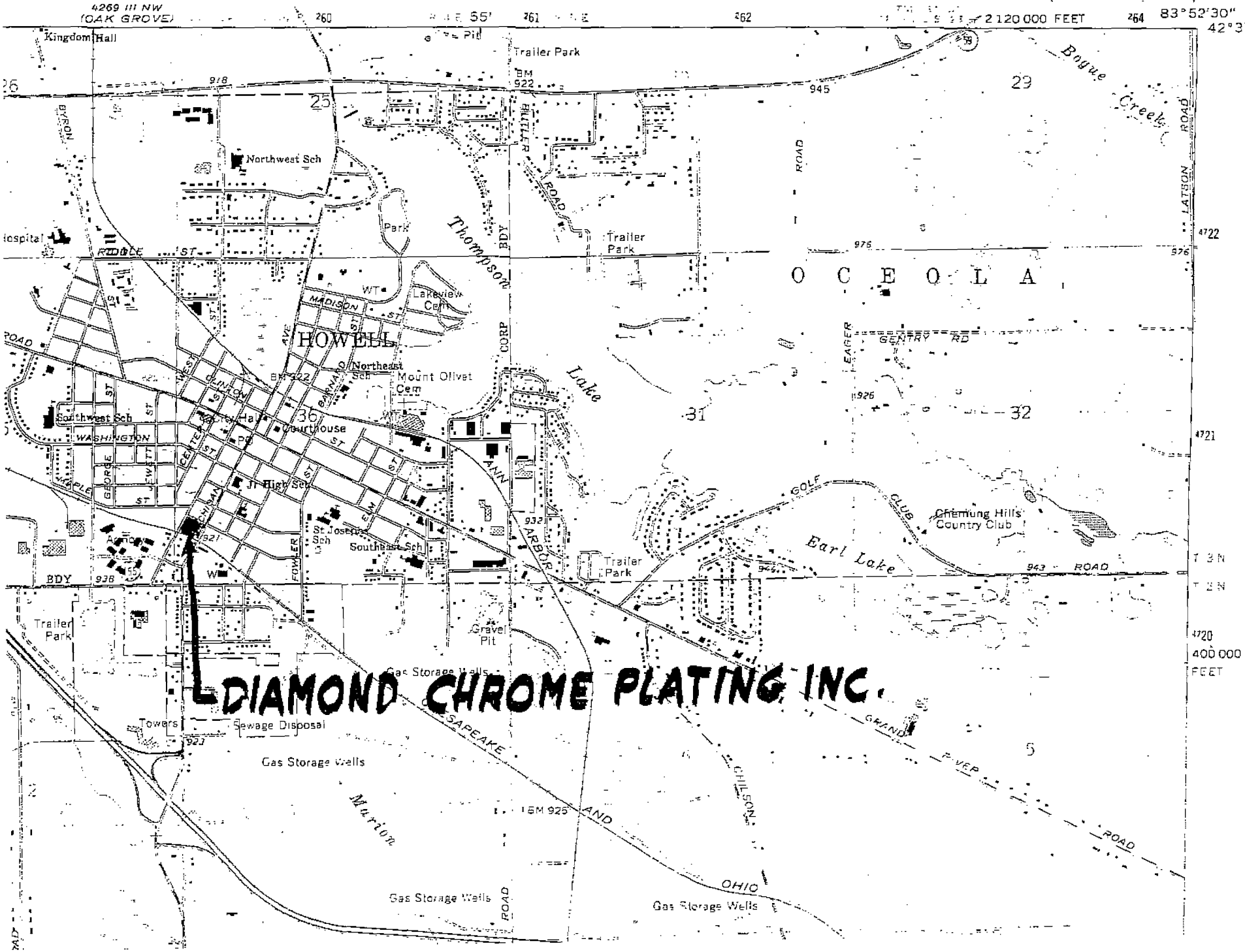
Note: When specifying mention series, size and type.
Example: 34 — 24 — MF3 Belt-drive fiberglass duct fan

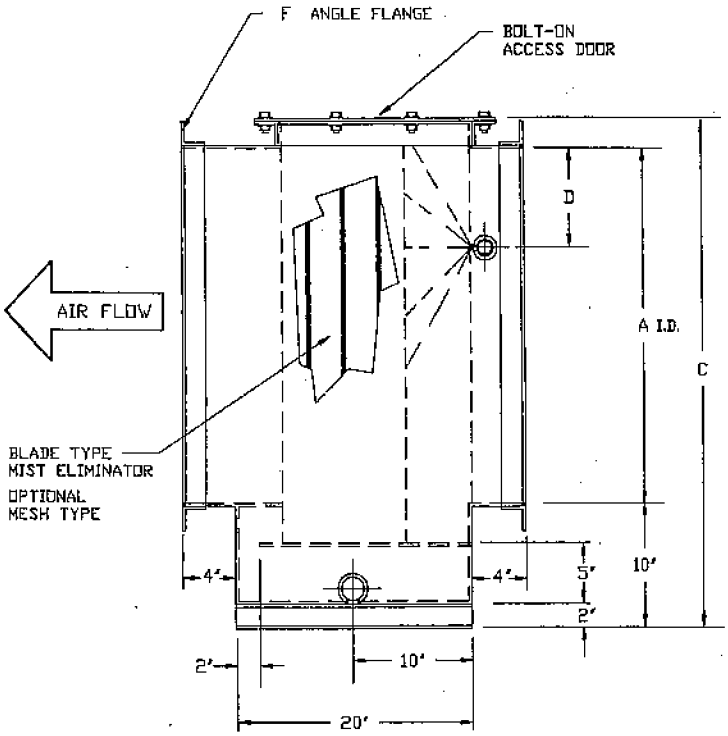
Series — Size — Type

Performance shown is for belt drive fans with inlet and outlet ducts.
RPM shown is nominal and performance is based on actual speed of test.

STATE OF MICHIGAN

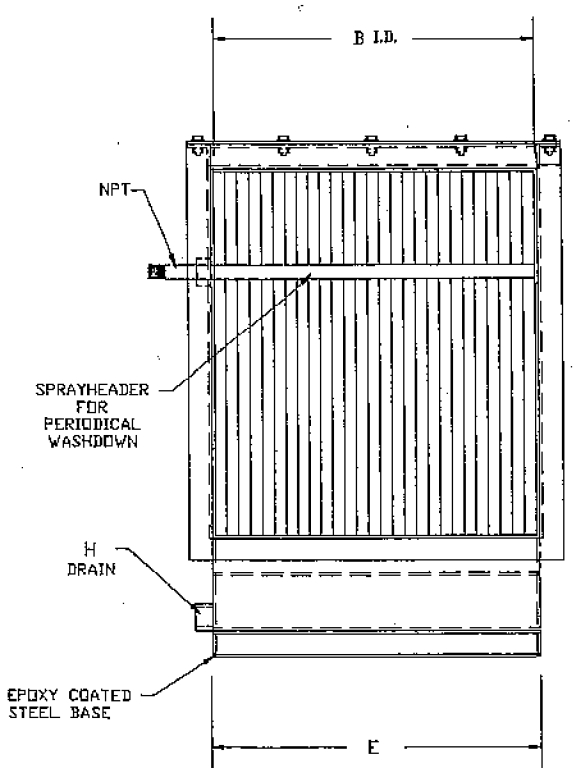
HOWELL QUADRANGLE
MICHIGAN—LIVINGSTON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)





MIST ELIMINATOR

Designed for horizontal installation, the MAPCO Eliminator removes chemical mist, but not gases, from the air stream. Liquid particles are occasionally encountered in the affluents of spray, agitation, or bubbling processes, and can be captured by adding a mist eliminator to the ventilation system. Companies using chrome, copper, zinc, and sulfuric acid, might find this unit suitable. The fumes, moisture-laden from your operation, pass through chevron-type blades providing four 30° directional changes in a vertical mounting, trapping the mist. The unit is set on an epoxy-coated steel base and is equipped with drain, piping, and spray nozzles for occasional washdown. If desired, it may also include an extra set of spray nozzles located at the inlet and be used continuously, converting the unit to a fume washer. The pressure drop through a MAPCO Eliminator is 1" w.g.



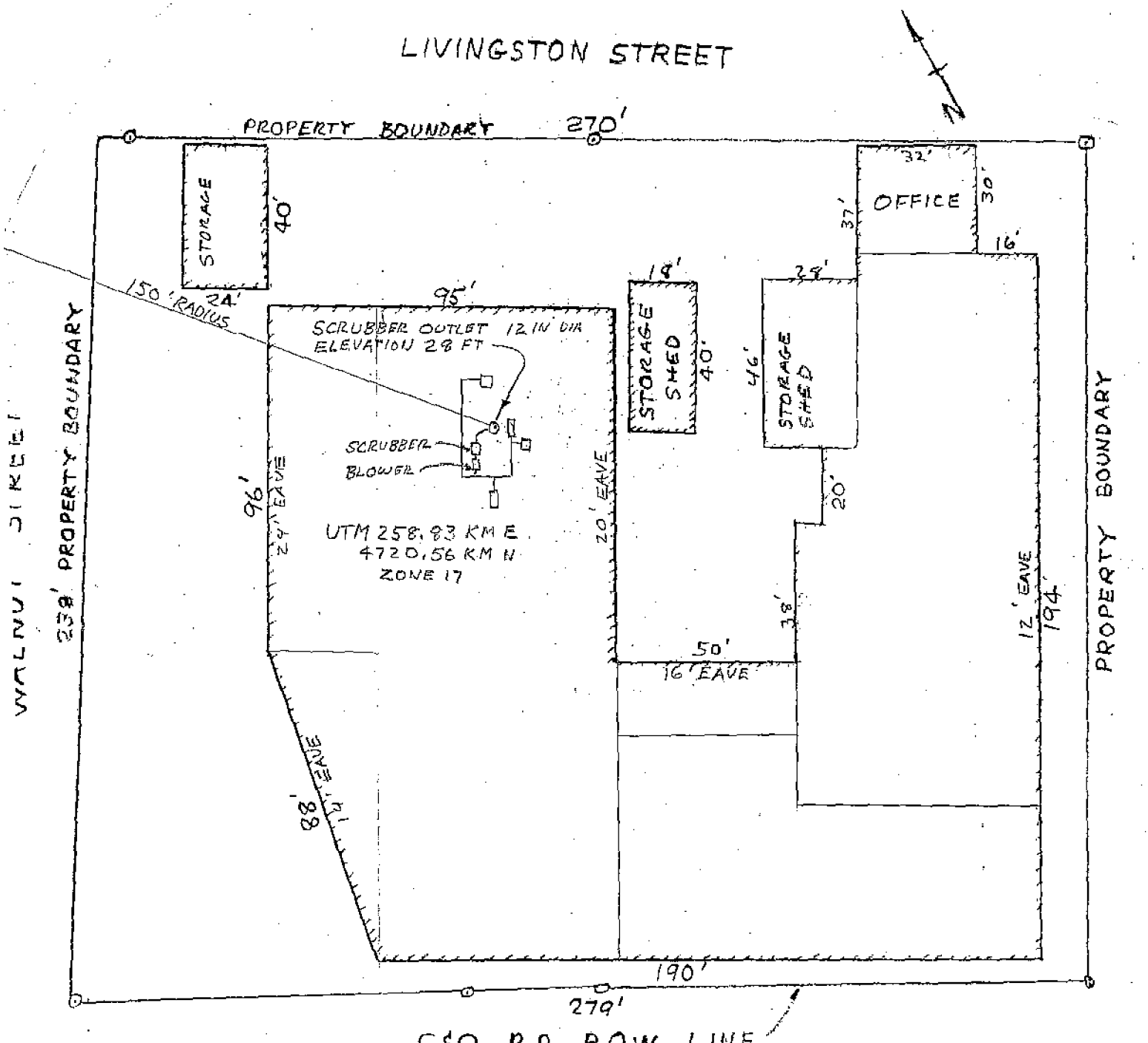
CFM	STATIC PRESS	NOZZLE QTY.S	A	B	C	D	E	F	G	H
500	.75	1	9	9	21	3	9 1/4	1 1/2	1/2	1 1/2
1000	.75	1	13	13	25	3	13 1/4	1 1/2	1/2	1 1/2
2000	.75	1	18	18	30	4	18 3/8	1 1/2	1/2	1 1/2
3000	.75	1	22	22	34	4	22 3/8	1 1/2	1/2	2
4000	.75	1	26	26	38	6	26 3/8	1 1/2	1/2	2
5000	.75	1	29	29	41	7	29 3/8	1 1/2	1/2	2
6000	.75	2	32	32	44	8	32 3/8	2	1/2	2
8000	.75	2	36	36	48	9	36 3/8	2	1/2	2
10000	.75	2	40	40	52	10	40 3/8	2	1/2	3
12000	.75	3	44	44	56	11	44 3/8	2	1/2	3
14000	.75	3	48	48	60	12	48 3/8	2	3/4	3
16000	.75	3	50	50	62	12	50 3/8	2	3/4	3
18000	.75	3	55	55	67	12	55 3/8	2	3/4	3
20000	.75	4	58	58	70	12	58 3/8	2	3/4	3
22000	.75	4	60	60	72	12	60 1/2	2	3/4	4
24000	.75	4	65	65	77	12	65 1/2	2	3/4	4
26000	.75	4	68	68	80	12	68 1/2	2	3/4	4
28000	.75	5	70	70	82	12	70 1/2	2	3/4	4
30000	.75	5	75	75	87	12	75 1/2	2	3/4	4
35000	.75	5	78	78	90	12	78 1/2	2	3/4	4
40000	.75	6	85	85	97	12	85 1/2	2	3/4	4
45000	.75	6	88	88	100	12	88 1/2	2	3/4	4
50000	.75	6	92	92	104	12	92 1/2	2	3/4	4

NOTE: ALL DIMENSIONS SHOWN IN INCHES

DIAMOND CHROME PLATING INC.
SITE PLAN - JANUARY 1988

UNPLATTED LAND CITY OF HOWELL
PART OF S.W. 1/4 SEC. 36, T3N-R4E

SCALE 1" = 40'



SUPERIOR TECHNOLOGY

DIAMOND CHROME PLATING INC.

604 SOUTH MICHIGAN AVENUE P.O. BOX 557 HOWELL, MICHIGAN 48843 (517) 546-0150

October 26, 1988

Department of Natural Resources
Air Quality Division
P.O. Box 30028
Lansing, MI 48909

Attn: Geff Richardson

Dear Mr. Richardson:

Per your phone request of October 14, 1988, here is the additional information on our air use permit applications.

#672-88 Process Description:

Tank #1 - Chrome Redox-Hexavalent Chrome, aqueous solution, concentration variable from 1 to 10 oz/gal is treated with sulfur dioxide to near saturation to convert hexavalent chrome to trivalent. pH is adjusted to 2.5 with sulfuric acid. Redox endpoint is 250 mv. Flow rate is 0-8 gal/min variable, up to 24 hrs/day, 6 days/week, 51 weeks/year temperature to 120 F. Waste from this tank is pH adjusted, precipitated and settled in non-ventilated tanks. The resultant clean water flows to city POTW and the filtered solids are removed by licensed hauler to licensed landfill with necessary manifests.

Tank #2 - Acid alkaline neutralization - Waste process acids and alkalies are combined for disposal. Combinations of nitric acid, sulfuric acid 1-100%, hydrochloric acid 1-100%, 1-100%, sodium hydroxide 1-50%, potassium hydroxide 1-50%, tetrapotassium pyrophosphate 1-3 lb/gal, calcium chloride 1-3 lb/gal and proprietary electrocleaners 1-50 oz/gal are mixed together in 500 gallon batches at room temperature rising on occasion to 150 F. Final pH is 8.5. Up to one batch per day, 5 days/week, 51 weeks/year may be processed. The mixture is then filtered with the clean water going to city POTW and the solids removed by licensed hauler to licensed landfill with necessary manifests.

Tank #3 - Cyanide Redox - Cyanide bearing waste water 1-10 oz/gal is treated in 150 gallon batches at room temperature. Up to one batch/day, 5 days/week, 51 weeks/year may be processed. pH is adjusted to 11 using sodium hydroxide. Chlorine is added to a redox endpoint of 250 mv. pH is adjusted to 9 and chlorine added to an endpoint of 300 mv. Batch is then filtered with clean water going to city POTW and solids removed by licensed hauler to licensed landfill with proper manifests.

Tank #4 - Tank Bottom Redox - Waste from tank bottoms and pits containing up to 8 lb/gal chromic acid and up to 20 lb/gal lead chromate is treated in 30 gallon batches at room temperature rising to 150 F using sodium hydrosulfite to an endpoint yeilding no hexavalent chrome when sample is analyzed. Chrome is converted to trivalent form by this process. Up to one (1) batch/day, 5 days/week, 51 weeks/year may be processed. The resulting semi-solid is hauled away by a licensed hauler to a licensed landfill with the necessary manifests.

The Mabeo Mist eliminator is operating at 2000 cfm, well below its 8000 cfm rating. Efficiency should be 91%. Water flow is 4 gpm recirculating, pH 8.5, exhaust air is room temperature. There is no bypass. Process is shut down if vent requires maintenance. See attached diagram for building heights.

#673-88 Process Description

Two (2) electroless nickel tanks are ventilated, one (1) 90 gallon and one (1) 300 gallon. Both are proprietary containing nickel sulfate up to 1 oz/gal sodium hypophosphate up to 4 oz/gal, ammonia up to 0.1 oz/gal and under 1 oz/gal proprietary buffers and regulators. Operating temperature is 195 F, steam heated. pH is 4.5. Both operate up to 24 hours/day, 6 days/week, 51 weeks/year.

Up to 28 small (10-50 gallon) tanks are used for metal cleaning. Fixed content tanks are as follows:

5	15 gallons water - room temperature
2	50 gallons water - room temperature
1	50 gallon hot water - steam heated 150F
1	15 gallon proprietary alkaline etch cleaner 8 oz/gal steam heated to 160F
1	15 gallons concentrated nitric acid, 2 oz/gal hydrofloric acid - room temperature
1	15 gallon concentrated nitric acid - room temperature
1	15 gallon Zincate 2 lb/gal - room temperature
1	50 gallon nitric acid 20% - steam heated 120F
2	50 gallon concentrated nitric acid - room temperature

Variable content tanks (13) - 5-40 gallon tanks normally empty, filled when needed with acids/alkalies/water as listed in application concentrations to 100% - room temperature.

Scrubber efficiency should be 93%. Exhaust is at room temperature. There is no bypass on this unit. Processing is stopped if maintenance is required. See attached diagram for building heights.

#674-88 Process Description

Two (2) vapor degreasers are used to degrease small parts prior to plating. Parts are placed in a 12 inch round or 18 x 20 inch basket, or are suspended individually, and lowered by hoist into the degreaser for 2 - 20 minutes depending on mass. At completion of cycle parts are removed form the degreaser by hoist. This is a sporadic batch operation up to 16 hours/day, 6 days/week, 51 weeks/year.

#675-88 Process Description

Two (2) tanks are used for cadmium plating. The baths contain 3 oz/gal cadmium, 15 oz/gal sodium cyanide, 2 oz/gal sodium hydroxide, 5 oz/gal sodium carbonate and 100 ppm hydrogen peroxide. Baths are cooled by chiller to 70F. Aircraft parts are loaded into the tanks by hand or by hoist and plated 5-20 minutes at approximately 25 amps/sq. ft.

Scrubber efficiency shoud be 95%, stack size is 12 x 16 inches. Waste water from scrubber is treated in our waste treatment area (permit appication 672-88). Clean water flows to city POTW. The residual filtered sludge is hauled away by licensed hauler to licensed landfill with the necessary manifests. Tanks are operated up to 20 hours/day, 6 days/week, 51 weeks/year. There is no bypass - Process is stopped if scrubber needs maintenance.

#676-88 Process Description

Two (2) tanks are used to remove chrome plating from various steel parts. Tanks operate at 120F steam heated. The blowers have no control. Tanks operate up to 24 hours/day, 6 days/week, 51 weeks/year. Parts are loaded by hand or hoist and remain in the strip tank from 1/2 - 6 hours until coating is removed. There is no control on this vent. Waste from this process is treated in our waste treatment area (permit 671-88).

#677-88 Process Description

This cooling tower provides evaporation cooling of water which is used to cool air compressors, chrome tanks, and vapor degreasers. Steam condensate also flows into this circuit with excess water flowing to city POTW. Input water averages 100F, output water varies from 50-90F depending on weather conditions. Air out the

stack runs 10-15F above ambient. If bypass of the tower is required, city water is used for cooling on a once thru basis with water flowing to city POTW. Outlet stack diameter is 36 inches. Unit operates 24 hours/day, 6 days/week, 51 weeks/year and was installed November, 1985.

General:

Attached is a building diagram showing ridge heights of all the structures on our property.

If we have omitted any other information you need please let us know.

Sincerely,

John C. Beatty, III
General Manager

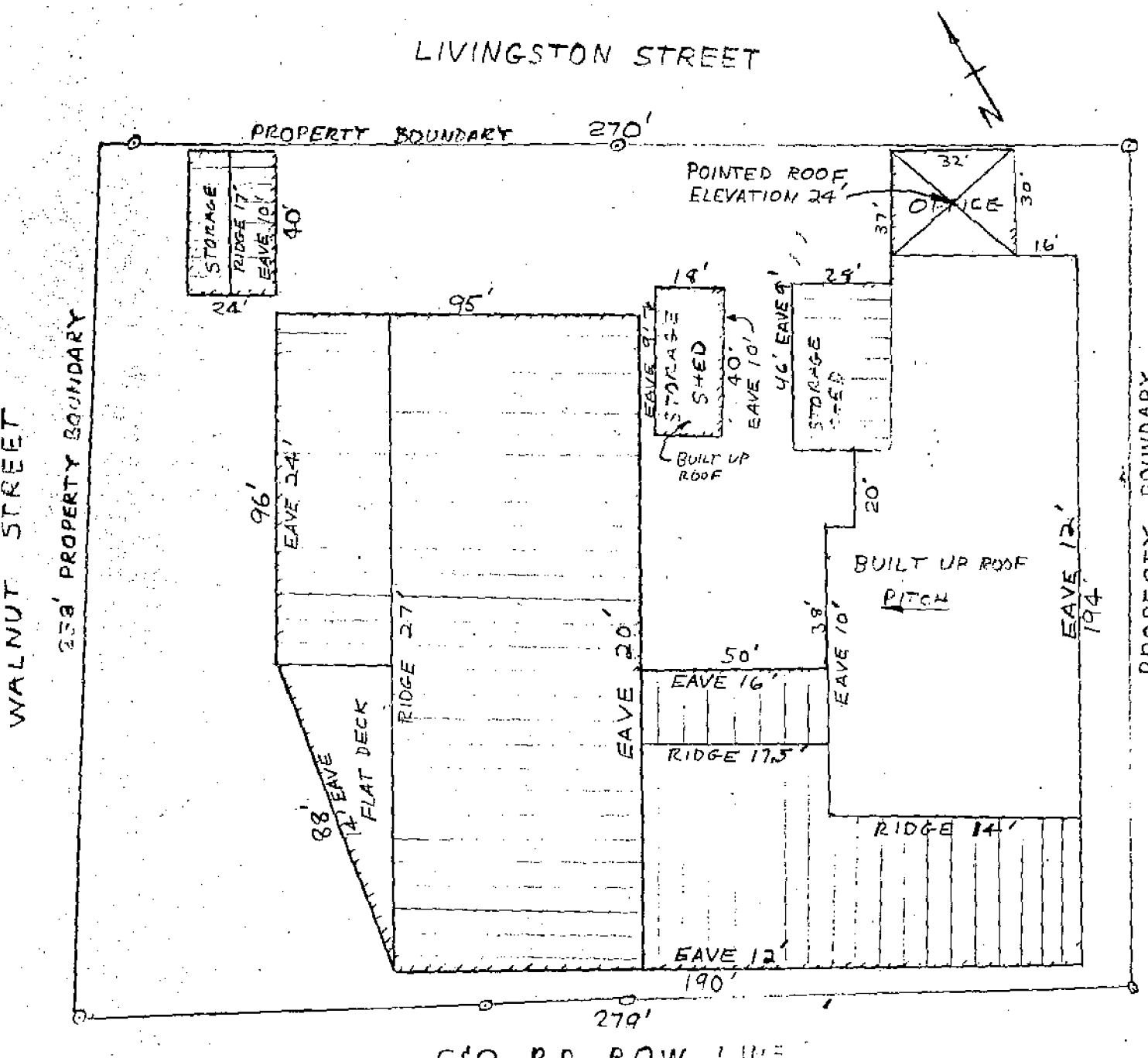
JCB/ks

attach.

DIAMOND CHROME PLATING INC.
SITE PLAN - JANUARY 1989

UNPLATTED LAND CITY OF HOWELL
PART OF S.W. 1/4 SEC. 36, T3N-R4E

SCALE 1" = 40'



Attachment 3 – Supplemental Information to PTI 672-88

SUPERIOR TECHNOLOGY

DIAMOND CHROME PLATING INC.

604 SOUTH MICHIGAN AVENUE P.O. BOX 557 HOWELL, MICHIGAN 48843 (517) 546-0150

October 26, 1988

Department of Natural Resources
Air Quality Division
P.O. Box 30028
Lansing, MI 48909

Attn: Geff Richardson

Dear Mr. Richardson:

Per your phone request of October 14, 1988, here is the additional information on our air use permit applications.

#672-88 Process Description:

Tank #1 - Chrome Redox-Hexavalent Chrome, aqueous solution, concentration variable from 1 to 10 oz/gal is treated with sulfur dioxide to near saturation to convert hexavalent chrome to trivalent. pH is adjusted to 2.5 with sulfuric acid. Redox endpoint is 250 mv. Flow rate is 0-8 gal/min variable, up to 24 hrs/day, 6 days/week, 51 weeks/year temperature to 120 F. Waste from this tank is pH adjusted, precipitated and settled in non-ventilated tanks. The resultant clean water flows to city POTW and the filtered solids are removed by licensed hauler to licensed landfill with necessary manifests.

Tank #2 - Acid alkaline neutralization - Waste process acids and alkalies are combined for disposal. Combinations of nitric acid, sulfuric acid 1-100%, hydrochloric acid 1-100%, 1-100%, sodium hydroxide 1-50%, potassium hydroxide 1-50%, tetrapotassium pyrophosphate 1-3 lb/gal, calcium chloride 1-3 lb/gal and proprietary electrocleaners 1-50 oz/gal are mixed together in 500 gallon batches at room temperature rising on occasion to 150 F. Final pH is 8.5. Up to one batch per day, 5 days/week, 51 weeks/year may be processed. The mixture is then filtered with the clean water going to city POTW and the solids removed by licensed hauler to licensed landfill with necessary manifests.

Tank #3 - Cyanide Redox - Cyanide bearing waste water 1-10 oz/gal is treated in 150 gallon batches at room temperature. Up to one batch/day, 5 days/week, 51 weeks/year may be processed. pH is adjusted to 11 using sodium hydroxide. Chlorine is added to a redox endpoint of 250 mv. pH is adjusted to 9 and chlorine added to an endpoint of 300 mv. Batch is then filtered with clean water going to city POTW and solids removed by licensed hauler to licensed landfill with proper manifests.

Tank #4 - Tank Bottom Redox - Waste from tank bottoms and pits containing up to 8 lb/gal chromic acid and up to 20 lb/gal lead chromate is treated in 30 gallon batches at room temperature rising to 150 F using sodium hydrosulfite to an endpoint yeilding no hexavalent chrome when sample is analyzed. Chrome is converted to trivalent form by this process. Up to one (1) batch/day, 5 days/week, 51 weeks/year may be processed. The resulting semi-solid is hauled away by a licensed hauler to a licensed landfill with the necessary manifests.

The Mapeo Mist eliminator is operating at 2000 cfm, well below its 8000 cfm rating. Efficiency should be 91%. Water flow is 4 gpm recirculating, pH 8.5, exhaust air is room temperature, There is no bypass. Process is shut down if vent requires maintenance. See attached diagram for building heights.

#673-88 Process Description

Two (2) electroless nickel tanks are ventilated, one (1) 90 gallon and one (1) 300 gallon. Both are proprietary containing nickel sulfate up to 1 oz/gal sodium hypophosphate up to 4 oz/gal, ammonia up to 0.1 oz/gal and under 1 oz/gal proprietary buffers and regulators. Operating temperature is 195 F, steam heated. pH is 4.5. Both operate up to 24 hours/day, 6 days/week, 51 weeks/year.

Up to 28 small (10-50 gallon) tanks are used for metal cleaning. Fixed content tanks are as follows:

5	15 gallons water - room temperature
2	50 gallons water - room temperature
1	50 gallon hot water - steam heated 150F
1	15 gallon proprietary alkaline etch cleaner 8 oz/gal steam heated to 160F
1	15 gallons concentrated nitric acid, 2 oz/gal hydrofloric acid - room temperature
1	15 gallon concentrated nitric acid - room temperature
1	15 gallon Zincate 2 lb/gal - room temperature
1	50 gallon nitric acid 20% - steam heated 120F
2	50 gallon concentrated nitric acid - room temperature

Variable content tanks (13) - 5-40 gallon tanks normally empty, filled when needed with acids/alkalies/water as listed in application concentrations to 100% - room temperature.

Scrubber efficiency should be 93%. Exhaust is at room temperature. There is no bypass on this unit. Processing is stopped if maintenance is required. See attached diagram for building heights.

#674-88 Process Description

Two (2) vapor degreasers are used to degrease small parts prior to plating. Parts are placed in a 12 inch round or 18 x 20 inch basket, or are suspended individually, and lowered by hoist into the degreaser for 2 - 20 minutes depending on mass. At completion of cycle parts are removed form the degreaser by hoist. This is a sporadic batch operation up to 16 hours/day, 6 days/week, 51 weeks/year.

#675-88 Process Description

Two (2) tanks are used for cadmium plating. The baths contain 3 oz/gal cadmium, 15 oz/gal sodium cyanide, 2 oz/gal sodium hydroxide, 5 oz/gal sodium carbonate and 100 ppm hydrogen peroxide. Baths are cooled by chiller to 70F. Aircraft parts are loaded into the tanks by hand or by hoist and plated 5-20 minutes at approximately 25 amps/sq. ft.

Scrubber efficiency shoud be 95%, stack size is 12 x 16 inches. Waste water from scrubber is treated in our waste treatment area (permit aopication 672-88). Clean water flows to city POTW. The residual filtered sludge is hauled away by licensed hauler to licensed landfill with the necessary manifests. Tanks are operated up to 20 hours/day, 6 days/week, 51 weeks/year. There is no bypass - Process is stopped if scrubber needs maintenance.

#676-88 Process Description

Two (2) tanks are used to remove chrome plating from various steel parts. Tanks operate at 120F steam heated. The blowers have no control. Tanks operate up to 24 hours/day, 6 days/week, 51 weeks/year. Parts are loaded by hand or hoist and remain in the strip tank from 1/2 - 6 hours until coating is removed. There is no control on this vent. Waste from this process is treated in our waste treatment area (permit 671-88).

#677-88 Process Description

This cooling tower provides evaporation cooling of water which is used to cool air compressors, chrome tanks, and vapor degreasers. Steam condensate also flows into this circuit with excess water flowing to city POTW. Input water averages 100F, output water varies from 50-90F depending on weather conditions. Air out the

stack runs 10-15F above ambient. If bypass of the tower is required, city water is used for cooling on a once thru basis with water flowing to city POTW. Outlet stack diameter is 36 inches. Unit operates 24 hours/day, 6 days/week, 51 weeks/year and was installed November, 1985.

General:

Attached is a building diagram showing ridge heights of all the structures on our property.

If we have omitted any other information you need please let us know.

Sincerely,

John C. Beatty, III
General Manager

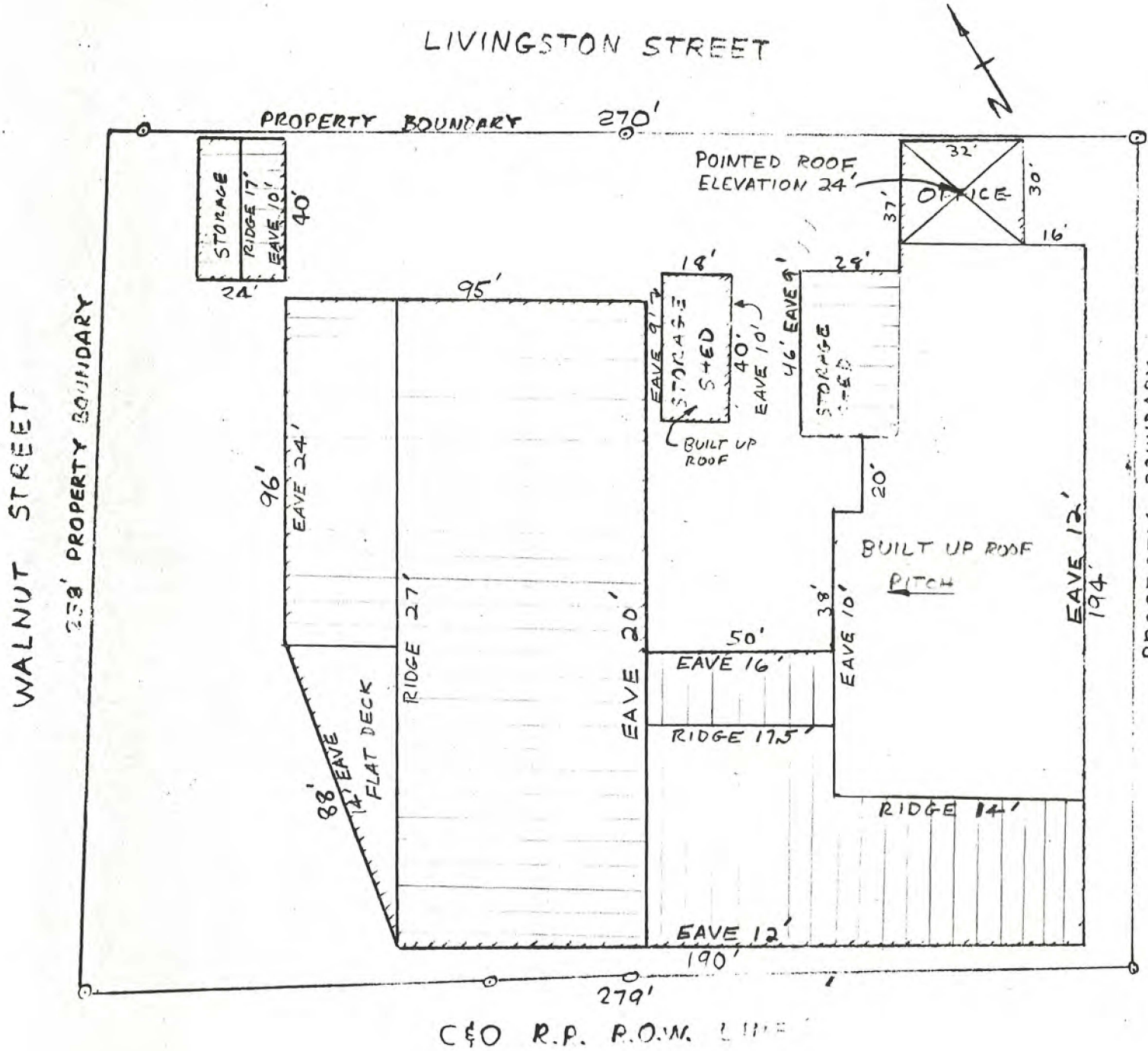
JCB/ks

attach.

DIAMOND CHROME PLATING INC.
SITE PLAN - JANUARY 1999

UNPLATTED LAND CITY OF HOWELL
PART OF S.W. 1/4 SEC. 36, T3N-R4E

SCALE 1" = 40'



Attachment 4 – Bisulfite Safety Data Sheet

HAVILAND PRODUCTS COMPANY
SAFETY DATA SHEET

Haviland
PRODUCTS COMPANY

Section 1: Identification

Product Name: Sodium Bisulfite Liq 38-42% Product Code:H000448 & H006063

Haviland Products Company
421 Ann Street NW
Grand Rapids, MI 49504
(616) 361-6691

Emergency Phone
CHEMTREC: Canada and USA - (800) 424-9300
CHEMTREC: In Mexico - 01-800-681-9531

D.C.P.L. 25 RM 4/13/23

Product Use:
Not recommended for:

Section 2: Hazard(s) Identification

GHS Ratings:

Corrosive to metals	1	Corrosive to metals
Skin corrosive	2	Reversible adverse effects in dermal tissue, Draize score: >= 2.3 < 4.0 or persistent inflammation
Eye corrosive	2A	Eye irritant: Subcategory 2A, Reversible in 21 days
Respiratory sensitizer	1	Respiratory sensitizer
Skin sensitizer	1	Skin sensitizer

GHS Hazards

H290	May be corrosive to metals
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled

GHS Precautions

P234	Keep only in original container
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P264	Wash face, hands, and any exposed skin thoroughly after handling
P272	Contaminated work clothing should not be allowed out of the workplace
P280	Wear protective gloves/protective clothing/eye protection/face protection
P285	In case of inadequate ventilation wear respiratory protection
P321	Specific treatment (see first aid treatment on SDS)
P362	Take off contaminated clothing and wash before reuse
P363	Wash contaminated clothing before reuse
P390	Absorb spillage to prevent material damage
P302+P352	If on skin: Wash with plenty of soap and water.
P304+P341	If inhaled: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice / attention
P333+P313	If skin irritation or rash occurs: Get medical advice / attention.
P337+P313	If eye irritation persists get medical advice / attention
P342+P311	If experiencing respiratory symptons: Call a POISON CENTER or doctor / physician.
P406	Store in a corrosive resistant container with a resistant inner liner
P501	Dispose of contents/container in accordance with local/regional/national/international regulations

Danger

Section 3: Composition/Information on Ingredients

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
Sodium bisulfite 7631-90-5 30 to 40%		5 mg/m3 TWA	NIOSH: 5 mg/m3 TWA

Section 4: First-aid Measures

Inhalation
Rescuers should put on appropriate protective gear. Remove from area of exposure. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep victim warm. Get immediate medical attention. To prevent aspiration, keep head below knees.

Eye Contact
Immediately flush eyes with water. Flush eyes with water for a minimum of 15 minutes, occasionally lifting and lowering upper lids. Get medical attention promptly.

Skin Contact
Remove contaminated clothing. Wash skin with soap and water. Get medical attention. Wash clothing separately and clean shoes before reuse.

Ingestion
If swallowed, do NOT induce vomiting. Give victim a glass of water. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

Section 5: Fire-fighting Measures

Extinguishing Media
Use media suitable for the surrounding fire.

Specific Hazards Arising from the Chemical
None known.

Special Protective Equipment and Precautions for Firefighters
Special Information: As in any fire, wear self-contained breathing apparatus pressure-demand (MSHA / NIOSH approved or equivalent) and full protective gear.

Section 6: Accidental Release Measures

Spill and Leak Procedures
Personal Precautions, Protective Equipment, Emergency Procedures: CORROSIVE MATERIAL. Evacuate unprotected personnel from area. Maintain adequate ventilation. Follow personal protective equipment recommendations found in Section 8. Never exceed any occupational exposure limits.

Methods and Materials for Containment and Clean Up: Shut off source of leak if safe to do so. Contain spill, place into drums for proper disposal. Neutralize with an alkali (sodium carbonate, lime, ect.) sulfur dioxide and carbon dioxide may be released during neutralization. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs.

Section 7: Handling and Storage

Handling Procedures
Use with adequate ventilation. Avoid breathing dusts, mists, and vapors. Do not get in eyes, on skin, or on clothing. Wear eye protection and protective clothing. Wash thoroughly after handling.

Storage Requirements
Store containers in a cool, dry, well ventilated place. Keep container closed when not in use.

Section 8: Exposure Control/Personal Protection

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
Sodium bisulfite 7631-90-5		5 mg/m3 TWA	NIOSH: 5 mg/m3 TWA

ENGINEERING CONTROLS: Provide ventilation sufficient to maintain exposure below the recommended limits.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.

SKIN PROTECTION: Wear impervious protective gloves. Wear protective gear as needed - apron, suit, boots.

EYE PROTECTION: Wear safety glasses with side shields (or goggles) and a face shield.

OTHER PROTECTIVE EQUIPMENT: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

HYGENIC PRACTICES: Do not eat, drink, or smoke in areas where this material is used. Avoid breathing vapors. Remove contaminated clothing and wash before reuse. Wash thoroughly after handling. Wash hands before eating.

Section 9: Physical and Chemical Properties

Appearance: Clear Yellow Liquid	**Odor:** Sulfur Dioxide Odor
Vapor Pressure: ~ 9 @ 20° C mm Hg (SO2)	**Odor threshold:** Not Avaliable
Vapor Density: Not Avaliable	**pH:** 4 as is
Density: Not Available	**Melting point:** Not Avaliable
Freezing point: 45° F	**Solubility:** Complete

Boiling range: ~ 220° F	**Flash point:** Not Combustible
Evaporation rate: Not Avaliable	**Flammability:** Not Avaliable
Explosive Limits: Not Available	**Specific Gravity** 1.33 @ 25° C
Autoignition temperature: Not Avaliable	**Decomposition temperature:** Not Avaliable
Viscosity: Not Available	**Grams VOC less water:** Not Avaliable

Section 10: Stability and Reactivity

Chemical Stability:
STABLE
Incompatible Materials
Acids. Mineral acids. Oxidizing agents. Corrosive to some metals.

Conditions to Avoid
Temperatures at or near boiling point causes evolution of Sulfur dioxide. Avoid excess exposure to air. On exposure to air, the product will lose some Sulfur dioxide and gradually oxidize to sulfate.

Hazardous Decomposition Products
Sulfur dioxide gas. Sulfur oxides. Toxic vapors.

Hazardous Polymerization
Hazardous polymerization will not occur.

Section 11: Toxicology Information

Mixture Toxicity
Oral Toxicity LD50: 3,279mg/kg

Routes of Entry:
Inhalation
Ingestion
Skin contact
Eye contact

Target Organs
Eyes Skin Respiratory System

Effects of Overexposure

CAS Number	Description	% Weight	Carcinogen Rating

Section 12: Ecological Information

Section 13: Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14: Transportation Information

UN Code: 2693 **DOT Name:** Bisulfites, Aquesous Solutions N.O.S. (Sodium Bisulfite)

Hazard Class: 8 **Package Group:** III **Reportable Quantity:** 5000# (Sodium Bisulfite)

Section 15: Regulatory Information

CERCLA/SARA Hazardous Substances

7631-90-5 Sodium bisulfite

TSCA 8(b) Inventory

7631-90-5 Sodium bisulfite

WARNING: This product can expose you to chemical(s), which [is / are] known to the State of California to cause [cancer, birth defects, or other reproductive harm]. For more information go to www.P65Warnings.ca.gov.

Sulfur Dioxide

Country	Regulation	All Components Listed

Section 16: Other Information

Date Prepared: 3/14/2023

Disclaimer

The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.

Attachment 5 – Sulfuric Acid Safety Data Sheet

HAVILAND PRODUCTS COMPANY
SAFETY DATA SHEET

SCANNED

Section 1: Identification

Product Name: Acid, Sulfuric 50% Product Code:H000038

Haviland Products Company
421 Ann Street NW
Grand Rapids, MI 49504
(616) 361-6691

Emergency Phone
CHEMTREC (800) 424-9300
CHEMTREC International (703) 527-3887

DCPI 25 RK 10/11/2020

D.C.P.I. 4 10/1/2020

Product Use: NA
Not recommended for: NA

Section 2: Hazard(s) Identification

GHS Ratings:

Corrosive to metals	1	Corrosive to metals
Inhalation Toxicity	Acute Tox. 2	Gases>100+<=500ppm, Vapors>0.5+<=2mg/l, Dusts&mists>0.05+<=0.5mg/l
Skin corrosive	1A	Destruction of dermal tissue: Exposure < 3 min. Observation < 1 hour, visible necrosis in at least one animal
Eye corrosive	1	Serious eye damage: Irreversible damage 21 days after exposure, Draize score: Corneal opacity >= 3, Iritis > 1.5
Carcinogen	1B	Presumed Human Carcinogen, Based on demonstrated animal carcinogenicity
Organ toxin single exposure	1	Significant toxicity in humans- Reliable, good quality human case studies or epidemiological studies, Presumed significant toxicity in humans- Animal studies with significant and/or severe toxic effects relevant to humans at generally low exposure (guidance)
Organ toxin repeated exposure	1	Significant toxicity in humans- Reliable, good quality human case studies or epidemiological studies Presumed significant toxicity in humans- Animal studies with significant and/or severe toxic effects relevant to humans at generally low exposure (guidance)
Aquatic toxicity	A3	Acute toxicity <= 10.0 but < 100 mg/l

GHS Hazards

H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H330	Fatal if inhaled
H350	May cause cancer
H370	Causes damage to organs
H372	Causes damage to organs through prolonged or repeated exposure
H402	Harmful to aquatic life

GHS Precautions

P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood
P234	Keep only in original container
P260	Do not breathe dust/fume/gas/mist/vapors/spray
P264	Wash face, hands, and any exposed skin thoroughly after handling
P270	Do not eat, drink or smoke when using this product
P271	Use only outdoors or in a well-ventilated area

P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
P281	Use personal protective equipment as required
P284	Wear respiratory protection
P310	Immediately call a POISON CENTER or doctor/physician
P314	Get Medical advice/attention if you feel unwell
P320	Specific treatment is urgent (see first aid treatment on SDS)
P321	Specific treatment (see first aid treatment on SDS)
P363	Wash contaminated clothing before reuse
P390	Absorb spillage to prevent material damage
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338	IF IN EYES: Rinse cautiosly with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P307+P311	IF exposed: Call a POISON CENTER or doctor/physician
P308+P313	IF exposed or concerned: Get medical advice/attention
P405	Store locked up
P406	Store in a corrosive resistant container with a resistant inner liner
P403+P233	Store in a well ventilated place. Keep container tightly closed
P501	Dispose of contents/container in accordance with local/regional/national/international regulations

Danger

Section 3: Composition/Information on Ingredients

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
Sulfuric acid 7664-93-9 50 to 60%	1 mg/m3 TWA	0.2 mg/m3 TWA (thoracic fraction)	NIOSH: 1 mg/m3 TWA

Section 4: First-aid Measures

Inhalation
Rescuers should put on appropriate protective gear. Remove from area of exposure. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep victim warm. Get immediate medical attention. To prevent aspiration, keep head below knees.

Eye Contact
Immediately flush eyes with water. Flush eyes with water for a minimum of 15 minutes, occasionally lifting and lowering upper lids. Get medical attention promptly.

Skin Contact
Remove contaminated clothing. Wash skin with soap and water. Get medical attention. Wash clothing separately and clean shoes before reuse.

Ingestion
If swallowed, do NOT induce vomiting. Give victim a glass of water. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

Section 5: Fire-fighting Measures

Extinguishing Media
Product is not flammable. Use appropriate media for adjacent fire. Cool containers with water.

Specific Hazards Arising from the Chemical
Emits toxic fumes (sulfur oxides, hydrogen sulfide gas) under fire conditions. (See also Stability and Reactivity section).

Special Protective Equipment and Precautions for Firefighters
Special Information: As in any fire, wear self-contained breathing apparatus pressure-demand (MSHA/NIOSH approved or equivalent) and full protective gear.

Section 6: Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASE OR SPILLED:
Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements.

Prevent spillage from entering drains. Neutralize spill with sodium bicarbonate or lime. Absorb spill with noncombustible absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations.

Section 7: Handling and Storage

HANDLING: Use only in a well ventilated area. Avoid breathing vapor, fumes or mist. Avoid contact with eyes, skin, and clothing. Ground and bond containers when transferring material. Always open containers slowly to allow any excess pressure to vent. Follow all MSDS/label precautions even after containers are emptied because they may retain product residues.

STORAGE: Keep away from heat, sparks, and flame. Store containers in a cool, well ventilated place. Keep container closed when not in use. Protect from direct sunlight.

Section 8: Exposure Control/Personal Protection

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
Sulfuric acid 7664-93-9	1 mg/m3 TWA	0.2 mg/m3 TWA (thoracic fraction)	NIOSH: 1 mg/m3 TWA

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.

SKIN PROTECTION: Wear impervious protective gloves. Wear protective gear as needed - apron, suit, boots.

EYE PROTECTION: Wear safety glasses with side shields (or goggles) and a face shield.

OTHER PROTECTIVE EQUIPMENT: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

HYGENIC PRACTICES: Do not eat, drink, or smoke in areas where this material is used. Avoid breathing vapors. Remove contaminated clothing and wash before reuse. Wash thoroughly after handling. Wash hands before eating.

Section 9: Physical and Chemical Properties

Appearance: Colorless to Slightly Black Liquid	**Odor:** Odorless
Vapor Pressure: Negligible	**Odor threshold:** Unknown
Vapor Density: Unknown	**pH:** Unknown
Density: Unknown	**Melting point:** Unknown
Freezing point: -57.6°F (-49.8°C)	**Solubility:** Completely
Boiling range: 237.5°F (114.2°C)	**Flash point:** Unknown
Evaporation rate: Unknown	**Flammability:** Unknown
Explosive Limits: Unknown	**Specific Gravity** 1.4
Autoignition temperature: Unknown	**Decomposition temperature:** Unknown
Viscosity: Unknown	**Grams VOC less water:** Unknown

Section 10: Stability and Reactivity

Chemical Stability:

STABLE

Incompatible Materials

Bases, halides, organic material, carbides, chlorates, fulminates, nitrates, picrates, cyanides, cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorus (III) oxide, powdered metals.

Conditions to Avoid

Moisture

Hazardous Decomposition Products

Sulfur oxides, hydrogen sulfide gas.

Hazardous Polymerization

Hazardous polymerization will not occur.

Section 11: Toxicology Information

Mixture Toxicity

Oral Toxicity LD50: 4,172mg/kg

Inhalation Toxicity LC50: 1mg/L

Component Toxicity

Routes of Entry:

Inhalation
Ingestion
Skin contact
Eye contact

Eyes **Skin** **Respiratory System**

Effects of Overexposure

CAS Number	Description	% Weight	Carcinogen Rating
7664-93-9	Sulfuric acid	50 to 60%	Sulfuric acid: IARC: Human carcinogen IARC: Human carcinogen OSHA: listed

Section 12: Ecological Information

Component Ecotoxicity

Sulfuric acid 96 Hr LC50 Brachydanio rerio: >500 mg/L [static]

Section 13: Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14: Transportation Information

UN Code: 2796 **DOT Name:** Sulfuric Acid with not more than 51% acid

Hazard Class: 8 **Package Code:** II

Section 15: Regulatory Information

CERCLA/SARA Hazardous Substances

7664-93-9 Sulfuric acid

DEA List I and II Chemicals

7664-93-9 Sulfuric acid

SARA 313

7664-93-9 Sulfuric acid

TSCA 8(b) Inventory

7664-93-9 Sulfuric acid

Country	Regulation	All Components Listed

Section 16: Other Information

Date Prepared: 6/03/2019

Disclaimer

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safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.