STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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GOVERNOR

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Intermat
York County
Biddeford, Maine
A-302-71-N-R

Departmental
Findings of Fact and Order
Air Emission License
Renewal

FINDINGS OF FACT

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., §344 and §590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Intermat has applied to renew their Air Emission License permitting the operation of emission sources associated with their carbon and graphite materials production facility.

The equipment addressed in this license is located at 389 Hill Street, Biddeford, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Boilers

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate (scf/hr)	Fuel Type	Manuf. Date	Stack #
Boiler #1	1.34	1301	natural gas	1986	1

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

Process Equipment

Equipment	Max. Raw Material Process Rate	Date of Installation	Pollution Control Equipment	Stack #
Pitch Impregnator	1200 lb/24 hrs	1986	Coalescent Filter	6
#1 Atmospheric Carbonizer	1200 lb/56 hrs	1986	Carbonizer Incinerator	2
#2 Atmospheric Carbonizer	480 lb/48 hrs	2003	Carbonizer Incinerator	2
#1 15-K HIP	950 lb/42 hrs	1986	Spray Condenser	4
#2 15-K HIP	950 lb/42 hrs	1986	Spray Condenser	4
#1 Graphitizer	220 lb/24 hrs	1986	Graph Incinerator	3
#2 Graphitizer	220 lb/24 hrs	1986	Graph Incinerator	3
Grieve Oven	Phenolic Resin, 13 lb/load	2001	Graph Incinerator	3
Heat Cleaning Process	Served Carbon Fiber, 42.5 lb/hr	2002	Graph Incinerator	3
Placed Fiber Process	Phenolic Resin, IPA, 15.1 lb/hr	2002	Overspray Filter, Enclosure, Incin.	7
Quartz Process	2-3 billets/month	2008	Cartridge Dust Collector	5
Machine Shop	N/A	1986	Cartridge Dust Collector	5
Degreaser Unit	N/A	2002	–	–

C. Application Classification

The application for Intermat does not include the licensing of increased emissions or the installation of new or modified equipment. Therefore, the license is considered to be a renewal of currently licensed emission units only and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (as amended).

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

Process Description

Intermat produces carbon and graphite materials used primarily for defense and aerospace applications. The primary processes include the preparation of carbon yarns and fibers, weaving of carbon fibers to form a two or three dimensional matrix, impregnation of the fiber matrix with petroleum or coal tar pitch, carbonization of the pitch, densification, re-impregnation, and graphitization. Other activities include binding carbon and graphite materials using phenolic resin and the use of additional products such as isopropyl alcohol and various adhesives.

B. Boiler #1

Intermat operates Boiler #1 for space heat. The boiler is rated at 1.34 MMBtu/hr and fires natural gas. The boiler was installed in 1986 and exhausts through its own stack.

Due to its size, Boiler #1 is not subject to the New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, for units greater than 10 MMBtu/hr manufactured after June 9, 1989.

1. BPT Findings

The BPT emission limits for Boiler #1 were based on the following:

Natural Gas

PM/PM_{10}	–	0.05 lb/MMBtu based on 06-096 CMR 115, BPT
SO_2	–	0.6 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
NO_x	–	100 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
CO	–	84 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
VOC	–	5.5 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
Opacity	–	06-096 CMR 101

The BPT emission limits for Boiler #1 are the following:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	0.07	0.07	neg	0.13	0.11	0.01

Visible emissions from the boiler shall not exceed 10% opacity on a 6 minute block average, except for no more than one (1) six (6) minute block average in a 3 hour period.

C. Pitch Impregnator

The pitch impregnator is made up of two impregnation vessels, installed in 1986. One vessel is filled with pitch (resembling lumps of shiny coal) and is heated to approximately 300°C (572°F) to melt the pitch and reduce its viscosity to about the consistency of water. The second vessel is also heated to 300°C (572°F) and contains the part to be impregnated (the part is called the 'billet'). The air is then evacuated from the vessel containing the billet and the pitch is pumped from the melting vessel into the billet vessel.

The heat for the impregnation vessels is electric. The vessels are also occasionally used to vacuum dry parts after porosity testing.

Control Equipment
Hydrocarbon exhaust emissions from the vacuum pump are controlled by a condenser followed by a coalescent filter, with a 99.9% overall collection and control efficiency. The condenser is a three foot tall chamber with baffle plates, trapping hydrocarbons which are driven off the pitch. The coalescent filter captures oil fumes generated in the vacuum pump. Both the condenser and filter are drained periodically.

BPT
BPT for the pitch impregnator system is the use of the condenser/coalescent filter system. Intermat shall maintain a log, including documenting any repairs or maintenance to the controls and the routine draining of condensate.

D. Atmospheric Carbonizers

The parts are brought to the carbonization stage after impregnation. Intermat operates two carbonizers, one installed in 1986 and a second, smaller one installed in 2003. The pitch-impregnated billets are heated to approximately 800°C (1472°F) in a nitrogen environment at atmospheric pressure for over a day or two. Then the billets are cooled over a day and a half. This process converts the

material to a dense coke. The carbonization process releases hydrogen, methane, and hydrocarbon vapors.

Control Equipment
The carbonizers are controlled by a thermal incinerator with a 99.99% control efficiency. The incinerator is operated at a temperature of 1600°F throughout the carbonization cycle, with a minimum retention time of 0.5 seconds. It has been calculated to have over double this retention time. The incinerator has two chambers and the burner is rated at 0.8 MMBtu/hr firing natural gas. Testing has shown that the emissions from the carbonizing process drop to negligible levels after the cooling stage begins.

BPT
BPT for the carbonizers is use of the thermal incinerator to control emissions. Intermat shall record the incinerator temperature, minimum of 1600°F, on an hourly basis using a chart recorder. Upon power termination to the carbonizer furnace, the incinerator may be shut down when the carbonizer furnace has a temperature drop of 110°C (230°F) and a minimum of eight hours has elapsed from the time the furnace power has been shut off. At no time shall both carbonizers be powered simultaneously.

A summary of the BPT analysis for the carbonizer incinerator is the following:

PM/PM_{10}	–	0.05 lb/MMBtu based on 06-096 CMR 115, BPT
SO_2	–	0.6 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
NO_x	–	200 lb/MMscf based on twice AP-42, Table 1.4-1, dated 7/98 due to the high amount of thermal NO_x expected
CO	–	84 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
VOC	–	5.5 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
Opacity	–	06-096 CMR 101

	PM (lb/hr)	**PM_{10} (lb/hr)**	**SO_2 (lb/hr)**	**NO_x (lb/hr)**	**CO (lb/hr)**	**VOC (lb/hr)**
Carbonizer Incinerator	0.04	0.04	neg	0.16	0.07	neg

Visible emissions from the carbonizer incinerator shall not exceed 10% opacity on a 6 minute block average, except for no more than one (1) six (6) minute block average in a 3 hour period.

E. Hot Isostatic Press (HIP) Vessels

The two Hot Isostatic Press (HIP) vessels (#1 15-K HIP and #2 15-K HIP) were installed in 1986. The HIP vessels may also be referred to as PIC (Pressure/Impregnation/Carbonization) vessels.

The billets are placed inside a large electric furnace, which is then placed in an autoclave. The HIP furnace heats the parts to as high as 750°C (1382°F) while argon is used to pressurize the vessel up to 15,000 lb/psig (pounds per square inch gauge).

In the standard carbon-carbon HIP cycle, hydrocarbon gases are exhausted from the autoclave during brief pulses. The exhaust goes through a large pressure drop and is cooled by a wet scrubber.

When manufacturing molded-phenolic products, the products are made from 'pre-preg' and molded in the HIP vessels. 'Pre-preg' is carbon-fiber cloth or tape that has been previously impregnated with phenolic resin and heated in the grieve oven to remove most of the volatiles in the resin. The 'pre-preg' cloth is molded into the desired form using a combination of moderate temperatures and pressures in the HIP vessels. Thermal decomposition of the resin is not expected at these temperatures. However any potential emissions are vented through the vacuum pump and controlled by the condenser and coalescent filter.

Control Equipment
The HIP vessels are controlled by a wet scrubber which condenses and removes the heavy hydrocarbons. The HIP scrubber, approximately five feet tall and five feet in diameter, is rated at 99.9% efficiency for the collection and removal of pitch volatiles.

During 'pre-preg' molding in the HIP vessels, potential emissions are controlled by the condenser and coalescent filter

BPT
BPT for the standard carbon-carbon HIP cycle is the use of the HIP scrubber. Intermat shall operate the scrubber in accordance with the design parameters and shall maintain a scrubber minimum flow of 3 gal/min.

BPT for the production of molded phenolic products is the use of the condenser and coalescent filters.

F. Graphitizers

Carbon and phenolic materials are converted to graphite using one of the two graphitizer furnaces, both installed in 1986. The carbonized parts are placed in the

furnaces and are heated to 2500°C (4532°F). In order to prevent oxidation of the carbon and/or graphite, the furnaces are continuously purged with nitrogen. Emissions from the graphitizers are drawn from the top of the furnace and are ducted into the 'graph' incinerator.

Control Equipment
The graphitizer furnaces are controlled by a graphitizer incinerator, which is rated at 99.99% efficiency. The incinerator is operated at a minimum temperature of 1600°F throughout the graphitizer cycle, with a minimum retention time of 0.75 seconds. It has been calculated to have approximately double this retention time.

The incinerator has a natural gas burner rated at 0.65 MMBtu/hr. Testing has shown that the emissions from the graphitizer process drop to negligible levels after the cooling stage begins.

BPT
BPT for the graphitizer furnaces is the use of the graphitizer incinerator to thermally oxidize emissions. The incinerator shall be operated at a minimum temperature of 1600°F and temperature shall be recorded hourly using a chart recorder. Upon power termination to the graphitizer furnace, the graphitizer incinerator may be shut down when the graphitizer furnace has a temperature drop of 700°C (1292°F) and a minimum of three and a half hours has elapsed from the time the furnace power has been shut off.

A summary of the BPT analysis for the natural gas burner on the graphitizer incinerator is the following:

PM/PM_{10}	–	0.05 lb/MMBtu based on 06-096 CMR 115, BPT
SO_2	–	0.6 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
NO_x	–	200 lb/MMscf based on twice AP-42, Table 1.4-1, dated 7/98 due to the high amount of thermal NO_x expected
CO	–	84 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
VOC	–	5.5 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
Opacity	–	06-096 CMR 101

	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Graphitizer Incinerator	0.03	0.03	neg	0.13	0.05	neg

Visible emissions from the graphatizer incinerator shall not exceed 10% opacity on a 6 minute block average, except for no more than one (1) six (6) minute block average in a 3 hour period.

G. Grieve Oven

The grieve oven, installed in 2001, is used for staging phenolic resins, drying parts, and removing alcohol. The phenolic resins staged in the oven are the curing carbon fiber pre-preg mixture or post-curing carbon-phenolic hot pressed or autoclaved components. The grieve oven process volatilizes the alcohol used as the reducing agent, while controlling temperature and duration of heating to prevent the resin from over-curing. The quantity of resin-fiber mixture that can be staged is a function of the solvent loading to the oven to maintain a non-explosive atmosphere in both the oven chamber and the exhaust line (13.0 lbs).

Control Equipment
The grieve oven is controlled by exhausting to the existing graphitizer incinerator.

BPT
BPT for the grieve oven is the use of the graphitizer incinerator when the grieve oven is in use for staging phenolic materials, the loading limit for uncured resin of 13 lb/load, and maintaining a log of the loading weight of the phenolic resin.

H. Heat Cleaning Process

The heat cleaning process, installed in 2002, is used to remove nylon or polyester fibers ('serving') which has been wrapped around the carbon fiber yarn. The serving is used to reinforce the carbon and improve its handling characteristics. The serving may be left in place for weaving some materials. However, it must be removed for some applications, such as three-dimensional weaving. In order to remove the serving, the heat cleaning process uses controlled atmospheric pyrolysis which leaves the more resistant carbon fiber relatively unchanged.

Heat cleaning occurs either in the yarn stage or once the yarn is woven into cloth, tape, or similar broad goods.

Intermat is experimenting with variations on this process. Currently, continuous-feed natural gas fired tube furnaces are being used for heat cleaning in the yarn stage, and a continuous-feed gas fired pyrolysis oven is used for heat cleaning the woven broad goods. The heat cleaning furnace capacities vary, but none are greater than 0.5 MMBtu/hr. The heat cleaning process exhausts to the graphitizer incinerator.

During the heat cleaning process, it is expected that the serving is mostly combusted. However, conservative calculations assumes that the total weight of the serving is exhausted to the incinerator. An estimated 24% of the total weight of the served fiber and cloth is serving weight. Therefore, approximately 42.4 lb/hr can be fired in the pyrolysis ovens/furnaces, so that the serving weight discharged to the graphitizer incinerator remains below 10.2 lb/hr.

Control Equipment
The heat cleaning process is controlled by exhausting to the existing graphitizer incinerator.

BPT
BPT for the heat cleaning process is the use of the graphitizer incinerator, the load limit for served fiber or cloth of 42.5 lb/hr, maintaining a log of the loading weight of the served fiber or cloth, and the scheduling of heat cleaning operations only at times when the graphitizer incinerator can accommodate the additional 10.2 lb/hr loading.

I. Placed Fiber Process

The Placed Fiber Spray Booth, installed in 2002, treats carbon fibers with phenolic resin to produce sheets of resin-impregnated material (pre-preg). The fibers are impregnated with resin using either a flow coater chopper gun or manual application methods. The chopper gun draws carbon fibers from spools through a pneumatically powered chopping blade and deposits the fiber in a random orientation on a substrate. As the fibers are deposited, a low pressure stream of phenolic resin thinned with isopropyl alcohol (IPA) is put onto the fibers. The sheets are then transferred to the grieve oven via a cart (enclosed with plastic). In the grieve oven, the IPA evaporates and the exhaust is treated by the graphitizer incinerator.

Control Equipment
The control equipment for the placed fiber spray booth is a fiber filter prior to being exhausted to the roof. This overspray filter is rated at a 90-93% efficiency. The control equipment for the processed sheets is the use of an enclosed cart for transport to the grieve oven, and the use of the graphitizer incinerator for the grieve oven exhaust.

BPT
BPT for the placed fiber spray booth is the use of a fiber filter and a limit on visible emissions. The use of a low pressure stream coater shall be used to minimize the VOC and HAP emissions (IPA, formaldehyde, phenol) from the coating process. All containers shall be closed when not in operation.

BPT for the placed fiber processed sheets shall be the use of the wheeled cart enclosed with plastic sheeting to reduce evaporation when transporting the sheets to the grieve oven, and the use of the graphitizer incinerator to treat the grieve oven exhaust. The resign impregnated material shall be transferred from the spray booth to the grieve oven within 90 minutes of spray completion (approx. two hours after spraying the first sheet). This method was tested and approximately 12% of the resin mixture evaporated over a 90 minute period.

Calculating emissions, it was estimated that annual resin use would be less than 1000 lbs and IPA use would be less than 1200 lbs. Emissions from the staging area and spray booth were calculated as follows:

Material	Max Raw mat'l use	Phenol	Formaldehyde	Isopropanol	Solids
Resin Usage (x)	1000 lb/yr	180 lb/yr (18% of resin)	20 lb/yr (2% of resin)	200 lb/yr (20% of resin)	600 lb/yr (60% of resin)
Isopropanol Usage (y)	1200 lb/yr	0	0	1200 lb/yr	0
As applied ($x+y$)	2200 lb/yr	180 lb/yr	20 lb/yr	1400 lb/yr	150 lb/yr (calcs assume conservative 75% transfer efficiency)
Controlled spray booth emissions		See table below for evaporation	See table below for evaporation	See table below for evaporation	15 lb/yr (filter 90% control)

Testing determined that on average less than 15% of the sprayed resin mixture evaporated in 90 min. using the enclosed cart for transporting to the grieve oven. Based on the annual use of 2200 lb/yr of resin/IPA mixture and 15% evaporation, the volatile emissions would be 330 lb/yr.

	Phenol	Formaldehyde	Isopropanol
% of evaporative resin constituents	11.25%	1.25%	87.50%
Evaporated emissions from 330 lb/yr (z)	37.13 lb/yr	4.13 lb/yr	288.75 lb/yr
Controlled incinerator emissions of remaining volatiles (v)	0.14 lb/yr [(180 – 37.13) x (100-99.9)]	0.02 lb/yr [(20 – 4.13) x (100-99.9)]	1.11 lb/yr [(1400 – 288.8) x (100-99.9)]
Total Controlled Emissions ($z+v$)	37.3 lb/yr	4.1 lb/yr	289.9 lb/yr

Phenol and formaldehyde are considered HAPs. Phenol, formaldehyde, and isopropanol are considered VOC. Therefore, total emissions from the placed fiber process shall be:

41.4 lb/yr (0.02 tpy) HAP, and
331.3 lb/yr (0.2 tpy) VOC.

PM emissions are expected to be less than 15 lb/yr (0.01 tpy).

J. Machine Shop

The machine shop, established in 1986, consists of grinders and saws which create graphite dust and other particulate matter. Flexible hoses collect the dust at each work station via a vacuum. The air is passed through a cartridge-type dust collector. The filtered air is then either vented back to the machine shop or is vented through the roof vents.

Control Equipment
The machine shop is controlled through the use of a cartridge dust collector, rated at 99.6% efficiency.

BPT
BPT for the machine shop shall be the use of the cartridge dust collector. Intermat shall be limited to 10% opacity on a 6 minute average from the dust collector when it is vented outside through the roof vents.

K. Quartz Process

Intermat operates a quartz production process, licensed in 2009, to produce approximately two to three quartz billets per month. The quartz process includes weaving high purity quartz fibers to form a two or three dimensional matrix known as a preform. The preform is then heat cleaned to remove sizing. After heating, the quartz preform undergoes vacuum and/or pressure impregnation with aqueous 40% colloidal silica (SiO_2). Following the impregnation, the part is oven dried and sintered at a high temperature to form a cohesive structure. The impregnation, drying, and sintering may then be repeated until the final density is reached.

The heat cleaning of the preform matrix at the beginning of the process is vented to the atmosphere. Additional control was not proposed due to the intermittent operations, limited quantity of parts being manufactured, and minimal emissions (based on the MSDS sheet for a typical quartz fiber yarn).

Impregnation of the quartz matrix with the colloidal silica can be conducted using either a vacuum-only impregnation process, or a vacuum/pressure impregnation

process. In the vacuum-only process, the quartz preform or partially densified quartz part is placed in a smaller, dedicated silica impregnation vessel, which is then closed, and a vacuum is drawn on the vessel and SiO_2 impregnant is drawn into the vessel to infiltrate the part.

If a pressure impregnation is desired to be subsequently applied, the vacuum is released from the vessel and the impregnation vessel containing the preform and impregnant will be put in one of the existing HIP vessels. After loading the impregnator into the HIP vessel it is closed and pressurized with gas.

Once impregnated, dried (at approximately 250°F) and sintered (at approximately 1562°F), the process may be repeated. All of these processes use electric ovens with no fuel burning emissions.

Control Equipment
Particulate matter from the vacuum pump exhaust is controlled with a coalescent filter. The pressure relief from the HIP vessel is vented to the HIP scrubber.

BPT
BPT for the quartz process is the use of a coalescent filter on the vacuum pump exhaust and the HIP scrubber on the pressure relief from the HIP vessel.

L. Quartz Process Supporting Activities

The finished quartz parts are machined and the surfaces may be sprayed with an aluminum/plasma coating.

The aluminum plasma spray unit meets the criteria for 06-096 CMR 115, Appendix B, Section (A)(66): "Plasma etcher or plasma spray unit, using dust collection to prevent fugitive emissions and using only oxygen, nitrogen, carbon dioxide, or inert gas that do not emit VOCs or HAPs". The aluminum itself is not a HAP and no HAP gases are used. Intermat will maintain documentation of the plasma spray operations to ensure it continues to meet the insignificant activity exemption.

Control Equipment
The machining equipment vents to the Machine Shop's dust collection system.

BPT for control of particulate matter from the machining of quartz parts is the use of the machine shop's dust collection system.

M. Parts Washer

The parts washer has a design capacity of 20 gallons. The parts washer is subject to *Solvent Cleaners*, 06-096 CMR 130 (as amended) and records shall be kept documenting compliance.

N. Annual Emissions

1. Total Annual Emissions
Intermat shall be restricted to the following annual emissions, based on a calendar year total.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_x	CO	VOC	Total HAP
Boiler #1	0.3	0.3	N/A	0.6	0.5	0.1	N/A
Carbonizer Incinerator	0.2	0.2	N/A	0.7	0.3	N/A	N/A
Graphitizer Incinerator	0.1	0.1	N/A	0.6	0.2	N/A	N/A
Pitch Processing	N/A	N/A	4.0	0.8	0.1	0.1	0.1
Placed Fiber Process	0.1	0.1	N/A	N/A	N/A	0.2	0.1
Total TPY	**0.7**	**0.7**	**4.0**	**2.7**	**1.1**	**0.4**	**0.2**

2. Greenhouse Gases
Greenhouse gases are considered regulated pollutants as of January 2, 2011, through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans,* 40 CFR Part 52, Subpart A, §52.21 Prevention of Significant Deterioration of Air Quality rule. Greenhouse gases, as defined in 06-096 CMR 100 (as amended), are the aggregate group of the following gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO_2e).

Based on the facility's fuel use limit, the worst case emission factors from AP-42, IPCC (Intergovernmental Panel on Climate Change), and *Mandatory Greenhouse Gas Reporting*, 40 CFR Part 98, and the global warming potentials contained in 40 CFR Part 98, Intermat is below the major source

threshold of 100,000 tons of CO_2e per year. Therefore, no additional licensing requirements are needed to address GHG emissions at this time.

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source shall be determined by the Department on a case-by case basis. In accordance with 06-096 CMR 115, an ambient air quality impact analysis is not required for a minor source if the total emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM_{10}	25
SO_2	50
NO_x	50
CO	250

The total facility licensed emissions are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-302-71-N-R subject to the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

STANDARD CONDITIONS

(1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S.A. §347-C).

(2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 CMR 115]

(3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 CMR 115]

(4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 CMR 115]

(5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353-A. [06-096 CMR 115]

(6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 CMR 115]

(7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 CMR 115]

(8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 CMR 115]

(9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an

application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 CMR 115]

(10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 CMR 115]

(11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:

A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
   1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
   2. pursuant to any other requirement of this license to perform stack testing.

B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and

C. submit a written report to the Department within thirty (30) days from date of test completion.

[06-096 CMR 115]

(12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:

A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and

B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and

C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a

demonstration of compliance under normal and representative process and operating conditions.
[06-096 CMR 115]

(13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 CMR 115]

(14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 CMR 115]

(15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 CMR 115]

SPECIFIC CONDITIONS

(16) **Boiler #1**

A. Boiler #1 shall fire natural gas.[06-096 CMR 115, BPT]

B. Emissions shall not exceed the following [06-096 CMR 115, BPT]:

Emission Unit	PM (lb/hr)	PM_{10} (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	0.07	0.07	0.13	0.11	0.01

C. Visible emissions from Boiler #1 shall not exceed 10% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block averages in a continuous 3-hour period. [06-096 CMR 101]

(17) **Pitch Impregnator System**

A. Emissions from the pitch impregnator system shall vent through the condenser/coalescent filter system. [06-096 CMR 115, BPT]

B. Intermat shall not exceed a pitch usage rate of 101,077 lb/yr (50.5 tons/yr). Records shall be maintained documenting pitch usage on a monthly and calendar year total. [06-096 CMR 115, BPT]

C. A log shall be maintained documenting any repairs or maintenance on the control equipment. The log shall also include documentation on the routine draining of condensate, including the date and time the filters are drained. [06-096 CMR 115, BPT]

(18) **Atmospheric Carbonizers**

A. Intermat shall operate the thermal carbonizer incinerator to control emissions from the carbonizers. At no time shall both carbonizers be powered simultaneously. Intermat shall maintain records documenting compliance with the single unit operation. [06-096 CMR 115, BPT]

B. Intermat shall maintain a minimum temperature of 1600°F in the incinerator with a retention time of at least 0.5 seconds. A pyrometer or thermocouple shall be maintained in the afterburner at the point that represents a 0.5 second retention time at 1600°F. Intermat shall record the incinerator temperature on an hourly basis. [06-096 CMR 115, BPT]

C. Upon power termination to the carbonizer furnace, the incinerator may be shut down when the carbonizer furnace has a temperature drop of 110°C (230°F) and a minimum of eight hours has elapsed from the time the furnace power has been shut off. [06-096 CMR 115, BPT]

D. Emissions from firing natural gas in the carbonizer incinerator burner shall not exceed the following [06-096 CMR 115, BPT]:

	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Carbonizer Incinerator	0.04	0.04	neg	0.16	0.07	neg

E. Opacity from the carbonizer incinerator shall not exceed 10% on a 6 minute block average basis, except for no more than one (1) six (6) minute block average in a 3 hour period. [06-096 CMR 101]

(19) **Hot Isostatic Press (HIP) Vessels**

A. Intermat shall control emissions from the HIP Vessels with the HIP scrubber during the standard carbon-carbon HIP cycle or the quartz process. The scrubber shall be operated in accordance with the design parameters and a scrubber minimum flow of 3 gal/min shall be maintained. [06-096 CMR 115, BPT]

B. Intermat shall maintain a log documenting all repair and maintenance on the HIP scrubber. [06-096 CMR 115, BPT]

C. Intermat shall control emissions from the production of molded phenolic products in the HIP vessels with the condenser and coalescent filters. [06-096 CMR 115, BPT]

D. Intermat shall control emissions from the quartz vacuum process in the HIP vessels with the coalescent filters. [06-096 CMR 115, BPT]

(20) **Graphitizers**

A. Intermat shall operate the thermal graphitizer incinerator to control emissions from the graphitizers and the grieve oven. [06-096 CMR 115, BPT]

B. Intermat shall maintain a minimum temperature of 1600°F in the incinerator with a retention time of at least 0.75 seconds. A pyrometer or thermocouple shall be maintained in the afterburner at the point that represents a 0.75 second retention time at 1600°F. Intermat shall record the incinerator temperature on an hourly basis. [06-096 CMR 115, BPT]

C. Upon power termination to the graphitizer furnace, the graphitizer incinerator may be shut down when the graphitizer furnace has a temperature drop of 700°C (1292°F) and a minimum of three and a half hours has elapsed from the time the graphitizer furnace power has been shut off. [06-096 CMR 115, BPT]

D. Emissions from firing natural gas in the graphitizer incinerator burner shall not exceed the following [06-096 CMR 115, BPT]:

	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Graphitizer Incinerator	0.03	0.03	neg	0.13	0.05	neg

E. Opacity from the graphitizer incinerator shall not exceed 10% on a 6 minute block average basis, except for no more than one (1) six (6) minute block average in a 3 hour period. [06-096 CMR 101]

(21) **Grieve Oven**

A. Emissions from the grieve oven shall be controlled through the use of the graphitizer incinerator when the grieve oven is in use for staging phenolic materials. [06-096 CMR 115, BPT]

B. Intermat shall limit the loading for uncured resin at 13 lb/load to the oven. A log shall be maintained of the loading weight of the uncured phenolic resin. [06-096 CMR 115, BPT]

(22) **Heat Cleaning Process**

A. Intermat shall control emissions from the pyrolysis ovens/furnaces with the use of the graphitizer incinerator. No pyrolysis oven/furnace shall exceed a burner heat input of 0.5 MMBtu/hr. [06-096 CMR 115, BPT]

B. Intermat shall not exceed a load limit for served fiber or cloth of 42.5 lb/hr. A log shall be maintained documenting when the pyrolysis ovens/furnaces are operated and the loading weight of the served fiber or cloth. Heat cleaning operations shall be scheduled only at time when the graphitizer incinerator can accommodate the additional 10.2 lb/hr loading. [06-096 CMR 115, BPT]

(23) **Placed Fiber Process**

A. In the placed fiber process, Intermat shall be limited to using no more than 1000 lb/year of resin and 1200 lb/yr of isopropyl alcohol, based on a calendar year total. Records shall be maintained documenting the monthly and calendar year totals. [06-096 CMR 115, BPT]

B. Intermat shall use fabric filters to control particulate matter from the spray booth. Maintenance records shall be kept on the fabric filter. [06-096 CMR 115, BPT]

C. Visible emissions from the spray booth shall not exceed 10% opacity, based on a 6 minute block average basis. [06-096 CMR 115, BPT]

D. Intermat shall transfer the resin impregnated materials from the spray booth to the grieve oven using an enclosed wheeled cart to reduce evaporation when transporting the sheets. The resin impregnated material shall be transferred from the spray booth to the grieve oven within 90 minutes of spray completion. Records shall be maintained documenting the transfer time of

each batch. The records shall include the time the first sheet is sprayed, the time the last sheet is sprayed, and the transfer time from spraying the last sheet to putting in the grieve oven. [06-096 CMR 115, BPT]

E. All containers shall be closed when not in operation. [06-096 CMR 115, BPT]

(24) **Machine Shop**

A. Intermat shall use a cartridge dust collector to control particulate matter from the machine shop. [06-096 CMR 115, BPT]

B. Intermat shall be limited to no greater than 10% opacity on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1 hour period from the dust collector when it is vented outside through the roof vents. The facility shall take corrective action if visible emissions from the dust collector exceed 5% opacity when vented outside. [06-096 CMR 101]

(25) **Quartz Process**

A. Intermat shall maintain records of the amount of quartz parts produced. [06-096 CMR 115, BPT]

B. Particulate matter from the machining of quartz parts shall be controlled through the use of the machine shop dust control system. [06-096 CMR 115, BPT]

C. Intermat shall maintain documentation of the plasma spray operations to ensure it continues to meet the insignificant activity exemption of 06-096 CMR 115, Appendix B, Section (A)(66): "Plasma etcher or plasma spray unit, using dust collection to prevent fugitive emissions and using only oxygen, nitrogen, carbon dioxide, or inert gas that do not emit VOCs or HAPs." [06-096 CMR 115]

(26) **Parts Washer**

Parts washers at Intermat are subject to *Solvent Cleaners*, 06-096 CMR 130 (as amended).

A. Intermat shall keep records of the amount of solvent added to each parts washer. [06-096 CMR 115, BPT]

B. The following are exempt from the requirements of 06-096 CMR 130 [06-096 CMR 130]:
   1. Solvent cleaners using less than two liters (68 oz) of cleaning solvent with a vapor pressure of 1.00 mmHg, or less, at 20° C (68° F);
   2. Wipe cleaning; and,
   3. Cold cleaning machines using solvents containing less than or equal to 5% VOC by weight.

C. The following standards apply to cold cleaning machines that are applicable sources under Chapter 130.

   1. Intermat shall attach a permanent conspicuous label to each unit summarizing the following operational standards [06-096 CMR 130]:

      (i) Waste solvent shall be collected and stored in closed containers.
      (ii) Cleaned parts shall be drained of solvent directly back to the cold cleaning machine by tipping or rotating the part for at least 15 seconds or until dripping ceases, whichever is longer.
      (iii) Flushing of parts shall be performed with a solid solvent spray that is a solid fluid stream (not a fine, atomized or shower type spray) at a pressure that does not exceed 10 psig. Flushing shall be performed only within the freeboard area of the cold cleaning machine.
      (iv) The cold cleaning machine shall not be exposed to drafts greater than 40 meters per minute when the cover is open.
      (v) Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in the degreaser.
      (vi) When a pump-agitated solvent bath is used, the agitator shall be operated to produce no observable splashing of the solvent against the tank walls or the parts being cleaned. Air agitated solvent baths may not be used.
      (vii) Spills during solvent transfer shall be cleaned immediately. Sorbent material used to clean spills shall then be immediately stored in covered containers.
      (viii) Work area fans shall not blow across the opening of the degreaser unit.
      (ix) The solvent level shall not exceed the fill line.

   2. The remote reservoir cold cleaning machine shall be equipped with a perforated drain with a diameter of not more than six inches. [06-096 CMR 130]

(27) Intermat shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S.A. §605).

DONE AND DATED IN AUGUSTA, MAINE THIS 21 DAY OF November , 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cove for
PATRICIA W. AHO, COMMISSIONER

The term of this license shall be ten (10) years from the signature date above.

[Note: If a complete renewal application, as determined by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 MRSA §10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the renewal of the license.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 9/28/11
Date of application acceptance: 9/29/11

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Poland, Bureau of Air Quality.

Filed
NOV 21 2013
State of Maine
Board of Environmental Protection