



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

TO: Interested Parties / Applicant

DATE: October 6, 2008

RE: Thermwood Corporation / 147-26505-00039

FROM: Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FNPER.dot12/03/07



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Minor Source Operating Permit OFFICE OF AIR QUALITY

**Thermwood Corporation
904 Dale-Buffaloville Road
Dale, Indiana 47523**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued to the above mentioned company under the provisions of 326 IAC 2-1.1, 326 IAC 2-6.1 and 40 CFR 52.780, with conditions listed on the attached pages.

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a MSOP under 326 IAC 2-6.1.

Operation Permit No.: M147-26505-00039	
Issued by:	Issuance Date: October 6, 2008
<i>Original Signed by:</i>	
Iryn Calilung, Section Chief Permits Branch Office of Air Quality	Expiration Date: October 6, 2013

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SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 and A.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-5.1-3(c)][326 IAC 2-6.1-4(a)]

The Permittee owns and operates a stationary Industrial Machinery Manufacturing operation.

Source Address:	904 Dale-Buffaloville Road, Dale, Indiana 47523
Mailing Address:	904 Dale-Buffaloville Road, Dale, IN, 47523-0436
General Source Phone Number:	812-937-4476
SIC Code:	3559
County Location:	Spencer
Source Location Status:	Attainment for all criteria pollutants, except Ohio Township
Source Status:	Minor Source Operating Permit Program Minor Source, under PSD and Emission Offset Rules-Ohio Township Minor Source, Section 112 of the Clean Air Act Not 1 of 28 Source Categories

A.2 Emission Units and Pollution Control Equipment Summary

This stationary source consists of the following emission units and pollution control devices:

- (a) Two (2) paint spray booths, identified as SPB-1 and SPB-2, constructed in 1976, for applying coatings to computer numerical controlled (CNC) metal routers, equipped with four (4) high volume low pressure (HPLV) spray guns, coating a maximum of 0.089 unit per hour, using dry paper filters to control particulate emissions, and venting to the atmosphere via stacks SPB#1 and SPB#2, respectively.
- (b) One (1) paint spray booth, identified as SPB-3, constructed in 2007, for applying several coats to wood furniture products with eight paint options, equipped with four (4) High Volume Low Pressure (HVLP) spray guns and spraying/ brushing maximum of 0.50 unit per hour, utilizing dry filters for particulate overspray control, and exhausting to stack SPB3.
- (c) Four (4) existing wood working Routers:
 - (1) One (1) CNC router, identified as R-1, constructed in 2000, maximum capacity of 800 pounds per hour of spoil wood boards, equipped with an integral cartridge filter with a flow rate of 1500 acfm at a maximum loading of 0.03 gn/cf, and exhausting indoors to GV.
 - (2) One (1) CNC routers, identified as R-2, constructed in 2000, maximum capacity of 800 pounds per hour of spoil wood boards, equipped with an integral cartridge filter in series with a cyclone with a flow of 1973 acfm at a maximum loading of 0.03 gn/cf, exhausting indoors to GV.
 - (3) Two (2) CNC routers, identified as R-3 and R-4, constructed in 2007, maximum capacity of 0.5 unit per hour each for wood furniture, equipped with an integral cartridge filter in series with a cyclone with a flow of 1973 acfm at a maximum loading of 0.03 gn/cf, at a process throughput of 800 pounds of wood per hour each, exhausting indoors to GV.

- (d) One (1) shot blaster, identified as BI, constructed in 2007, using sand as the blast media, controlled by a fabric filter for particulate control, with a flow rate of 1180 cfm and loading 0.03 gn/cf, at a process throughput of less than 100 pounds per hour, and exhausting to GV.
- (e) Four (4) metal inert gas (MIG) welding stations with a maximum wire consumption rate of 0.23 lbs/hr per stations, at a process weight rate of 2,340 pounds (1.17 tons) per hour, vented to the atmosphere.
- (f) One (1) parts washer, identified as CI, constructed in 2007, with a maximum solvent usage less than 145 gallons per 12 months, using non-halogenated solvents, and exhausting to GV.
- (g) Twenty Eight (28) natural gas fired air make-up units and space heaters, constructed before 2000, with a combined heating capacity of 7.809 MMBTU per hour:
 - (1) One (1) natural gas-fired air makeup unit rated at 3.456 MMBtu/hr vented to the atmosphere.
 - (2) One (1) natural gas-fired heating unit rated at 0.203 MMBtu/hr vented to the atmosphere.
 - (3) Seventeen (17) natural gas-fired heating units each rated at 0.20 MMBtu/hr vented to the atmosphere.
 - (4) Two (2) natural gas fired heating units each rated at 0.12 MMBtu/hr vented to the atmosphere.
 - (5) One (1) natural gas-fired heating unit rated at 0.10 MMBtu/hr vented to the atmosphere.
 - (6) One (1) natural gas-fired heating unit rated at 0.08 MMBtu/hr vented to the atmosphere.
 - (7) Two (2) natural gas-fired heating units each rated at 0.075 MMBtu/hr vented to the atmosphere.
 - (8) Three (3) natural gas-fired heating units each rated at 0.060 MMBtu/hr vented to the atmosphere.

SECTION B GENERAL CONDITIONS

B.1 Definitions [326 IAC 2-1.1-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-1.1-1) shall prevail.

B.2 Permit Term [326 IAC 2-6.1-7(a)][326 IAC 2-1.1-9.5][IC 13-15-3-6(a)]

-
- (a) This permit, M147-26505-00039, is issued for a fixed term of five (5) years from the issuance date of this permit, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit.
- (b) If IDEM, OAQ, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, until the renewal permit has been issued or denied.

B.3 Term of Conditions [326 IAC 2-1.1-9.5]

Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

- (a) the condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or
- (b) the emission unit to which the condition pertains permanently ceases operation.

B.4 Enforceability

Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

B.5 Severability

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

B.6 Property Rights or Exclusive Privilege

This permit does not convey any property rights of any sort or any exclusive privilege.

B.7 Duty to Provide Information

-
- (a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1). Upon request, the Permittee shall also furnish to IDEM, OAQ copies of records required to be kept by this permit.
- (b) For information furnished by the Permittee to IDEM, OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.8 Certification

- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by an "authorized individual" of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.
- (c) An "authorized individual" is defined at 326 IAC 2-1.1-1(1).

B.9 Annual Notification [326 IAC 2-6.1-5(a)(5)]

- (a) An annual notification shall be submitted by an authorized individual to the Office of Air Quality stating whether or not the source is in operation and in compliance with the terms and conditions contained in this permit.
- (b) The annual notice shall be submitted in the format attached no later than March 1 of each year to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, IN 46204-2251
- (c) The notification shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

B.10 Preventive Maintenance Plan [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) within ninety (90) days after issuance of this permit, including the following information on each facility:
 - (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
 - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
 - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

The PMP extension notification does not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) A copy of the PMPs shall be submitted to IDEM, OAQ upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

B.11 Prior Permits Superseded [326 IAC 2-1.1-9.5]

- (a) All terms and conditions of permits established prior to M147-26505-00039 and issued pursuant to permitting programs approved into the state implementation plan have been either:
 - (1) incorporated as originally stated,
 - (2) revised, or
 - (3) deleted.
- (b) All previous registrations and permits are superseded by this permit.

B.12 Termination of Right to Operate [326 IAC 2-6.1-7(a)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least ninety (90) days prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-6.1-7.

B.13 Permit Renewal [326 IAC 2-6.1-7]

- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ and shall include the information specified in 326 IAC 2-6.1-7. Such information shall be included in the application for each emission unit at this source. The renewal application does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

- (b) A timely renewal application is one that is:
 - (1) Submitted at least ninety (90) days prior to the date of the expiration of this permit; and
 - (2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

- (c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-6.1 until IDEM, OAQ takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified in writing by IDEM, OAQ any additional information identified as being needed to process the application.

B.14 Permit Amendment or Revision [326 IAC 2-5.1-3(e)(3)][326 IAC 2-6.1-6]

- (a) Permit amendments and revisions are governed by the requirements of 326 IAC 2-6.1-6 whenever the Permittee seeks to amend or modify this permit.

- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application shall be certified by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) The Permittee shall notify the OAQ within thirty (30) calendar days of implementing a notice-only change. [326 IAC 2-6.1-6(d)]

B.15 Source Modification Requirement

A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2.

B.16 Inspection and Entry

[326 IAC 2-5.1-3(e)(4)(B)][326 IAC 2-6.1-5(a)(4)][IC 13-14-2-2][IC 13-17-3-2][IC 13-30-3-1]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a permitted source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- (d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.17 Transfer of Ownership or Operational Control [326 IAC 2-6.1-6]

- (a) The Permittee must comply with the requirements of 326 IAC 2-6.1-6 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.
- (b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:
- Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
- The application which shall be submitted by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) The Permittee may implement notice-only changes addressed in the request for a notice-only change immediately upon submittal of the request. [326 IAC 2-6.1-6(d)(3)]

B.18 Annual Fee Payment [326 IAC 2-1.1-7]

- (a) The Permittee shall pay annual fees to IDEM, OAQ within thirty (30) calendar days of receipt of a billing.
- (b) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

B.19 Credible Evidence [326 IAC 1-1-6]

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitations and Standards [326 IAC 2-6.1-5(a)(1)]

C.1 Particulate Emission Limitations For Processes with Process Weight Rates Less Than One Hundred (100) Pounds per Hour [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2(e)(2), particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) which has a maximum process weight rate less than 100 pounds per hour and the methods in 326 IAC 6-3-2(b) through (d) do not apply shall not exceed 0.551 pounds per hour.

C.2 Permit Revocation [326 IAC 2-1.1-9]

Pursuant to 326 IAC 2-1.1-9 (Revocation of Permits), this permit to operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of this article.

C.3 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.4 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

C.5 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2.

C.6 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

C.7 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
- (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
- (2) If there is a change in the following:
- (A) Asbestos removal or demolition start date;
- (B) Removal or demolition contractor; or
- (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue
MC 61-52 IGCN 1003
Indianapolis, Indiana 46204-2251

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (e) **Procedures for Asbestos Emission Control**
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.

- (f) Demolition and Renovation
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).
- (g) Indiana Licensed Asbestos Inspector
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Licensed Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement to use an Indiana Licensed Asbestos inspector is not federally enforceable.

Testing Requirements [326 IAC 2-6.1-5(a)(2)]

C.8 Performance Testing [326 IAC 3-6]

- (a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ if the Permittee submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.9 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

Compliance Monitoring Requirements [326 IAC 2-6.1-5(a)(2)]

C.10 Compliance Monitoring [326 IAC 2-1.1-11]

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. All monitoring and record keeping requirements not already legally required shall be implemented when operation begins.

C.11 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60, Appendix B, 40 CFR 63, or other approved methods as specified in this permit.

C.12 Instrument Specifications [326 IAC 2-1.1-11]

- (a) When required by any condition of this permit, an analog instrument used to measure a parameter related to the operation of an air pollution control device shall have a scale such that the expected maximum reading for the normal range shall be no less than twenty percent (20%) of full scale.
- (b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an alternative instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

Corrective Actions and Response Steps

C.13 Response to Excursions or Exceedances

- (a) Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
- (b) The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Corrective actions may include, but are not limited to, the following:
 - (1) initial inspection and evaluation;
 - (2) recording that operations returned to normal without operator action (such as through response by a computerized distribution control system); or
 - (3) any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.
- (c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not limited to, the following:
 - (1) monitoring results;
 - (2) review of operation and maintenance procedures and records; and/or
 - (3) inspection of the control device, associated capture system, and the process.

- (d) Failure to take reasonable response steps shall be considered a deviation from the permit.
- (e) The Permittee shall maintain the following records:
 - (1) monitoring data;
 - (2) monitor performance data, if applicable; and
 - (3) corrective actions taken.

C.14 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Record Keeping and Reporting Requirements [326 IAC 2-6.1-5(a)(2)]

C.15 Malfunctions Report [326 IAC 1-6-2]

Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAQ, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

C.16 General Record Keeping Requirements [326 IAC 2-6.1-5]

- (a) Records of all required monitoring data, reports and support information required by this permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

C.17 General Reporting Requirements [326 IAC 2-1.1-11] [326 IAC 2-6.1-2] [IC 13-14-1-13]

- (a) Reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
- (b) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.
- (c) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (d) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

- (a) Two (2) paint spray booths, identified as SPB-1 and SPB-2, constructed in 1976, for applying coatings to computer numerical controlled (CNC) metal routers, equipped with four (4) high volume low pressure (HPLV) spray guns, coating a maximum of 0.089 unit per hour, using dry paper filters to control particulate emissions, and venting to the atmosphere via stacks SPB#1 and SPB#2, respectively.
- (b) One (1) paint spray booth, identified as SPB-3, constructed in 2007, for applying several coats to wood furniture products with eight paint options, equipped with four (4) High Volume Low Pressure (HVLP) spray guns and spraying/ brushing maximum of 0.50 unit per hour, utilizing dry filters for particulate overspray control, and exhausting to stack SPB3.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-6.1-5(a)(1)]

D.1.1 Volatile Organic Compounds (VOC) [326 IAC 8-2-12]

Pursuant to 326 IAC 8-2-12 (Wood Furniture and Cabinet Coating), the Permittee shall perform surface coating of wood furniture in paint spray booth SPB-3, with the exception of no more than ten (10) gallons of coating per day used for touch-up and repair operations, using one (1) or more of the following application systems:

- Airless Spray Application
- Air Assisted Airless Spray Application
- Electrostatic Spray Application
- Electrostatic Bell or Disc Application
- Heated Airless Spray Application
- Roller Coating
- Brush or Wipe Application
- Dip-and-Drain Application

High Volume Low Pressure (HVLP) Spray Application is an accepted alternative method of application for Air Assisted Airless Spray Application. HVLP spray is the technology used to apply coating to substrate by means of coating application equipment which operates between one-tenth (0.1) and ten (10) pounds per square inch gauge (psig) air pressure measured dynamically at the center of the air cap and at the air horns of the spray system.

Compliance Monitoring Requirements [326 IAC 2-6.1-5(a)(2)]

D.1.2 Particulate [326 IAC 6-3-2(d)]

- (a) Pursuant to 326 IAC 6-3-2(d), particulate from surface coating booths SPB-1, SPB-2, and SPB-3, shall each be controlled by dry particulate filters, and the Permittee shall operate each control device in accordance with manufacturer's specifications.
- (b) If overspray is visibly detected at the exhaust or accumulates on the ground, the Permittee shall inspect the control device and do either of the following no later than four (4) hours after such observation:
 - (1) Repair control device so that no overspray is visibly detectable at the exhaust or accumulates on the ground.

- (2) Operate equipment so that no overspray is visibly detectable at the exhaust or accumulates on the ground.
- (c) If overspray is visibly detected, the Permittee shall maintain a record of the action taken as a result of the inspection, any repairs of the control device, or change in operations, so that overspray is not visibly detected at the exhaust or accumulates on the ground. These records must be maintained for five (5) years.

Record Keeping and Reporting Requirements [326 IAC 2-6.1-5(a)(2)]

D.1.3 Record Keeping Requirement

- (a) To document compliance with Condition D.1.2(c) the Permittee shall maintain a record of any actions taken if overspray is visibly detected.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

SECTION D.2 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

- (c) Four (4) existing wood working Routers:
- (1) One (1) CNC router, identified as R-1, constructed in 2000, maximum capacity of 800 pounds per hour of spoil wood boards, equipped with an integral cartridge filter with a flow rate of 1500 acfm at a maximum loading of 0.03 gn/cf, and exhausting indoors to GV.
 - (2) One (1) CNC routers, identified as R-2, constructed in 2000, maximum capacity of 800 pounds per hour of spoil wood boards, equipped with an integral cartridge filter in series with a cyclone with a flow of 1973 acfm at a maximum loading of 0.03 gn/cf, exhausting indoors to GV.
 - (3) Two (2) CNC routers, identified as R-3 and R-4, constructed in 2007, maximum capacity of 0.5 unit per hour each for wood furniture, equipped with an integral cartridge filter in series with a cyclone with a flow of 1973 acfm at a maximum loading of 0.03 gn/cf, at a process throughput of 800 pounds per hour each, exhausting indoors to GV.
- (d) One (1) shot blaster, identified as BI, constructed in 2007, using sand blast media, controlled by a fabric filter for particulate control, flow rate of 1180 cfm and loading 0.03 gn/cf, at a process throughput of less than 100 pounds per hour, and exhausting indoors to GV.
- (e) Four (4) metal inert gas (MIG) welding stations with a maximum wire consumption rate of 0.23 lbs/hr per stations, at a process weight rate of 2,340 pounds (1.17 tons) per hour, vented to the atmosphere.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-6.1-5(a)(1)]

D.2.1 Particulate [326 IAC 6-3-2]

- (a) Pursuant to 326 IAC 6-3-2(e), the particulates (PM) from the Router R-1, R-2, R-3, and R-4 shall not exceed 2.22 pounds per hour each when operating at a process weight rate of 800 pounds (0.4 tons) per hour each.
- (b) Pursuant to 326 IAC 6-3-2(e), the particulate (PM) from the shot blaster, identified as BI, the allowable particulate emissions shall not exceed 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour.
- (c) Pursuant to 326 IAC 6-3-2(e), the particulate (PM) from the welding and thermal cutting operation, identified as (MIG), the allowable particulate emissions shall not exceed 4.55 pounds per hour when operating at a process weight rate of 1.17 tons per hour.

The pound per hour limitation for (a), (b) and (c) was calculated using the following equation:

Interpolation of the data for the process weight rates up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

Compliance Determination Requirements

D.2.2 Particulate Control

- (a) In order to comply with Condition D.2.1(a), the dust collectors integral to each of the routers, for particulate control, shall be in operation at all times the routers are in operation.
- (b) In order to comply with condition D.2.1(b), the dust collectors for particulate control, shall be in operation at all times when the shot blasting is in operation.
- (c) In the event that dust cartridge failure is observed in a multi-compartment dust collector, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

D.2.3 Manufacturer's Specifications [326 IAC 2-6-1.5]

The four routers, identified as R-1, R-2, R-3 and R-4, and their cartridge filtration integral to the system shall each operate per manufacturer's specifications.

Compliance Monitoring Requirements [326 IAC 2-6.1-5(a)(2)]

D.2.4 Cyclone Failure Detection

In the event that cyclone failure has been observed:

Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

Compliance with these limits combined with the PM from other emission units shall limit emissions from the entire source to less than two hundred fifty (250) tons per year for PM and render the requirements of 326 IAC 2-2 (PSD) not applicable.

D.2.5 Broken or Failed Dust Collector Detection

- (a) For a single compartment dust collector controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced.
- (b) For a single compartment dust collector controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line

SECTION D.3 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

- (f) One (1) parts washer, identified as CI, constructed in 2007, with a maximum solvent usage less than 145 gallons per 12 months, using non-halogenated solvents, and exhausting to GV.
- (g) Twenty Eight (28) natural gas fired air make-up units and space heaters, constructed before 2000, with a combined heating capacity of 7.809 MMBTU per hour:
 - (1) One (1) natural gas-fired air makeup unit rated at 3.456 MMBtu/hr vented to the atmosphere.
 - (2) One (1) natural gas-fired heating unit rated at 0.203 MMBtu/hr vented to the atmosphere.
 - (3) Seventeen (17) natural gas-fired heating units each rated at 0.20 MMBtu/hr vented to the atmosphere.
 - (4) Two (2) natural gas fired heating units each rated at 0.12 MMBtu/hr vented to the atmosphere.
 - (5) One (1) natural gas-fired heating unit rated at 0.10 MMBtu/hr vented to the atmosphere.
 - (6) One (1) natural gas-fired heating unit rated at 0.08 MMBtu/hr vented to the atmosphere.
 - (7) Two (2) natural gas-fired heating units each rated at 0.075 MMBtu/hr vented to the atmosphere.
 - (8) Three (3) natural gas-fired heating units each rated at 0.060 MMBtu/hr vented to the atmosphere.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-6.1-5(a)(1)]

D.3.1 Volatile Organic Compounds (VOC) [326 IAC 8-3-2]

Pursuant to 326 IAC 8-3-2, for CI parts washers, the owner or operator shall:

- (a) Equip the cleaner with a cover;
- (b) Equip the cleaner with a facility for draining cleaned parts;
- (c) Close the degreaser cover whenever parts are not being handled in the cleaner;
- (d) Drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;
- (e) Provide a permanent, conspicuous label summarizing the operation requirements;
- (f) Store waste solvent only in covered containers and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate into the atmosphere.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

**MINOR SOURCE OPERATING PERMIT
ANNUAL NOTIFICATION**

This form should be used to comply with the notification requirements under 326 IAC 2-6.1-5(a)(5).

Company Name:	Thermwood Corporation
Address:	904 Dale-Buffaloville Road
City:	Dale, Indiana 47523
Phone #:	812-937-4476
MSOP #:	M147-26505-00039

I hereby certify that Thermwood Corporation is :

still in operation.

no longer in operation.

I hereby certify that Thermwood Corporation is :

in compliance with the requirements of MSOP M147-26505-00039.

not in compliance with the requirements of MSOP M147-26505-00039.

Authorized Individual (typed):
Title:
Signature:
Date:

If there are any conditions or requirements for which the source is not in compliance, provide a narrative description of how the source did or will achieve compliance and the date compliance was, or will be achieved.

Noncompliance:

MALFUNCTION REPORT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF AIR QUALITY FAX NUMBER - 317 233-6865

This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE IT HAS POTENTIAL TO EMIT 25 TONS/YEAR PARTICULATE MATTER ?_____, 25 TONS/YEAR SULFUR DIOXIDE ?_____, 25 TONS/YEAR NITROGEN OXIDES?_____, 25 TONS/YEAR VOC ?_____, 25 TONS/YEAR HYDROGEN SULFIDE ?_____, 25 TONS/YEAR TOTAL REDUCED SULFUR ?_____, 25 TONS/YEAR REDUCED SULFUR COMPOUNDS ?_____, 25 TONS/YEAR FLUORIDES ?_____, 100 TONS/YEAR CARBON MONOXIDE ?_____, 10 TONS/YEAR ANY SINGLE HAZARDOUS AIR POLLUTANT ?_____, 25 TONS/YEAR ANY COMBINATION HAZARDOUS AIR POLLUTANT ?_____, 1 TON/YEAR LEAD OR LEAD COMPOUNDS MEASURED AS ELEMENTAL LEAD ?_____, OR IS A SOURCE LISTED UNDER 326 IAC 2-5.1-3(2) ?_____. EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF "MALFUNCTION" AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY: _____ PHONE NO. () _____
LOCATION: (CITY AND COUNTY) _____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: _____

DATE/TIME MALFUNCTION STARTED: ____/____/20____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION: _____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE ____/____/20____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____

MEASURES TAKEN TO MINIMIZE EMISSIONS: _____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____

CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: _____

CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: _____

INTERIM CONTROL MEASURES: (IF APPLICABLE) _____

MALFUNCTION REPORTED BY: _____ TITLE: _____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____ DATE: _____ TIME: _____

*SEE PAGE 2

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. This rule applies to the owner or operator of any facility required to obtain a permit under 326 IAC 2-5.1 or 326 IAC 2-6.1.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner.

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management
Office of Air Quality

Addendum to the
Technical Support Document (TSD) for a
Registration Transitioning to a
Minor Source Operating Permit (MSOP) with New Source Review (NSR)

Source Background and Description

Source Name:	Thermwood Corporation
Source Location:	Old Buffaloville Road, Dale, Indiana 47523
County:	Spencer
SIC Code:	3559
MSOP No.:	147-26505-00039
Permit Reviewer:	Swarna Prabha

On August 28, 2008, the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) had a notice published in The Journal Democrat, P. O. B. 6,+ Rockport, IN 47365, stating that Thermwood Corporation had applied for a new source review and Minor Source Operating Permit (MSOP) relating to the construction and modification of the existing paint booth to increase the capacity and allow the full production of wood furniture. The notice also stated that IDEM, OAQ proposed to issue a MSOP for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Comments and Responses

NOTE: The Technical Support Document (TSD) is used by IDEM, OAQ for historical purposes. IDEM, OAQ does not make any changes to the original TSD, but the Permit will have the updated changes.

On September 26, 2008, Mary S. Gogel, a Dale resident, submitted a comment on the proposed MSOP. The summary of the comments and responses are shown below. Deleted text is shown in ~~strikeout~~ and new text is shown in **bold** if applicable.

Comment 1:

I am commenting as a private citizen on the Thermwood request. I am thankful that we have a strong company in our town that is a revenue base for our community. I am excited that the increased production will bring more jobs to our community and as a result, stimulate our local economy.

I would want to make sure that the company will have a routine inspection schedule that I as a resident can be assured that their compliance to the permit is verified. I would like verification that yes, as a resident, my health is important to IDEM and I can be assured that a routine (however you define that but not based on complaints) inspection schedule will be followed. I am a breast cancer survivor and am very vigilant in trying to maintain an environment of good health for myself. I don't want to be at the mercy of another entity (IDEM or Thermwood) to assure the air I breathe is acceptable.

IDEM Response 1:

The federal Clean Air Act requires the United States Environmental Protection Agency (U.S. EPA) to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants. These criteria pollutants are carbon monoxide (CO), lead, sulfur dioxide (SO₂), particulate matter to a diameter of 10 microns (PM₁₀), particulate matter to a diameter of 2.5 microns (PM_{2.5}), nitrogen oxides (NO_x) and ground level ozone. The U.S. EPA sets these standards at levels that protect human health, which is why the National Ambient Air Quality Standards (NAAQS) are often referred to as the federal health standards for outdoor air. The NAAQS limit for all criteria pollutants is set low enough to protect human health, including the health of sensitive persons, such as asthmatics, children, and the elderly. More information about each of these pollutants is available at <http://www.epa.gov/air/airpollutants.html> on U.S. EPA's website. The complete table of the NAAQS for all six criteria pollutants can be found at the <http://www.epa.gov/air/criteria.html> website. EPA's website <http://www.epa.gov/air/urbanair/6poll.html> provides more detailed information about the health effects of these six common air pollutants and why they are regulated.

It is also a requirement to determine whether the ambient air in any area of the United States fails to meet any of NAAQS. Any area that fails to meet one or more of the NAAQS will be designated as in "nonattainment" for that pollutant. Large air pollution sources in a nonattainment area are subject to additional regulations and U.S. EPA may require that additional steps be taken that will result in the area meeting the NAAQS.

Spencer County is in attainment for all the NAAQS except Ohio Township, and this plant is located outside of the Ohio Township. Information about current and expected air pollution levels is available on IDEM's SmogWatch site at <http://www.in.gov> on the internet. The site is designed to provide Hoosiers with an easy-to-read forecast of air quality in their communities. The site provides information about ground-level ozone and particulate matter forecasts.

Thermwood Corporation is transitioning from Registration to a Minor Source Operating Permit (MSOP). The MSOP is issued to sources that would emit less than 100 tons per year without control when operating 24 hours and seven days a year. Additionally, the source may be required to maintain records, and/or submit reports to demonstrate compliance with their MSOP limits. Violations observed by an IDEM inspector would be evaluated by IDEM's Compliance Branch and Office of Enforcement, and the appropriate action would be initiated to ensure compliance with applicable permit conditions and State and Federal regulations.

In response to this comment, IDEM conducted an air quality modeling analysis for the Thermwood Corporation. The analysis shows the emissions from the Thermwood plant will be in compliance with the U.S. EPA NAAQS at the property boundary.

Any citizen observing a possible violation of the plant's permit should immediately file a complaint with IDEM. Citizens may make a complaint about any air pollution concern by contacting the following South West Regional Office IDEM OAQ Compliance Inspector;

Derrick Ohning, Environmental Manager
Indiana Department of Environmental Management
1120 Vincennes Ave,
P. O. Box 128
Petersburg, IN 47567
Ph: 812-380-2316
email: dohning@idem.in.gov

by submitting a complaint on line at <http://www.in.gov/idem/4174.htm>, by contacting IDEM's Complaint Coordinator at (800) 451-6027, extension 24464, or by sending a written complaint to IDEM, Attn: Complaint Coordinator, 100 North Senate Avenue, MC 50-03 IGCN 1313, Indianapolis, IN 46204-2251.

No change in the permit has been made because of this comment.

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Registration Transitioning to a Minor Source Operating Permit (MSOP) with New Source Review (NSR)

Source Description and Location

Source Name:	Thermwood Corporation
Source Location:	Old Buffaloville Road, Dale, Indiana 47523
County:	Spencer
SIC Code:	3559
MSOP No.:	147-26505-00039
Permit Reviewer:	Swarna Prabha

On May 8, 2008, Office of Air Quality (OAQ) has received an application from Thermwood Corporation related to the construction and operation of new emission units at an existing industrial machinery manufacturing facility for the production of computer numerical controlled (CNC) routers, surface coating of metal routers and wood furniture parts, and transition from a registration to a MSOP.

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

- (a) Registration 147-6919-00039 issued August 16, 1996;
- (b) Reregistration 147-13590-00039, issued on April 23, 2001

Due to this application, the source is transitioning from a Registration to a MSOP.

County Attainment Status

The source is located in Spencer County.

Pollutant	Designation
SO ₂	Better than national standards.
CO	Unclassifiable or attainment effective November 15, 1990.
O ₃	Unclassifiable or attainment effective June 15, 2004, for the 8-hour ozone standard. ¹
PM ₁₀	Unclassifiable effective November 15, 1990.
NO ₂	Cannot be classified or better than national standards.
Pb	Not designated.
¹ Unclassifiable or attainment effective October 18, 2000, for the 1-hour ozone standard which was revoked June 15, 2005. Basic nonattainment designation effective federally April 5, 2005, for the Ohio Twp for PM2.5. The remainder of the Spencer county is unclassifiable or attainment effective April 5, 2005, for PM2.5.	

(a) Ozone Standards

Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Spencer County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) Spencer County has been classified as attainment for PM2.5 except Ohio Township. On May 8, 2008 U.S. EPA promulgated the requirements for Prevention of Significant Deterioration (PSD) for PM2.5 emissions, and the effective date of these rules was July 15th, 2008. Indiana has three years from the publication of these rules to revise its PSD rules, 326 IAC 2-2, to include those requirements. The May 8, 2008 rule revisions require IDEM to regulate PM10 emissions as a surrogate for PM2.5 emissions until 326 IAC 2-2 is revised. This source is not located in Ohio Township in Spencer County.

(c) Other Criteria Pollutants

Spencer County has been classified as attainment or unclassifiable in Indiana for all criteria pollutants except Ohio township. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Fugitive Emissions

(a) The fugitive emissions of criteria pollutants and hazardous air pollutants are counted toward the determination of 326 IAC 2-6.1 (Minor Source Operating Permits) applicability.

(b) Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2, 326 IAC 2-3, or 326 IAC 2-7, and there is no applicable New Source Performance Standard that was in effect on August 7, 1980, fugitive emissions are not counted toward the determination of PSD, Emission Offset, and Part 70 Permit applicability.

Background and Description of Permitted Emission Units

The Office of Air Quality (OAQ) has reviewed a Minor Source Operating Permit application, submitted by Thermwood Corporation on May 8, 2008, relating to the operation of a new existing paint booth, SPB-3 to increase the capacity to allow full production of wood furniture. The modifications includes extending the existing short overhead rail to a long motorized system and increasing the booth's spray guns from one to four to allow continuous painting of wood furniture parts. Additionally, the facility has requested to modify the existing paint booths SPB-1 and SPB-2 coating CNC metal routers, with different paints and processes, as well as an addition of two new routers, R-3 and R-4.

The source consists of the following permitted emission units and pollution control devices:

(a) Two (2) paint spray booths, identified as SPB-1 and SPB-2, constructed in 1976, for applying coatings to computer numerical controlled (CNC) metal routers, equipped with four (4) high volume low pressure (HPLV) spray guns, coating a maximum of 0.089 unit per hour, using dry paper filters to control particulate emissions, and venting to the atmosphere via stacks SPB#1 and SPB#2, respectively.

(b) Twenty Eight (28) natural gas fired air make-up units and space heaters, constructed before 2000, with a combined heating capacity of 7.809 MMBTU per hour:

(1) One (1) natural gas-fired air makeup unit rated at 3.456 MMBtu/hr vented to the atmosphere.

- (2) One (1) natural gas-fired heating unit rated at 0.203 MMBtu/hr vented to the atmosphere.
 - (3) Seventeen (17) natural gas-fired heating units each rated at 0.20 MMBtu/hr vented to the atmosphere.
 - (4) Two (2) natural gas-fired heating units each rated at 0.12 MMBtu/hr vented to the atmosphere.
 - (5) One (1) natural gas-fired heating unit rated at 0.10 MMBtu/hr vented to the atmosphere.
 - (6) One (1) natural gas-fired heating unit rated at 0.08 MMBtu/hr vented to the atmosphere.
 - (7) Two (2) natural gas-fired heating units each rated at 0.075 MMBtu/hr vented to the atmosphere.
 - (8) Three (3) natural gas-fired heating units each rated at 0.060 MMBtu/hr vented to the atmosphere.
- (c) Four (4) metal inert gas (MIG) welding and cutting stations with a maximum wire consumption rate of 0.23 lbs/hr per stations, at a combined process weight rate of 2,340 pounds (1.17 tons) per hour, vented to the atmosphere.

The following units are existing units, however, they were not included in the existing Reregistration:

- (d) One (1) CNC router, identified as R-1, constructed in 2000, maximum capacity of 800 pounds per hour of spoil wood boards, equipped with an integral cartridge filter with a flow rate of 1500 acfm at a maximum loading of 0.03 gn/cf, and exhausting indoors to GV.
- (e) One (1) CNC routers, identified as R-2, constructed in 2000, maximum capacity of 800 pounds per hour of spoil wood boards, equipped with an integral cartridge filter in series with a cyclone with a flow of 1973 acfm at a maximum loading of 0.03 gn/cf, and exhausting indoors to GV.
- (f) One (1) parts washer, identified as CI, constructed in 2007, with a maximum solvent usage less than 145 gallons per 12 months, using non-halogenated solvents, and exhausting to GV.

NOTE: The VOC emissions are at an exemption level for the parts washer.

Unpermitted Emission Units and Pollution Control Equipment

- (g) One (1) paint spray booth, identified as SPB-3, constructed in 2007, for applying several coats to wood furniture products with eight paint options, equipped with four (4) High Volume Low Pressure (HVLV) spray guns and spraying/ brushing maximum of 0.50 unit per hour, utilizing dry filters for particulate overspray control, and exhausting to stack SPB3.
- (h) Two (2) CNC routers, identified as R-3 and R-4, constructed in 2007, maximum capacity of 0.5 unit per hour each for wood furniture, equipped with an integral cartridge filter in series with cyclone with a flow of 1973 acfm at a maximum loading of 0.03 gn/cf, at a process throughput of 800 pounds of wood per hour each, exhausting indoors to GV.
- (i) One (1) shot blaster, identified as BI, constructed in 2007, using sand as the blast media, controlled by a fabric filter for particulate control, flow rate of 1180 cfm and loading 0.03 gn/cf, at a process throughput of less than 100 pounds per hour, and exhausting indoors to GV.

"Integral Part of the Process" Determination

The applicant has submitted following justification why the dust collectors controlling routers, R-1, R-2, R-3 and R-4 should be considered an integral part of the wood working operation on July 15, 2008.

- (1) Exhaust inside the building without the use of dust collectors:
Air inside the building flows to the surface coating booths because of stack exhaust from the booths. Any dust released inside the building would flow to the booths. The surface coating operation at the facility is very high quality (high-grade furniture) and sensitive to quality control issues. Dust in the paint would not meet quality specifications and would render the product unsaleable. Thus, the dust collectors are necessary for production of the product.

- (2) Exhaust outside the building without the use of dust collectors:
The dust could be exhausted through the roof to eliminate the dust collectors. This design would require one or more make-up air units (total 7,419 cfm) to replace the exhausted air. The make-up air would draw in dust from the woodworking exhaust whenever it is upwind of the make-up air unit. Thus, a cartridge filter would be needed on the make-up air equivalent to the second stage of the existing dust collector units. Based on grain loading the PTE of the 4 systems is 835 TPY PM. Much of the sawdust would settle out on the roof, parking lot, cars and neighboring properties. At a minimum, the roof would have to be cleaned frequently to prevent structural collapse. Cars would have to be cleaned as well. The only savings under this justification would be the elimination of the cyclone (first stage of the dust collector unit) at an estimated savings of \$1,000 per unit or \$4,000. The additional costs would be:
 - (a) The stacks thru the roof;
 - (b) The make-up air system (contractor estimate is \$18,000 including installation);
 - (c) The heating costs (natural gas) for the make-up air (cost is \$574,000 per year for 6 months heating at average 25 degrees F heat rise and \$12 per Mcf);
 - (d) Labor and equipment to clean the roof and cars;
 - (e) and liability for dust on neighbors' property.

Thus, it is clear that there is an overwhelming cost advantage to the existing dust collectors at the point of generation.

IDEM, OAQ has evaluated the justifications submitted on July 15, 2008, and has determined that the dust collectors for R-1, R-2, R-3, and R-4 should not be considered as an integral part of the wood working process. This determination is based on the fact that the wood working routers can still operate without the control device, and the control device does not serve a primary purpose other than pollution control. Also, there is no significant positive net economic benefit by recycling the dust.

The applicant has resubmitted following justification on August 4, 2008, after discussing further options with IDEM, OAQ, which included the installation of interlock device which will make the routers inoperable if control equipment is not working.

- (3) Interlocking device:
Thermwood installed interlocks on 07/28/ 2008 on its woodworking routers to prevent operation of the units with out the attached dust collectors. The routers will not work if the control device is not in operation.

IDEM, OAQ has evaluated the justification submitted for option 3 and agrees that the dust collectors controlling particulate emissions from routers R-1, R-2, R-3 and R-4 are integral part of the process. This

determination is based on the fact that it is not possible to bypass the control equipment while operating each of the routers, and the woodworking operation will cease the operation if the control device is not functioning properly. Therefore, the permitting level will be determined using the potential to emit after the cartridge filters in series with cyclone. Operating conditions in the proposed permit will specify that this cartridge filter and cyclone shall operate at all times when the woodworking process is in operation.

Enforcement Issues

IDEM is aware that equipment has been constructed and operated prior to receipt of the proper permit. IDEM is reviewing this matter and will take the appropriate action. This proposed approval is intended to satisfy the requirements of the construction permit rules.

Emission Calculations

See Appendix A of this TSD for detailed emission calculations.

Permit Level Determination – MSOP

The following table reflects the unlimited potential to emit (PTE) of the entire source before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	49.72
PM10 ⁽¹⁾	49.72
SO ₂	0.02
NO _x	3.42
VOC	90.05
CO	2.87

- (1) Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant". US EPA has directed states to regulate PM10 emissions as surrogate for PM2.5 emissions.

HAPs	Potential To Emit (tons/year)
Xylenes	2.81
Ethylbenzene	0.06
Methyl ethyl ketone	1.59
Benzene	negligible
Dichlorobenzene	negligible
Formaldehyde	7.6E-02
n-Hexane	6.16E-02
Toluene	8.82
Lead	negligible
TOTAL HAPs	13.42

- (a) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of PM, PM10 and VOC are each less than one hundred (100) tons per year, but greater than or equal to twenty-five (25) tons per year. The PTE of all other regulated criteria pollutants are less than twenty-five (25) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-6.1. A Minor Source Operating Permit (MSOP) will be issued.
- (b) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the PTE of a combination of HAPs is less than twenty-five (25) tons per year.

Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-7.

Federal Rule Applicability Determination

New Source Performance Standards (NSPS)

- (a) This requirements of 326 IAC 12 or 40 CFR 60, Subpart EE (60.310 through 60.316), Standards of Performance for the Surface Coating of Metal Furniture Operations are not included in the permit, because this source does not perform Surface Coating of Metal Furniture.
- (b) There are no New Source Performance Standards (NSPS)(40 CFR Part 60) included in the permit.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

- (a) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR 63, Subpart MMMM, Miscellaneous Metal Parts and Products Surface Coating are not included in the permit, since this source is not a major source of HAPs as defined in 40 CFR 63.2.
- (b) The requirements of the National Emission Standards for Hazardous Air Pollutants for Wood Surface Coatings operations (40 CFR 63, Subpart JJ, 326 IAC 20-14-1) are not included in this permit, since this source is not a major source of HAPs as defined in 40 CFR 63.2.
- (c) The requirements of the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR 63, Subpart HHHHHH, surface coating or paint stripping and miscellaneous surface coating operations at area source (40CFR Part 63.11169) are not included in this permit, since this source is not involved in the use of chemical strippers that contain methyl chloride (MeCl) in paint removal process, and the surface coating used at this source do not contain chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd).
- (d) This source is not subject to the requirements of the 40 CFR Subpart T (63.460 Through 63.470), NESHAP for for Halogenated Solvent Cleaning, because this operation does not use a degreasing solvent that contains any of the halogenated compounds listed in 40 CFR 63.460(a).
- (e) There are no other National Emission Standards for Hazardous Air Pollutants (NESHAPS) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) included in the permit.

Compliance Assurance Monitoring (CAM)

Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is not included in the permit, because the unlimited potential to emit of the source is less than the Title V major source thresholds and the source is not required to obtain a Part 70 or Part 71 permit.

State Rule Applicability Determination

The following state rules are applicable to the source:

- (a) 326 IAC 2-6.1 (Minor Source Operating Permits (MSOP))
MSOP applicability is discussed under the Permit Level Determination – MSOP section above.
- (b) 326 IAC 2-2 (Prevention of Significant Deterioration(PSD))
This source is not a major stationary source, under PSD (326 IAC 2-2), because the potential to emit of all attainment regulated pollutants are less than 250 tons per year, and this source is not one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).
Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

- (c) 326 IAC 2-3 (Emission Offset)
The requirements of 326 IAC 2-3 (Emission Offset) apply to major sources or major modifications constructed in an area designated as non-attainment. The requirements of 326 IAC 2-3 (Emission Offset) will not be applicable to Thermwood because it is not located in Ohio Township in Spencer County.
- (d) 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
The potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-4.1.
- (e) 326 IAC 2-6 (Emission Reporting)
Pursuant to 326 IAC 2-6-1, this source is not subject to this rule, because it is not required to have an operating permit under 326 IAC 2-7 (Part 70), it is not located in Lake, Porter, or LaPorte County, and it does not emit lead into the ambient air at levels equal to or greater than 5 tons per year. Therefore, 326 IAC 2-6 does not apply.
- (f) 326 IAC 5-1 (Opacity Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:
 - (1) Opacity shall not exceed an average of thirty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute non-overlapping integrated averages for a continuous opacity monitor in a six (6) hour period.
- (g) Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.
- (h) 326 IAC 8-11-3 (Volatile Organic Compounds, Wood Furniture and Cabinet Coatings)
Pursuant to 326 IAC 8-11-3, this source is not subject to this rule, since this source is not located in Lake, Porter, Clark, or Floyd County.

State Rule Applicability - Surface Coating Operation (Paint Booths SPB-1 and SPB-2)

- (i) 326 IAC 8-1-6 (New Facilities - General Reduction Requirement)
The paint booths SPB-1 and SPB-2, were constructed prior to January 1, 1980 therefore, paint booths SPB-1 and SPB-2 are not subject to the provisions of 326 IAC 8-1-6.
- (j) 326 IAC 8-2-9 (Miscellaneous Metal Coating)
This rule applies to industrial categories with specific SIC codes, including facilities whose first two digits are 35 and have been constructed after July 1991. The SPB-1 and SPB-2 coating booths were constructed in 1976, therefore paint booths are not subject to the provisions of 326 IAC 8-2-9.
- (k) 326 IAC 8-6-1 (Applicability of Rule)
This rule is applicable for sources that commenced operations after October 7, 1974 and prior to January 1, 1980, located anywhere in the state with potential VOC emissions equal to or greater than 100 tons per year and not limited by other rule. The Paint booths SPB1 and SPB-2 were constructed in 1976, but the total potential VOC emissions from the source are 90.05 tons per year, therefore 8-6-1 does not apply.

- (l) 326 IAC 8
There are no other 326 IAC 8 Rules that are applicable to surface coating booths SPB-1 and SPB-2.

State Rule Applicability - Surface Coating Operation (Paint Booth SPB-3)

- (l) 326 IAC 8-1-6 (New facilities; general reduction requirements)
The paint booth SPB-3, which was constructed after the applicability date of January 1, 1980, is not subject to the requirements of 326 IAC 8-1-6, since it is subject to 326 IAC 8-2-12.

- (m) 326 IAC 8-2-9 (Miscellaneous Metal Coating Operations)
Pursuant to 326 IAC 8-1-1(b), this source is not subject to 326 IAC 8-2-9 since paint booth SPB-3 paints wood furniture.
- (n) 326 IAC 8-2-12 (Wood Furniture and Cabinet Coating)
This rule applies to surface coating of wood furnishings, including cabinets (kitchen, bath, and vanity), tables, beds, chairs, sofas (nonupholstered), art objects, and any other coated furnishings made of solid wood, wood composition, or simulated wood material. The surface coating booth SPB-3 is subject to 326 IAC 8-2-12, since the paint booth to be constructed after July 1, 1990, and will have actual emissions of greater than fifteen (15) pounds of VOC per day before add-on controls. Pursuant to 326 IAC 8-2-12 (Wood Furniture and Cabinet Coating), the Permittee shall perform surface coating of wood furniture and cabinets, with the exception of no more than ten (10) gallons of coating per day used for touch-up and repair operations, using one (1) or more of the following application systems:

- Airless Spray Application
- Air Assisted Airless Spray Application
- Electrostatic Spray Application
- Electrostatic Bell or Disc Application
- Heated Airless Spray Application
- Roller Coating
- Brush or Wipe Application
- Dip-and-Drain Application

High Volume Low Pressure (HVLP) Spray Application is an accepted alternative method of application for Air Assisted Airless Spray Application. HVLP spray is the technology used to apply coating to substrate by means of coating application equipment which operates between one-tenth (0.1) and ten (10) pounds per square inch gauge (psig) air pressure measured dynamically at the center of the air cap and at the air horns of the spray system. Since surface coating booth SPB-3 uses air assisted airless spray, it is in compliance with 326 IAC 8-2-12.

- (o) 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-2(d), particulate from surface coating booths SPB-1, SPB-2, and SPB-3 shall each be controlled by dry particulate filters, and the Permittee shall operate the control device in accordance with manufacturer's specifications.
If overspray is visibly detected at the exhaust or accumulates on the ground, the Permittee shall inspect the control device and do either of the following no later than four (4) hours after such observation:
- (a) Repair control device so that no overspray is visibly detectable at the exhaust or accumulates on the ground.
 - (b) Operate equipment so that no overspray is visibly detectable at the exhaust or accumulates on the ground.

If overspray is visibly detected, the Permittee shall maintain a record of the action taken as a result of the inspection, any repairs of the control device, or change in operations, so that overspray is not visibly detected at the exhaust or accumulates on the ground. These records must be maintained for five (5) years.

State Rule Applicability - Routers (R-1, R-2, R-3, and R-4)

- (p) 326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-2(e), the particulate emissions from each of the routers R1, R2, R3 and R4 shall comply with the requirements of 326 IAC 6-3.
- (1) Pursuant to 326 IAC 6-3-2(e), the particulate emissions from Router R-1, shall not exceed 2.22 pounds per hour, when operating at a process rate of 800 pounds per hour.
 - (2) Pursuant to 326 IAC 6-3-2(e), the particulate emissions from Router R-2, shall not exceed 2.22 pounds per hour, when operating at a process rate of 800 pounds per hour.
 - (3) Pursuant to 326 IAC 6-3-2(e), the particulate emissions from Router R-3, shall not exceed 2.22 pounds per hour, when operating at a process rate of 800 pounds per hour.
 - (4) Pursuant to 326 IAC 6-3-2(e), the particulate emissions from Router R-4, shall not exceed 2.22 pounds per hour, when operating at a process rate of 800 pounds per hour.

The pound per hour limitation was calculated using the following equation:

Interpolation of the data for the process weight rates up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where} \quad \begin{array}{l} E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour} \end{array}$$

The OAQ has determined the cartridge filtration system in series with the cyclone is integral to each of the wood working operations, R-1, R-2, R-3, and R-4. The respective cartridge filtration system, must be in operation at all times when the wood working routers are in operation in order to comply with this limit. The permittee shall operate the control device in accordance with the manufacturer's specifications.

State Rule Applicability - Welding (MIG) and Sand blasting (BI) operation

- (q) 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes),
- (1) Pursuant to 326 IAC 6-3-2(e), the particulate emissions from welding and plasma cutting operation, shall not exceed 4.55 pounds per hour, when operating at a process weight rate of 2,340 pounds (1.17 tons) per hour.
 - (2) Pursuant to 326 IAC 6-3-2(e)(2), the particulate emissions from shot blasting operation shall not exceed 0.551 pounds per hour, when operating at a process rate of less than 100 pounds per hour.

Baghouse shall be in operation at all times that the shot blasting operation is in operation in order to comply with this limit.

The pound per hour limitation for q(1) and q(2) was calculated with the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where} \quad \begin{array}{l} E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour} \end{array}$$

State Rule Applicability – Twenty Eight (28) Natural Gas space heaters

- (r) 326 IAC 6-2 (Particulate Emissions from Indirect Heating Units)
The natural gas-fired heaters are not subject to 326 IAC 6-2 as they are not sources of indirect heating.
- (s) 326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-1(b)(14), each of the natural gas-fired heaters are exempt from the requirements of 326 IAC 6-3, because, pursuant to 326 IAC 1-2-51, liquid and gaseous fuels and combustion air are not considered as part of the process weight. In addition, each heater has a potential particulate emissions less than five hundred fifty-one thousandths (0.551) pound per hour.
- (t) 326 IAC 7-1 (Sulfur dioxide emission limitations: applicability)
The natural gas-fired heaters are each not subject to the requirements of 326 IAC 7-1, because the potential and the actual emissions are less than twenty-five (25) tons per year and ten (10) pounds per hour respectively.

State Rule Applicability - Parts washer CI

- (u) Volatile Organic Compounds (VOC) [326 IAC 8-1-1]
Pursuant to 326 IAC 8-3-1 (Organic Solvent Degreasing Operations), the one (1) parts washer is each subject to the requirements of 326 IAC 8-3-2 (Cold Cleaner Operations), since parts washer meets the definition of a cold cleaner degreaser under 326 IAC 1-2-18.5, utilize a organic solvent containing volatile organic compounds (VOCs) (as defined by 326 IAC 1-2-90), was constructed after the January 1, 1980, and do not have remote solvent reservoirs.

Pursuant to 326 IAC 8-3-2, for the parts cleaner, identified as CI, the owner or operator shall:

- (1) Equip the cleaner with a cover;
 - (2) Equip the cleaner with a facility for draining cleaned parts;
 - (3) Close the degreaser cover whenever parts are not being handled in the cleaner;
 - (4) Drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;
 - (5) Provide a permanent, conspicuous label summarizing the operation requirements;
 - (6) Store waste solvent only in covered containers and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate into the atmosphere.
- (v) 326 IAC 20-6-1 (Halogenated Solvent Cleaning)
This source is not subject to the requirements of the 326 IAC 20-6-1, since the degreasing operations do not use a solvent that contains any of the halogenated compounds listed in 326 IAC 20-6-1(a).

Conclusion and Recommendation

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant on June 13, 2008, July 15, 2008, August 4, 2008 and August 7, 2008. An application for the purpose of this review was received on May 8, 2008.

The construction and operation of this source shall be subject to the conditions of the attached proposed New Source Review and MSOP No. 147-26505-00039. The staff recommends to the Commissioner that this New Source Review and MSOP be approved.

IDEM Contact

- (a) Questions regarding this proposed permit can be directed to Swarna Prabha at the Indiana Department Environmental Management, Office of Air Quality, Permits Branch, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana 46204-2251 or by telephone at (317) 234-5376 or toll free at 1-800-451-6027 extension (45376).
- (b) A copy of the findings is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>.
- (c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov.

**Appendix A: Emissions Calculations
Emission Summary**

TSD Appendix A: Page 1 of 15

**Company Name: Thermawood
Address City IN Zip: Old Buffaloville Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha**

Uncontrolled Potential Emissions (tons/year)									
Category	Pollutant	Space heaters	Welding MIG	Shot Blaster Bl	Paint Booth SPB-3	Paint Booths SPB-1,SPB- 2	(4) Routers R1, R2, R3, R4	Parts Washer CI	TOTAL
Criteria Pollutants	PM	0.26	4.17	26.58	7.37	2.98	8.36		49.72
	PM10	0.26	4.17	26.58	7.37	2.98	8.36		49.72
	SO2	0.02							0.02
	NOx	3.42							3.42
	VOC	0.19				69.00	20.80	0.069	90.05
	CO	2.87							2.87
Hazardous Air Pollutant	Chromium	4.79E-05	negl.						4.8E-05
	Manganese	1.30E-05	negl.						1.3E-05
	Nickel	7.18E-05	negl.						7.2E-05
	Toluene	1.16E-04			8.75	7.1E-02			8.82
	Benzene	7.18E-05							7.2E-05
	Hexane	6.16E-02							6.2E-02
	Formaldehyde	2.57E-03			0.07	1.9E-03			7.6E-02
	Lead	1.71E-05							1.7E-05
	Xylene				2.56	0.25			2.81
	Ethylbenzene				0.00	5.50E-02			5.5E-02
	Methanol				0.00	1.09E-04			1.1E-04
	MEBK				1.52	7.00E-02			1.59
	Totals		6.4E-02			1.3E+01	0.45		

Controlled Potential Emissions (tons/year)									
Category	Pollutant	Space heaters	Welding MIG	Shot Blaster Bl	Paint Booth SPB-3	Two Paint Booths SPB-1,SPB- 2	(4) Routers R1, R2, R3, R4	Parts Washer CI	TOTAL
Criteria Pollutants	PM	0.260	4.17	1.33	0.74	0.30	8.36		15.15
	PM10	0.260	4.17	1.33	0.74	0.30	8.36		15.15
	SO2	0.0							0.02
	NOx	3.4							3.42
	VOC	0.19				69.00	20.796	0.069	90.05
	CO	2.87							2.87
Hazardous Air Pollutants	Chromium	4.79E-05	negl.						4.79E-05
	Manganese	1.30E-05	negl.						1.30E-05
	Nickel	7.18E-05	negl.						7.18E-05
	Toluene	1.16E-04			8.75	7.1E-02			8.82
	Benzene	7.18E-05							7.18E-05
	Hexane	6.16E-02							6.16E-02
	Formaldehyde	2.6E-03			0.07	1.9E-03			7.62E-02
	Lead	1.7E-05							1.71E-05
	Xylene				2.56	0.25			2.81
	Ethylbenzene				0.00	5.5E-02			0.06
	Mathenol				0.00	1.1E-04			0.00
	MEBK				1.52	7.0E-02			1.59
	Totals		6.4E-02			12.90	0.45		

Total emissions based on rated capacity at 8,760 hours/year.

**Appendix A: Emissions Calculations
 Natural Gas Combustion Only
 MM BTU/HR <100
 Small Industrial Boiler**

**Company Name: Thermwood
 Address City IN Zip: Old Buffaloville Road, Dale, Indiana 47523-4476
 Minor Source Operating Permit: 147-26505-00039
 Reviewer: Swarna Prabha**

Heat Input Capacity Potential Throughput
 MMBtu/hr MMCF/yr

7.8

68.4

Emission Factor in lb/MMCF	PM*	PM10*	SO2	NOx	VOC	CO
	7.6	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.26	0.26	0.02	3.42	0.19	2.87

NOTES:

1. *PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
2. There are no PM2.5 Emission Factors in AP-42, PM10 = PM2.5
3. **Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32
4. All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Methodology

Potential Throughput (MMCF) = Combined Total Heat Input Capacity (MMBtu/hr) * 8,760 hrs/yr * 1 MMCF/1,000 MMBtu

Emission (tons/yr) = Throughput (MMCF/yr) * Emission Factor (lb/MMCF) / 2,000 lb/ton

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu, MMCF = 1,000,000 Cubic Feet of Gas

Abbreviations

PM = Partic NOx = Nitrous Oxides Cr = Chromium

PM10 = Par VOC - Volatile Organic Compounds Ni = Nickel

SO2 = Sulfu.CO = Carbon Monoxide Cd = Cadmium

Appendix A: Emissions Calculations

Natural Gas Combustion Only

MM BTU/HR <100

Small Industrial Boiler

HAPs Emissions

Company Name: Thermwood

Address City IN Zip: Old Buffaloville Road, Dale, Indiana 47523-4476

Minor Source Operating Permit: 147-26505-00039

Reviewer: Swarna Prabha

	Benzene	Dichloroben:	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.10E-03	1.20E-03	7.50E-02	1.80E+00	3.40E-03
Potential Emission in tons/yr	7.18E-05	4.10E-05	2.57E-03	6.16E-02	1.16E-04

HAPs - Metals

	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.00E-04	1.10E-03	1.40E-03	3.80E-04	2.10E-03
Potential Emission in tons/yr	1.71E-05	3.76E-05	4.79E-05	1.30E-05	7.18E-05

Methodology

Emission (tons/yr) = Throughput (MMCF/yr) * Emission Factor (lb/MMCF) / 2,000 lb/ton

The five highest organic and metal HAPs emission factors are provided above.

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Appendix A: Emissions Calculations
Welding and Thermal Cutting**

**Company Name: Thermwood
Address City IN Zip: Old Buffalo Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26504-00039
Reviewer: Swarna Prabha**

PROCESS	Number of Stations	Max. electrode consumption per station (lbs/hr)		EMISSION FACTORS* (lb pollutant/lb electrode)				EMISSIONS (lbs/hr)				HAPS (lbs/hr)
				PM = PM10	Mn	Ni	Cr	PM = PM10	Mn	Ni	Cr	
WELDING												
Submerged Arc	0	0		0.036	0.011			0.000	0.000	0.000	0	0.000
Metal Inert Gas (MIG)(carbon steel)	4	0.23		0.0055	0.0005			0.005	0.000	0.000	0	0.000
Stick (E7018 electrode)	0	0		0.0211	0.0009			0.000	0.000	0.000	0	0.000
Tungsten Inert Gas (TIG)(carbon steel)	0	0		0.0055	0.0005			0.000	0.000	0.000	0	0.000
Oxyacetylene(carbon steel)	0	0		0.0055	0.0005			0.000	0.000	0.000	0	0.000
FLAME CUTTING	Number of Stations	Max. Metal Thickness Cut (in.)	Max. Metal Cutting Rate (in./minute)	EMISSION FACTORS (lb pollutant/1,000 inches cut, 1" thick)**				EMISSIONS (lbs/hr)				HAPS (lbs/hr)
				PM = PM10	Mn	Ni	Cr	PM = PM10	Mn	Ni	Cr	
Oxyacetylene	3	2	15	0.1622	0.0005	0.0001	0.0003	0.876	0.000	0.000	0.000	0.000
Oxymethane	0			0.0815	0.0002		0.0002	0.000	0.000	0.000	0.000	0.000
Plasma**	2	0.375	150	0.0039				0.070	0.000	0.000	0.000	0.000
EMISSION TOTALS												
Potential Emissions lbs/hr								0.95				0.00
Potential Emissions lbs/day								22.83				0.01
Potential Emissions tons/year								4.17				0.00

*Emission Factors are default values for carbon steel unless a specific electrode type is noted in the Process column.

**Emission Factor for plasma cutting from American Welding Society (AWS). Trials reported for wet cutting of 8 mm thick mild steel with 3.5 m/min cutting speed (at 0.2 g/min emitted). Therefore, the emission factor for plasma cutting is for 8 mm thick.

METHODOLOGY

Using AWS average values: (0.25 g/min)/(3.6 m/min) x (0.0022 lb/g)/(39.37 in./m) x (1,000 in.) = 0.0039 lb/1,000 in. cut, 8 mm thick

Plasma cutting emissions, lb/hr: (# of stations)(max. cutting rate, in./min.)(60 min./hr.)(emission factor, lb. pollutant/1,000 in. cut, 8 mm thick)

Cutting emissions, lb/hr: (# of stations)(max. metal thickness, in.)(max. cutting rate, in./min.)(60 min./hr.)(emission factor, lb. pollutant/1,000 in. cut, 1" thick)

Welding emissions, lb/hr: (# of stations)(max. lbs of electrode used/hr/station)(emission factor, lb. pollutant/lb. of electrode used)

Emissions, lbs/day = emissions, lbs/hr x 24 hrs/day

Emissions, tons/yr = emissions, lb/hr x 8,760 hrs/year x 1 ton/2,000 lbs.

Welding and other flame cutting emission factors are from an internal training session document.

Refer to AP-42, Chapter 12.19 for additional emission factors for welding.

**Appendix A: Emissions Calculations
Shot Blaster (BI)**

**Company Name: Thermwood
Address City IN Zip: Old Buffaloville Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha**

Unit ID	Control Efficiency (%)	Grain Loading per Actual Cubic foot of Outlet Air (grains/cub. ft.)	Gas or Air Flow Rate (acfm.)	PTE of PM/PM10 before Controls (lb/hr)	PTE of PM/PM10 before Controls (tons/yr)	PTE of PM/PM10 after Controls (lb/hr)	PTE of PM/PM10 after Controls (tons/yr)	Allowable 326 IAC 6-3-2 lbs/hr
shot blaster	95.0%	0.030	1,180	6.07	26.58	0.30	1.33	0.551

PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

PM10 = PM2.5

The process throughput for shot blasting operation = 50 pounds/hr of steel and .01538 pounds per hr of shots per pound of parts

Process throughput = $[50 + (.01538 \times 50)]$ lbs/hr = 50.8 pounds per hour

Methodology

Emission Rate in lbs/hr (after controls) = (grains/cub. ft.) (cub. ft./min.) (60 min/hr) (lb/7000 grains)

Emission Rate in tons/yr = (lbs/hr) (8760 hr/yr) (ton/2000 lb)

**Appendix A: Emissions Calculations
Wood Furniture Surface Coating Operations-Booth SPB-3**

TSD Appendix A: Page 6 of 15

**Company Name: Thermwood
Address City IN Zip: Old BuffaloVille Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha**

VOC and Particulate SPB-3 -Wood substrate

Material	ID#	Density (Lb/Gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential (ton/yr)	lb VOC/gal solids	Transfer Efficiency
SCHEDULE 1: WORN ANTIQUE WHITE																	
Base Coat	001L-03/04	9.44	0.54	0.00	54.4%	0.00%	0.254	0.33	0.625	5.13	5.13	1.06	25.41	4.64	0.97	20.24	0.75
Base Coat	001L-03/04	9.44	0.54	0.00	54.4%	0.00%	0.254	0.33	0.625	5.13	5.13	1.06	25.41	4.64	0.97	20.24	0.75
Sealer	001L-05/07	7.01	0.91	0.14	77.0%	14.68%	0.071	0.33	0.625	6.33	5.40	1.11	26.73	4.88	0.14	76.06	0.75
Glaze	001L-06	7.07	0.83	0.00	83.5%	0.00%	0.072	0.33	0.625	5.90	5.90	1.22	29.21	5.33	0.26	82.18	0.75
Sealer	001L-05/07	7.01	0.91	0.14	77.0%	14.68%	0.071	0.33	0.625	6.33	5.40	1.11	26.73	4.88	0.14	76.06	0.75
Topcoat	001L-08	7.05	0.90	0.12	78.2%	12.88%	0.076	0.37	0.625	6.32	5.51	1.27	30.58	5.58	0.17	72.21	0.75
Spatter	001L-09	6.67	1.00	0.00	99.7%	0.00%	0.002	0.18	0.625	6.65	6.65	0.75	17.95	3.28	0.00	2770.55	0.75
Topcoat	001L-10	7.45	0.78	0.07	70.2%	8.41%	0.153	0.37	0.625	5.71	5.23	1.21	29.03	5.30	0.42	34.30	0.75
Total														38.51	3.10		

SCHEDULE 2: BLACK WORN RED (2)																	
Spray Stain	002-03	7.1	0.93	13.1%	79.9%	0.141	0	0.50	0.50	6.60	5.67	1.42	34.02	6.21	0.14	0.00	0.75
Sealer	002-04/06	7.6	0.757	5.7%	70.0%	0.066	0.177	0.64	0.50	5.69	5.32	1.70	40.91	7.47	0.65	30.14	0.75
Black Realtone	002-05	7.65	0.722	5.3%	66.9%	0.062	0.165	1.55	0.50	5.46	5.12	3.96	95.03	17.34	1.80	31.12	0.75
Sealer	002-04/06	7.6	0.757	5.7%	70.0%	0.066	0.177	1.12	0.50	5.69	5.32	2.99	71.79	13.10	1.14	30.14	0.75
Glaze	002-07	8.66	0.467	0.0%	46.7%	0.000	0.367	0.70	0.50	4.05	4.05	1.41	33.95	6.20	1.77	11.04	0.75
Topcoat	002-08	7.72	0.73	8.2%	64.8%	0.096	0.202	1.02	0.50	5.53	5.00	2.56	61.39	11.20	1.17	24.72	0.75
Topcoat	002-08	7.72	0.73	8.2%	64.8%	0.096	0.202	0.63	0.50	5.53	5.00	1.58	37.85	6.91	0.72	24.72	0.75
Total												15.62	374.94	68.43	7.37		

SCHEDULE 3: DISTRESSED ANTIQUE MAPLE																	
Equalizer	003-03	6.89	0.993	0.160	83.3%	16.65%	0.150	0.33	0.400	6.89	5.74	0.76	18.18	3.32	0.01	38.22	0.75
NGR Stain	003-04	6.87	0.995	0.161	83.4%	16.79%	0.137	0.33	0.400	6.89	5.73	0.76	18.15	3.31	0.00	41.79	0.75
Spray Stain	003-05	6.37	0.916	0.000	91.6%	0.00%	0.057	0.33	0.400	5.83	5.83	0.77	18.47	3.37	0.08	103.22	0.75
Antique Pad	003-06	6.67	0.998	0.000	99.8%	0.00%	0.002	0.33	0.400	6.66	6.66	0.88	21.08	3.85	0.00	2893.62	0.75
Washcoat	003-07	7.19	0.872	0.104	76.8%	11.30%	0.088	0.37	0.400	6.22	5.52	0.82	19.61	3.58	0.15	62.51	0.75
Glaze	003-08	8.76	0.418	0.000	41.8%	0.00%	0.233	0.33	0.400	3.66	3.66	0.48	11.60	2.12	0.74	15.69	0.75
Sealer	003-09	7.6	0.757	0.057	70.0%	6.56%	0.177	0.33	0.400	5.69	5.32	0.70	16.85	3.08	0.27	30.14	0.75
Spatter	003-10	6.67	0.997	0.000	99.7%	0.00%	0.002	0.33	0.400	6.65	6.65	0.88	21.06	3.84	0.00	2890.87	0.75
Topcoat	003-11/14	7.72	0.730	0.082	64.8%	9.63%	0.202	0.37	0.400	5.53	5.00	0.74	17.76	3.24	0.34	24.72	0.75
Powder Glaze	003-12	9.25	0.548	0.000	54.8%	0.00%	0.208	0.18	0.400	5.07	5.07	0.37	8.76	1.60	0.33	24.42	0.75
Dry Brush	003-13	7.42	0.708	0.000	70.8%	0.00%	0.146	0.18	0.400	5.26	5.26	0.38	9.08	1.66	0.17	36.10	0.75
Topcoat	003-11/14	7.72	0.730	0.082	64.8%	9.63%	0.202	0.37	0.400	5.53	5.00	0.74	17.76	3.24	0.34	24.72	0.75
Total														36.21	2.42		

There are no emissions for PM2.5 in AP-42, PM10 = PM2.5

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)
Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)
Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)
Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)
Total = All Coatings + Sum of all solvents used

**Appendix A: Emissions Calculations
Wood Furniture Surface Coating Operations-Booths SPB-3**

**Company Name: Thermwood
Address City IN Zip: Old BuffaloVille Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha**

**VOC and Particulate SPB-3
SCHEDULE 4: OLD WALNUT**

Material	ID#	Density (Lb/Gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential (ton/yr)	lb VOC/gal solids	Transfer Efficiency
Sap Stain	004-03	6.88	0.992	16.02%	83.14%	0.831	86.67%	0.330	0.625	33.93	5.72	1.18	28.31	5.17	0.01	6.60	0.75
NGR Stain	004-04	6.87	0.993	16.05%	83.26%	0.833	86.67%	0.334	0.625	34.17	5.72	1.19	28.64	5.23	0.01	6.60	0.75
Washcoat	004-05	7.19	0.872	10.38%	76.77%	0.768	83.64%	0.369	0.625	23.77	5.52	1.27	30.57	5.58	0.23	6.60	0.75
Wipe Stain	004-06	7.54	0.601	0.00%	59.55%	0.000	0.00%	0.330	0.625	4.49	4.49	0.93	22.23	4.06	0.68	0.00	0.75
Sealer	004-07	7.6	0.757	5.70%	70.00%	0.700	80.61%	0.330	0.625	17.73	5.32	1.10	26.33	4.81	0.42	6.60	0.75
Topcoat	004-08/10	7.68	0.740	8.38%	65.63%	0.656	76.36%	0.373	0.625	14.66	5.04	1.18	28.21	5.15	0.51	6.60	0.75
Dry Brush	004-09	7.13	0.806	0.00%	80.36%	0.000	0.00%	0.180	0.625	5.73	5.73	0.64	15.47	2.82	0.17	0.00	0.75
Topcoat	004-08/10	7.68	0.740	8.38%	65.63%	0.656	76.36%	0.373	0.625	14.66	5.04	1.18	28.21	5.15	0.51	6.60	0.75
Total														37.95	2.54		

SCHEDULE 5: FRONTIER OAK

Equalizer	005-03	6.86	0.996	16.10%	83.53%	0.835	86.82%	0.33	0.400	34.79	5.73	0.76	18.15	3.31	0.00	6.60	0.75
NGR Stain	005-04	6.88	0.992	16.01%	83.14%	0.831	86.67%	0.33	0.400	33.93	5.72	0.76	18.12	3.31	0.01	6.60	0.75
Spray Stain	005-05	6.34	0.923	0.00%	92.11%	0.000	0.00%	0.33	0.400	5.84	5.84	0.77	18.50	3.38	0.07	0.00	0.75
Washcoat	005-06	7.19	0.872	10.38%	76.77%	0.768	83.64%	0.37	0.400	23.77	5.52	0.82	19.61	3.58	0.15	6.60	0.75
Oil Sealer	005-07	7.2	0.783	0.00%	81.11%	0.000	0.00%	0.33	0.400	5.84	5.84	0.77	18.50	3.38	0.23	0.00	0.75
Sealer	005-08	6.96	0.939	13.17%	80.75%	0.807	85.15%	0.33	0.400	29.19	5.62	0.74	17.80	3.25	0.06	6.60	0.75
Topcoat	005-09/13/14	7.68	0.740	8.38%	65.63%	0.656	76.36%	0.37	0.400	14.66	5.04	0.75	17.90	3.27	0.32	6.60	0.75
Smud and Burnish	005-10	6.67	0.998	0.08%	99.70%	0.997	100.76%	0.33	0.400	2217.78	6.65	0.88	21.07	3.84	0.00	6.60	0.75
Dry Brush and Cowls	005-11	8.56	0.468	0.00%	49.42%	0.000	0.00%	0.33	0.400	4.23	4.23	0.56	13.40	2.45	0.66	0.00	0.75
Spatter	005-12	6.67	0.998	0.08%	99.70%	0.997	100.76%	0.18	0.400	2217.78	6.65	0.48	11.49	2.10	0.00	6.60	0.75
Topcoat	005-09/13/14	7.68	0.740	8.38%	65.63%	0.656	76.36%	0.37	0.400	14.66	5.04	0.75	17.90	3.27	0.32	6.60	0.75
Topcoat	005-09/13/14	7.68	0.740	8.38%	65.63%	0.656	76.36%	0.37	0.400	14.66	5.04	0.75	17.90	3.27	0.32	6.60	0.75
Total														38.39	2.15		

SCHEDULE 6: OLD ENGLISH CHERRY

Sap Stain	006L-02	6.85	0.999	0.162	0.836	0.836	0.868	0.330	0.40	35.05	5.73	0.76	18.15	3.31	0.00	6.60	0.75
NGR Stain	006L-03	6.88	0.990	0.159	0.831	0.831	0.867	0.330	0.40	33.93	5.72	0.76	18.12	3.31	0.01	6.60	0.75
Spray Stain	006L-04	6.36	0.937	0.000	0.936	0.000	0.000	0.330	0.40	5.95	5.95	0.79	18.85	3.44	0.06	0.00	0.75
Washcoat	006L-05	7.06	0.893	0.137	0.756	0.756	0.809	0.370	0.40	21.92	5.34	0.79	18.97	3.46	0.12	6.60	0.75
Glaze	006L-06	8.03	0.624	0.001	0.623	0.623	0.758	0.330	0.40	13.25	5.00	0.66	15.84	2.89	0.44	6.60	0.75
Sealer	006L-07	6.90	0.949	0.146	0.803	0.803	0.839	0.330	0.40	28.11	5.54	0.73	17.55	3.20	0.05	6.60	0.75
Topcoat	006L-08/11/1	7.46	0.772	0.067	0.705	0.705	0.797	0.370	0.40	17.84	5.26	0.78	18.68	3.41	0.28	6.60	0.75
Antique Pad	006L-09	6.67	0.998	0.001	0.997	0.997	1.008	0.330	0.40	2217.78	6.65	0.88	21.07	3.84	0.00	6.60	0.75
Dry Brush	006L-10	8.03	0.624	0.000	0.623	0.000	0.000	0.180	0.40	5.00	5.00	0.36	8.64	1.58	0.24	0.00	0.75
Topcoat	006L-08/11/1	7.46	0.772	0.067	0.705	0.705	0.797	0.370	0.40	17.84	5.26	0.78	18.68	3.41	0.28	6.60	0.75
Topcoat	006L-08/11/1	7.46	0.772	0.067	0.705	0.705	0.797	0.370	0.40	17.84	5.26	0.78	18.68	3.41	0.28	6.60	0.75
Total														35.27	1.75		

There are no emissions for PM2.5 in AP-42 , PM10 = PM2.5

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)
 Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)
 Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)
 Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
 Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
 Particulate (PM/PM10) Potential Tons per Year = (units/hour) * (lbs/gal) * (gal/unit) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
 Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)
 Total = All Coatings + Sum of all solvents used

**Appendix A: Emissions Calculations
Wood Furniture Surface Coating Operations-Booths SPB-3**

**Company Name: Thermwood
Address City IN Zip: Old BuffaloVille Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha**

TSD Appendix A: Page 8 of 15

VOC and Particulate SPB-3

SCHEDULE 7: ANTIQUE CHERRY

Material	ID#	Density (Lb/Gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential (ton/yr)	lb VOC/gal solids	Transfer Efficiency
Sap Stain	007-03	6.85	0.999	16.24%	83.65%	0.836	86.82%	0.33	0.400	35.05	5.73	0.76	18.15	3.31	0.00	6.60	0.75
NGR Stain	007-04	6.87	0.993	16.05%	83.26%	0.833	86.67%	0.33	0.40	34.17	5.72	0.76	18.12	3.31	0.01	6.60	0.75
Spray Stain	007-05	6.36	0.937	0.00%	93.55%	0.000	0.00%	0.33	0.40	5.95	5.95	0.79	18.85	3.44	0.06	0.00	0.75
Washcoat	007-06	7.19	0.872	10.38%	76.77%	0.768	83.64%	0.37	0.40	23.77	5.52	0.82	19.61	3.58	0.15	6.60	0.75
Glaze	007-07	8.03	0.624	0.08%	62.27%	0.623	75.76%	0.33	0.40	13.25	5.00	0.66	15.84	2.89	0.44	6.60	0.75
Sealer	007-08	6.96	0.939	13.17%	80.75%	0.807	85.15%	0.33	0.40	29.19	5.62	0.74	17.80	3.25	0.06	6.60	0.75
Topcoat (SS TC-20)	007-09/12/13	7.67	0.725	7.34%	65.17%	0.652	75.76%	0.25	0.40	14.35	5.00	0.50	12.00	2.19	0.23	6.60	0.75
Antique Pad	007-10	6.67	0.998	0.08%	99.70%	0.997	100.76%	0.33	0.40	2217.78	6.65	0.88	21.07	3.84	0.00	6.60	0.75
Dry Brush	007-11	8.03	0.624	0.00%	62.27%	0.000	0.00%	0.18	0.40	5.00	5.00	0.36	8.64	1.58	0.24	0.00	0.75
Topcoat (SS TC-20)	007-09/12/13	7.67	0.772	8.62%	68.55%	0.686	79.70%	0.25	0.40	16.73	5.26	0.53	12.62	2.30	0.19	6.60	0.75
Topcoat (SS TC-20)	007-09/12/13	7.67	0.772	8.62%	68.55%	0.685539	79.70%	0.25	0.40	16.73	5.26	0.53	12.62	2.30	0.19	6.60	0.75
Total														32.00	1.57		

SCHEDULE 8: MDF WHITE

Washcoat	008P-03	6.92	0.953	16.21%	79.05%	0.790	82.88%	0.37	0.50	26.11	5.47	1.01	24.29	4.43	0.07	6.60	0.75
Edge Filler	008P-04/05	11.05	0.357	4.15%	31.58%	0.316	52.88%	0.33	0.50	5.10	3.49	0.58	13.82	2.52	1.28	6.60	0.75
Edge Filler	008P-04/05	11.05	0.357	4.15%	31.58%	0.316	52.88%	0.33	0.50	5.10	3.49	0.58	13.82	2.52	1.28	6.60	0.75
Sealer	008P-07/09	7.17	0.882	17.30%	70.85%	0.709	76.97%	0.33	0.50	17.43	5.08	0.84	20.12	3.67	0.15	6.60	0.75
Sealer	008P-07/09	7.17	0.882	17.30%	70.85%	0.709	76.97%	0.33	0.50	17.43	5.08	0.84	20.12	3.67	0.15	6.60	0.75
Glaze	008P-10	8.77	0.455	0.80%	44.70%	0.447	59.39%	0.33	0.50	7.09	3.92	0.65	15.52	2.83	0.86	6.60	0.75
Topcoat	008P-11/14	7.72	0.730	8.23%	64.77%	0.648	75.76%	0.37	0.50	14.19	5.00	0.93	22.20	4.05	0.42	6.60	0.75
Spatter	008P-12	6.68	0.994	0.00%	99.40%	0.994	100.61%	0.33	0.50	1108.88	6.64	1.10	26.29	4.80	0.01	6.60	0.75
Dry Brush	008P-13	10.13	0.338	0.42%	33.37%	0.333662	51.21%	0.18	0.50	5.00	5.00	0.30	7.30	1.33	0.66	6.60	0.75
Topcoat	008P-11/14	7.72	0.730	8.23%	64.77%	0.647668	75.76%	0.37	0.50	14.19	5.00	0.93	22.20	4.05	0.42	6.60	0.75
Total														33.89	5.32		

CLEAN-UP

LAQUER THINNER	6.56	1	20.0%	80.0%	0.2008	0.00%	0.2	0.125	6.57	5.25	0.13	3.15	0.57	0.00	0.00		
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State Potential Emissions

Add worst case coating to all solvents (Schedule 2 - Black worn Red (2))

15.75 378.09 69.00 7.37

Dry Filter Control Efficiency =		90%
Worst Case Coating PTE PM/PM10 (After Controls) =		0.74

NOTES :

There are 8 paint options (schedules) each consisting of several coats. The maximum PTE is the max of the 8 schedules plus clean -up solvent
There are no emissions for PM2.5 in AP-42 , PM10 = PM2.5

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)
Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)
Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)
Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)
Total = All Coatings + Sum of all solvents used

Appendix A: Emissions Calculations
Wood Furniture Surface Coating Operations-Booth SPB-3

TSD Appendix A: Page 9 of 15

Company Name: Thernwood
Address City IN Zip: Old BuffaloVille Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha

PTE of HAPs from SPB-3

Material	Density (lbs/gal)	Maximum (unit/hour)	Maximum Capacity (gal/unit)	Maximum Usage * (gals/hour)	Weight % Toluene	Weight % Xylene	Weight % Ethylbenzene	Weight % Formaldehyde	Weight %Methanol	Weight % MIBK	PTE of Toulene (tons/yr)	PTE of MIBK (tos/yr)	PTE of Ethylbenzene (tons/yr)	PTE of Formaldehy de (tons/yr)	PTE of Xylene (tons/yr)	PTE of Methanol (tons/yr)	Total PTE of HAPs
SCHEDULE 1: WORN ANTIQUE WHITE																	
Base Coat	9.44	0.625	0.330	0.206	0.152	0.057	0.0115		0.051		1.30	0.00	0.10	0.43	0.49	0.43	2.75
Base Coat	9.44	0.625	0.330	0.206	0.152	0.057	0.0115		0.051		1.30	0.00	0.10	0.43	0.49	0.43	2.75
Sealer	7.01	0.625	0.330	0.206	0.044			0.007			0.28	0.00	0.00	0.04	0.00		0.32
Glaze	7.07	0.625	0.330	0.206				0.0022			0.00	0.00	0.00	0.01	0.00		0.01
Sealer	7.01	0.625	0.330	0.206	0.044			0.007			0.28	0.00	0.00	0.04	0.00		0.32
Topcoat	7.05	0.625	0.370	0.231	0.051			0.0084			0.36	0.00	0.00	0.06	0.00		0.42
Spatter	6.67	0.625	0.180	0.113							0.00	0.00	0.00	0.00	0.00		0.00
Topcoat	7.45	0.625	0.370	0.231	0.116	0.021		0.0203			0.88	0.00	0.00	0.15	0.16		1.19
Total											4.39	0.00	0.20	1.19	1.13		6.90
SCHEDULE 2: BLACK WORN RED (2)																	
Spray Stain	7.1	0.500	0.500	0.250		0.0101					0.00	0.00	0.00	0.00	0.08		0.08
Sealer	7.6	0.500	0.641	0.320	0.113	0.038		0.0006		0.0285	1.21	0.30	0.00	0.01	0.41		1.92
Black Realtone	7.65	0.500	1.547	0.773	0.105	0.039		0.0004		0.0264	2.72	0.68	0.00	0.01	1.01		4.43
Sealer	7.6	0.500	1.125	0.562	0.113	0.038		0.0006		0.0285	2.11	0.53	0.00	0.01	0.71		3.37
Glaze	8.66	0.500	0.699	0.350				0.0014			0.00	0.00	0.00	0.02	0.00		0.02
Topcoat	7.72	0.500	1.023	0.512	0.097	0.0126		0.0009			1.68	0.00	0.00	0.02	0.22		1.91
Topcoat	7.72	0.500	0.631	0.315	0.097	0.0126		0.0009			1.03	0.00	0.00	0.01	0.13		1.18
Total											8.75	1.52	0.00	0.07	2.56		12.90
SCHEDULE 3: DISTRESSED ANTIQUE MAPLE																	
Equalizer	6.89	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
NGR Stain	6.87	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Spray Stain	6.37	0.400	0.330	0.132				0.009			0.00	0.00	0.00	0.03	0.00		0.03
Antique Pad	6.67	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Washcoat	7.19	0.400	0.370	0.148	0.06	0.0192		0.001		0.0151	0.28	0.07	0.00	0.00	0.09		0.44
Glaze	8.76	0.400	0.330	0.132				0.0139			0.00	0.00	0.00	0.07	0.00		0.07
Sealer	7.6	0.400	0.330	0.132	0.113	0.038		0.0006		0.0285	0.50	0.13	0.00	0.00	0.17		0.79
Spatter	6.67	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Topcoat	7.72	0.400	0.370	0.148	0.097	0.0126		0.0009			0.49	0.00	0.00	0.00	0.06		0.55
Powder Glaze	9.25	0.400	0.180	0.072	0.12						0.35	0.00	0.00	0.00	0.00		0.35
Dry Brush	7.42	0.400	0.180	0.072				0.0025			0.00	0.00	0.00	0.01	0.00		0.01
Topcoat	7.72	0.400	0.370	0.148	0.097	0.0126		0.0009			0.49	0.00	0.00	0.00	0.06		0.55
Total											2.10	0.20	0.00	0.13	0.38		2.80

METHODOLOGY

HAPS emission rate (tons/yr) = [Maximum Usage (lb/hr)] * [Weight % HAP] * [8760 hours/yr] * [1 ton/2000 lbs]

**Appendix A: Emissions Calculations
Wood Furniture Surface Coating Operations-Booths SPB-3**

**Company Name: Thermwood
Address City IN Zip: Old Buffalo Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha**

TSD Appendix A: Page 10 of 15

PTE of HAPs from SPB-3

Material	Density (lbs/gal)	Maximum (unit/hour)	Maximum Capacity (gal/unit)	Maximum Usage * (gals/hour)	Weight % Toluene	Weight % Xylene	Weight % Ethylbenzene	Weight % Formaldehyde	Weight %Methanol	Weight % MIBK	PTE of Toluene (tons/yr)	PTE of MIBK (tos/yr)	PTE of Ethylbenzene (tons/yr)	PTE of Formaldehyde (tons/yr)	PTE of Xylene (tons/yr)	PTE of Methanol (tons/yr)	Total PTE of HAPs
SCHEDULE 4: OLD WALNUT																	
Sap Stain	6.88	0.625	0.330	0.206							0.00	0.00	0.00	0.00	0.00		0.00
NGR Stain	6.87	0.625	0.334	0.209							0.00	0.00	0.00	0.00	0.00		0.00
Washcoat	7.19	0.625	0.369	0.231	0.06	0.0192		0.001		0.0151	0.44	0.11	0.00	0.01	0.14		0.69
Wipe Stain	7.54	0.625	0.330	0.206				0.0035			0.00	0.00	0.00	0.02	0.00		0.02
Sealer	7.6	0.625	0.330	0.206	0.113	0.038		0.0006		0.0285	0.78	0.20	0.00	0.00	0.26		1.24
Topcoat	7.68	0.625	0.373	0.233	0.098	0.0128		0.0009			0.77	0.00	0.00	0.01	0.10		0.88
Dry Brush	7.13	0.625	0.180	0.113				0.0017			0.00	0.00	0.00	0.01	0.00		0.01
Topcoat	7.68	0.625	0.373	0.233	0.098	0.0128		0.0009			0.77	0.00	0.00	0.01	0.10		0.88
Total											2.75	0.31	0.00	0.06	0.60		3.71

SCHEDULE 5: FRONTIER OAK																	
Equalizer	6.86	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
NGR Stain	6.88	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Spray Stain	6.34	0.400	0.330	0.132				0.0089			0.00	0.00	0.00	0.03	0.00		0.03
Washcoat	7.19	0.400	0.370	0.148	0.06	0.0192		0.001		0.0151	0.28	0.07	0.00	0.00	0.09		0.44
Oil Sealer	7.2	0.400	0.330	0.132				0.006			0.00	0.00	0.00	0.02	0.00		0.02
Sealer	6.96	0.400	0.330	0.132	0.0273		0.01	0.0001		0.01	0.11	0.04	0.04	0.00	0.00		0.19
Topcoat	7.68	0.400	0.370	0.148	0.098	0.0128		0.0009			0.49	0.00	0.00	0.00	0.06		0.56
Smud and Burnish	6.67	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Dry Brush and Cowtail	8.56	0.400	0.330	0.132				0.0023			0.00	0.00	0.00	0.01	0.00		0.01
Spatter	6.67	0.400	0.180	0.072							0.00	0.00	0.00	0.00	0.00		0.00
Topcoat	7.68	0.400	0.370	0.148	0.098	0.0128		0.0009			0.49	0.00	0.00	0.00	0.06		0.56
Topcoat	7.68	0.400	0.370	0.148	0.098	0.0128		0.0009			0.49	0.00	0.00	0.00	0.06		0.56
Total											1.85	0.11	0.04	0.09	0.28		2.37

SCHEDULE 6: OLD ENGLISH CHERRY																	
Sap Stain	6.85	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
NGR Stain	6.88	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Spray Stain	6.36	0.400	0.330	0.132				0.009			0.00	0.00	0.00	0.03	0.00		0.03
Washcoat	7.06	0.400	0.370	0.148	0.052			0.0077			0.24	0.00	0.00	0.04	0.00		0.27
Glaze	8.03	0.400	0.330	0.132				0.0058			0.00	0.00	0.00	0.03	0.00		0.03
Sealer	6.9	0.400	0.330	0.132	0.0238			0.0049			0.09	0.00	0.00	0.02	0.00		0.11
Topcoat	7.46	0.400	0.370	0.148	0.116	0.0212					0.56	0.00	0.00	0.00	0.10		0.66
Antique Pad	6.67	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Dry Brush	8.03	0.400	0.180	0.072				0.0058			0.00	0.00	0.00	0.01	0.00		0.01
Topcoat	7.46	0.400	0.370	0.148	0.116	0.0212					0.56	0.00	0.00	0.00	0.10		0.66
Topcoat	7.46	0.400	0.370	0.148	0.116	0.0212					0.56	0.00	0.00	0.00	0.10		0.66
Total											2.02	0.00	0.00	0.13	0.31		2.45

METHODOLOGY

HAPS emission rate (tons/yr) = [Maximum Usage (lb/hr)] * [Weight % HAP] * [8760 hours/yr] * [1 ton/2000 lbs]

**Appendix A: Emissions Calculations
Wood Furniture Surface Coating Operations-Booths SPB-3**

Company Name: Thermwood
Address City IN Zip: Old Buffaloville Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha

PTE of HAPs from SPB-3

Material	Density (lbs/gal)	Maximum (unit/hour)	Maximum Capacity (gal/unit)	Maximum Usage * (gals/hour)	Weight % Toluene	Weight % Xylene	Weight % Ethylbenzene	Weight % Formaldehyde	Weight %Methanol	Weight % MIBK	PTE of Toluene (tons/yr)	PTE of MIBK (tos/yr)	PTE of Ethylbenzene (tons/yr)	PTE of Formaldehyde (tons/yr)	PTE of Xylene (tons/yr)	PTE of Methanol (tons/yr)	Total PTE of HAPs
SCHEDULE 7: ANTIQUE CHERRY																	
Sap Stain	6.85	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
NGR Stain	6.87	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Spray Stain	6.36	0.400	0.330	0.132				0.009			0.00	0.00	0.00	0.03	0.00		0.03
Washcoat	7.19	0.400	0.370	0.148	0.06	0.0192		0.001		0.0151	0.28	0.07	0.00	0.00	0.09		0.44
Glaze	8.03	0.400	0.330	0.132				0.0058			0.00	0.00	0.00	0.03	0.00		0.03
Sealer	6.96	0.400	0.330	0.132	0.0273			0.0177			0.11	0.00	0.00	0.07	0.00		0.18
Topcoat (Self-seal TC-2	7.6728	0.400	0.250	0.100	0.13	0.015	0.01				0.44	0.00	0.03	0.00	0.05		0.52
Antique Pad	6.67	0.400	0.330	0.132							0.00	0.00	0.00	0.00	0.00		0.00
Dry Brush	8.03	0.400	0.180	0.072				0.0058			0.00	0.00	0.00	0.01	0.00		0.01
Topcoat (Self-seal TC-2	7.6728	0.400	0.250	0.100	0.13	0.015	0.01				0.44	0.00	0.03	0.00	0.05		0.52
Topcoat (Self-seal TC-2	7.6728	0.400	0.250	0.100	0.13	0.015	0.01				0.44	0.00	0.03	0.00	0.05		0.52
Total											1.70	0.07	0.10	0.15	0.24		2.27

SCHEDULE 8: MDF WHITE

Washcoat	6.92	0.500	0.370	0.185	0.0205			0.0028			0.11	0.00	0.00	0.02	0.00		0.13
Edge Filler	11.05	0.500	0.330	0.165				0.0013			0.00	0.00	0.00	0.01	0.00		0.01
Edge Filler	11.05	0.500	0.330	0.165				0.0013			0.00	0.00	0.00	0.01	0.00		0.01
Sealer	7.17	0.500	0.330	0.165	0.053			0.0052			0.27	0.00	0.00	0.03	0.00		0.30
Sealer	7.17	0.500	0.330	0.165	0.053			0.0052			0.27	0.00	0.00	0.03	0.00		0.30
Glaze	8.77	0.500	0.330	0.165				0.0015			0.00	0.00	0.00	0.01	0.00		0.01
Topcoat	7.72	0.500	0.370	0.185	0.097	0.0126		0.0009			0.61	0.00	0.00	0.01	0.08		0.69
Spatter	6.68	0.500	0.330	0.165							0.00	0.00	0.00	0.00	0.00		0.00
Dry Brush	10.13	0.500	0.180	0.090				0.0012			0.00	0.00	0.00	0.00	0.00		0.00
Topcoat	7.72	0.500	0.370	0.185	0.097	0.0126		0.0009			0.61	0.00	0.00	0.01	0.08		0.69
Total											1.88	0.00	0.00	0.12	0.16		2.15

CLEAN-UP

LAQUER THINNER	6.56	0.125	0.200	0.025							0.00	0.00	0.00	0.00	0.00		0.00
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Worst Case HAPs from Black Worn Red (2)

8.75	1.52	0.00	0.07	2.56	0.00	12.90
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METHODOLOGY

HAPS emission rate (tons/yr) = [Maximum Usage (lb/hr)] * [Weight % HAP] * [8760 hours/yr] * [1 ton/2000 lbs]

Appendix A: Emissions Calculations

Metal Surface Coating Operations-Booths SPB1 and SPB 2

Company Name: ThermoWood
 Address City IN Zip: Old BuffaloVille Road, Dale, Indiana 47523-4476
 Minor Source Operating Permit: 147-26505-00039
 Reviewer: Swarna Prabha

Material Coated- Metal CNC Routers VOC and Particulate

Material	Density (Lb/Gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Actual usage gal/yr	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	PTE VOC lbs/hr	PTE VOC lbs/ day	PTE VOC tons/ year	Actual VOC tons/ year	PTE PM/PM10 (ton/yr)	lb VOC/gal solids	Transfer Efficiency
CF Varaprime 22805s	6.72	96.16%	12.50%	83.66%	10.08%	1.57%	63	0.315	0.089	6.25	5.62	0.16	3.78	0.69	0.18	0.01	0.03	75%
CF Varaprime Converter 22860s	7.85	76.94%	0.00%	76.94%	0.00%	23.06%	63	0.315	0.089	6.04	6.04	0.17	4.06	0.74	0.19	0.06	0.22	75%
RTS 1:1																		
Flat Black Enamel - W412	8.80	55.34%	0.00%	55.34%	0.00%	unk	24	0.120	0.089	4.87	4.87	0.05	1.25	0.23	0.06	0.05	0.18	75%
Imron Topcoat (333M28042)	9.38	41.60%	0.00%	41.60%	0.00%	48.16%	385	1.925	0.089	3.90	3.90	0.67	16.04	2.93	0.76	1.03	4.11	75%
Imron Activator (VG-M-6005)	9.35	10.00%	0.00%	10.00%	0.00%	87.23%	97	0.481	0.089	0.94	0.94	0.04	0.96	0.18	0.05	0.39	1.58	75%
Imron Accelerator (389S)	8.14	99.50%	0.00%	99.50%	0.00%	0.94%	6	0.075	0.089	8.10	8.10	0.05	1.31	0.24	0.06	0.00	0.00	75%
Imron Reducer (VHY691)	7.54	98.45%	0.00%	98.45%	0.00%	1.34%		0.038	0.089	7.42	7.42	0.02	0.60	0.11	0.03	0.00	0.00	75%
RTS 102:26:4:2																		
Polane Primer (E65A71)	13.33	20.18%	0.10%	20.08%	0.16%	61.00%	241	1.205	0.089	2.68	2.68	0.29	6.89	1.26	0.33	1.25	5.00	75%
Polane Primer Catalyst (V66V44)	9.32	27.47%	0.00%	27.47%	0.00%	63.00%	66	0.301	0.089	2.56	2.56	0.07	1.65	0.30	0.08	0.20	0.79	75%
Polane Primer Accelerator	7.03	95.45%	0.00%	95.45%	0.00%	4.00%	14	0.071	0.089	6.71	6.71	0.04	1.02	0.19	0.05	0.00	0.01	75%
RTS 102:26:6																		75%
CLEAN-UP SOLVENTS:																		75%
360 Laquer Thinner GunCleaner	6.49	100.00%	0.00%	100.00%	0.00%	0.00%	385	1.925	0.089	6	6.489	1.112	27	4.869	1.27	0.00	0.00	75%
340 PreCleaner (Solvent 340)	6.51	100.00%	0.00%	100.00%	0.00%	0.00%	715	3.575	0.089	7	6.510	2.071	50	9.072	2.37	0.00	0.00	75%
Total														20.80	5.43	2.98		

Dry Filter Control Efficiency =	90%
Worst Case Coating PTE PM/PM10 (After Controls) =	0.30

- NOTES:
 (1) 326 IAC 8-2-9 does not apply since booths were constructed in 1976.
 (2) There are no emission factors in AP-42 , PM2.5 = PM10

METHODOLOGY

Particulate Potential (PM/PM10)Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
 Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
 Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum unk
 Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
 Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)

Appendix A: Emissions Calculations
Metal Surface Coating Operations-Booths SPB1 and SPB 2

Company Name: Thermwood

Address City IN Zip: Old BuffaloVille Road, Dale, Indiana 47523-4476

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Minor Source Operating Permit: 147-26505-00039

Reviewer: Swarna Prabha

PTE of HAPs

Material	Density (lbs/gal)	Maximum (unit/hour)	Maximum Capacity (gal/unit)	Maximum Usage * (gals/hour)	Weight % Toluene	Weight % Xylene	Weight % Ethylbenzene	Weight % Formaldehyde	Weight %Methanol	Weight % MEBK	PTE of Toulene (tons/yr)	PTE of MEBK (tos/yr)	PTE of Ethylbenzene (tons/yr)	PTE of Formaldehyde (tons/yr)	PTE of Xylene (tons/yr)	PTE of Methanol (tons/yr)	Total PTE of HAPs
CF Varaprime 22805s	6.72	0.089	0.32	0.03	1%				1.00%		0.01	0.00	0.00	0.00	0.00	0.0001	0.01
CF Varaprime Converter 22860s	7.85	0.089	0.32	0.028		2.0%	0.6%	0.2%			0.00	0.00	0.01	0.002	0.02	0.0000	0.03
Flat Black Enamel - W412	8.80	0.089	0.12	0.011		33%	6.0%				0.00	0.00	0.02	0.00	0.14	0.0000	0.16
Imron Topcoat (333M28042)	9.38	0.089	1.93	0.171			0.1%				0.00	0.00	0.01	0.00	0.00	0.0000	0.01
Imron Activator (VG-M-6005)	9.35	0.089	0.48	0.043							0.00	0.00	0.00	0.00	0.00	0.0000	0.00
Imron Accelator (389S)	8.14	0.089	0.08	0.007							0.00	0.00	0.00	0.00	0.00	0.0000	0.00
Imron Reducer (VHY691)	7.54	0.089	0.04	0.003							0.00	0.00	0.00	0.00	0.00	0.0000	0.00
Polane Primer (E65A71)	13.33	0.089	1.21	0.107	1%						0.06	0.00	0.00	0.00	0.00	0.0000	0.06
Polane Primer Catalyst (V66V44)	9.32	0.089	0.30	0.027							0.00	0.00	0.00	0.00	0.00	0.0000	0.00
Polane Primer Accelerator	7.03	0.089	0.07	0.006		51%	9.0%			36%	0.00	0.07	0.02	0.00	0.10	0.0000	0.19
CLEAN-UP SOLVENTS:	6.49	0.089	1.93	0.171							0.00	0.00	0.00	0.00	0.00	0.0000	0.00
360 Laquer Thinner GunCleaner	6.51	0.089	3.58	0.318							0.00	0.00	0.00	0.00	0.00	0.0000	0.00
340 PreCleaner (Solvent 340)											0.00	0.00	0.00	0.00	0.00	0.0000	0.00
Total											0.07	0.07	0.06	0.002	0.254	0.0001	0.452

METHODOLOGY

HAPS emission rate (tons/yr) = [Maximum Usage (lb/hr)] * [Weight % HAP] * [8760 hours/yr] * [1 ton/2000 lbs]

**Appendix A: Emissions Calculations
CNC Routers R-1, R-2, R-3, R-4**

**Company Name: Thermwood
Address City IN Zip: Old Buffaloville Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha**

Unit ID	*Control Efficiency (%)	Grain Loading per Actual Cubic foot of Outlet Air (grains/cub. ft.)	Gas or Air Flow Rate (acfm.)	PTE of PM/PM10 before Controls (lb/hr)	PTE of PM/PM10 before Controls (tons/yr)	PTE of PM/PM10 after integral Controls (lb/hr)	PTE of PM/PM10 after integral Controls (tons/yr)
Router R1	99.0%	0.030	1,500	38.57	168.94	0.39	1.69
Router R2	99.0%	0.030	1,973	50.73	222.22	0.51	2.22
Router R3	99.0%	0.030	1,973	50.73	222.22	0.51	2.22
Router R4	99.0%	0.030	1,973	50.73	222.22	0.51	2.22
TOTALS				190.77	835.59	1.91	8.36

PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

There is no emission Factor in AP-42, PM10 = PM2.5

*The control device is considered integral to the process

Methodology

Emission Rate in lbs/hr (after controls) = (grains/cub. ft.) (cub. ft./min.) (60 min/hr) (lb/7000 grains)

Emission Rate in tons/yr = (lbs/hr) (8760 hr/yr) (ton/2000 lb)

Emission Rate in lbs/hr (before controls) = Emission Rate (after controls): (lbs/hr)/(1-control efficiency)

Emission Rate in tons/yr = (lbs/hr) (8760 hr/yr) (ton/2000 lb)

Allowable Rate of Emissions

326 IAC 6-3-2 (e)

Emission Units Router	Process Rate (lbs/hr)	Process Weight Rate (tons/hr)	Allowable PM/PM10 Emissions (lbs/hr)
R1	800.0	0.40	2.22
R2	800.0	0.40	2.22
R3	800.0	0.40	2.22
R4	800.0	0.40	2.22

Compliance with 326 IAC 6-3-2:

Allowable Emissions, $E = 4.10 * P^{0.67}$ (for weight rates up to 60,000 lb/hr)

where E = emissions in lbs/hr

P = process weight in tons/hr

The use of baghouse ensures compliance with the limits above.

Appendix A: Emissions Calculations

Parts Washer

Company Name: Thermwood
Address City IN Zip: Old Buffaloville Road, Dale, Indiana 47523-4476
Minor Source Operating Permit: 147-26505-00039
Reviewer: Swarna Prabha

Parts Washer PTE VOC

Parts Washer	VOC %	VOC PTE tons/yr
gal/yr		
20.00	100%	0.07

Methodology

Density of Water = 8.34 lbs/gal

Specific Gravity for Hydrotreated distillate CAS#64742-47-8 = 0.825

Solvent VOC content = 100%

VOC Emissions (tons/yr) = Solvent (gallon/yr) * Solvent Specific Gravity (.825)* Density of water(8.34) *[(100/100) VOC / 2000 lbs/tc