INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

NOTICE OF 30-DAY PERIOD
FOR PUBLIC COMMENT

Preliminary Findings Regarding the Renewal of a
Federally Enforceable State Operating Permit (FESOP)

for JELD-WEN, Inc. in Noble County

FESOP Renewal No.: F113-37982-00047

The Indiana Department of Environmental Management (IDEM) has received an application from JELD-WEN, located at 200 Gerber Street, Ligonier, Indiana 46767, for a new source review and Renewal of its FESOP issued on September 14, 2007. If approved by IDEM's Office of Air Quality (OAQ), this proposed modification would allow JELD-WEN to make certain changes at its existing source. JELD-WEN has applied to increase the maximum capacity of doors manufactured per hour and increase the polystyrene beads throughput to the expandable polystyrene (EPS) block molding operation.

The applicant intends to operate new equipment that will emit air pollutants; therefore, the permit contains new or different permit conditions. In addition, some conditions from previously issued permits/approvals have been corrected, changed, or removed. These corrections, changes, and removals may include Title I changes (e.g., changes that add or modify synthetic minor emission limits). The potential to emit regulated air pollutants will continue to be limited to less than the Title V and PSD major threshold levels. IDEM has reviewed this application and has developed preliminary findings, consisting of a draft permit and several supporting documents, which would allow the applicant to make this change.

IDEM is aware that the equipment has been constructed and operated prior to receipt of the proper permit. IDEM is reviewing this matter and will take appropriate action. This draft FESOP Renewal contains provisions to bring unpermitted equipment into compliance with construction and operation permit rules.

A copy of the permit application and IDEM's preliminary findings are available at:

Ligonier Public Library
300 South Main Street
Ligonier, IN 46767

and

IDEM Northern Regional Office
300 North Dr. Martin Luther King Jr. Boulevard, Suite 450
South Bend, IN 46601-1295

A copy of the preliminary findings is available on the Internet at: http://www.in.gov/ai/appfiles/idem-caats/.

A copy of the preliminary findings is also available via IDEM's Virtual File Cabinet (VFC.) Please go to: http://www.in.gov/idem/ and enter VFC in the search box. You will then have the option to search for permit documents using a variety of criteria.

How can you participate in this process?

The date that this notice is published in a newspaper marks the beginning of a 30-day public comment period. If the 30th day of the comment period falls on a day when IDEM offices are closed for business, all comments must be postmarked or delivered in person on the next business day that IDEM is open.

You may request that IDEM hold a public hearing about this draft permit. If adverse comments concerning the **air pollution impact** of this draft permit are received, with a request for a public hearing, IDEM will decide whether or not to hold a public hearing. IDEM could also decide to hold a public meeting instead of, or in addition to, a public hearing. If a public hearing or meeting is held, IDEM will make a separate announcement of the date, time, and location of that hearing or meeting. At a hearing, you would have an opportunity to submit written comments and make verbal comments. At a meeting, you would have an opportunity to submit written comments, ask questions, and discuss any air pollution concerns with IDEM staff.

Comments and supporting documentation, or a request for a public hearing should be sent in writing to IDEM at the address below. If you comment via e-mail, please include your full U.S. mailing address so that you can be added to IDEM's mailing list to receive notice of future action related to this permit. If you do not want to comment at this time, but would like to receive notice of future action related to this permit application, please contact IDEM at the address below. Please refer to permit number F113-37982-00047 in all correspondence.

Comments should be sent to:

Rithika Reddy
IDEM, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
(800) 451-6027, ask for extension 4-9694
Or dial directly: (317) 234-9694
Fax: (317) 232-6749 attn: Rithika Reddy
E-mail: Rreddy@idem.IN.gov

All comments will be considered by IDEM when we make a decision to issue or deny the permit. Comments that are most likely to affect final permit decisions are those based on the rules and laws governing this permitting process (326 IAC 2), air quality issues, and technical issues. IDEM does not have legal authority to regulate zoning, odor, or noise. For such issues, please contact your local officials.

For additional information about air permits and how the public and interested parties can participate, refer to the IDEM Air Permits page on the Internet at: http://www.in.gov/idem/airquality/2356.htm; and the Citizens' Guide to IDEM on the Internet at: http://www.in.gov/idem/6900.htm.

What will happen after IDEM makes a decision?

Following the end of the public comment period, IDEM will issue a Notice of Decision stating whether the permit has been issued or denied. If the permit is issued, it may be different than the draft permit because of comments that were received during the public comment period. If comments are received during the public notice period, the final decision will include a document that summarizes the comments and IDEM's response to those comments. If you have submitted comments or have asked to be added to the mailing list, you will receive a Notice of the Decision. The notice will provide details on how you may appeal IDEM's decision, if you disagree with that decision. The final decision will also be available on the Internet at the address indicated above, at the local library indicated above, at the IDEM Regional Office

indicated above , and the IDEM public file room on the 12th floor of the Indiana Government Center North, 100 N. Senate Avenue, Indianapolis, Indiana 46204-2251.

If you have any questions, please contact Rithika Reddy of my staff at the above address.

Iryn Calilung, Section Chief
Permits Branch
Office of Air Quality

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Bruno L. Pigott
Commissioner

New Source Review and Federally Enforceable State Operating Permit Renewal OFFICE OF AIR QUALITY

JELD-WEN, Inc.
200 Gerber Street
Ligonier, Indiana 46767

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

The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-8 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17. This permit also addresses certain new source review requirements for existing equipment and is intended to fulfill the new source review procedures pursuant to 326 IAC 2-8-11.1, applicable to those conditions

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 FESOP under 326 IAC 2-8.

Operation Permit No.: F113-37982-00047 Master AI ID : 11691	
Issued by: Iryn Calilung, Section Chief Permits Branch Office of Air Quality	Issuance Date: Expiration Date:

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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 through A.3 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 2-8-3(b)]

The Permittee owns and operates a stationary polystyrene insulated fiberglass and steel door manufacturing facility.

Source Address:	200 Gerber Street, Ligonier, Indiana 46767
General Source Phone Number:	(260)894-7111
SIC Code:	2431 (Millwork); 3086 (Plastics Foam Products); 3442 (Metal Doors, Sash, Frames, Molding, and Trim Manufacturing)
County Location:	Noble
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Federally Enforceable State Operating Permit Program Minor Source, under PSD and Emission Offset Rules Minor Source, Section 112 of the Clean Air Act Not 1 of 28 Source Categories

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-8-3(c)(3)]

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

(a) One (1) surface coating operation, identified as P001, consisting of the following:

(1) One (1) surface coating spray booth, identified as Door Edge Paint Booth, constructed in 1978, approved in 2018 for modification, utilizing a HVLP spray application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E1.

(2) One (1) surface coating touch-up spray booth, identified as Door Touch-Up Booth, constructed in 1990, approved in 2018 for modification, utilizing an air atomized spray application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E2.

These door edges are for exteriors of buildings.

(b) One (1) adhesive roll coating unit, identified as P003, constructed in 1993, approved in 2018 for modification, with a maximum capacity of 200 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

(c) One (1) core burning operation, identified as P004, consisting of following:

(1) One (1) core burning unit, identified as Core Burn Unit 1, constructed in 1981, approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E5.

(2) One (1) core burning unit, identified as Core Burn Unit 2, constructed in 1997,

approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E6.

The 2018 modification for P001, P003, and P004 is to increase the maximum capacity of doors from 175 to 200 doors per hour.

(d) One (1) woodworking operation, identified as P005, constructed prior to 2000, using an integral baghouse for particulate control, identified as DC7, exhausting to stack DC7, and consisting of the following:

(1) One (1) table saw (M1)

(2) One (1) Miter saw (M2)

(3) One (1) rail machine (M4)

(4) One (1) Lockstile machine (M6)

(5) One (1) Hingestile machine (M7)

(6) One (1) tilting table saw (M9)

(7) One (1) planer (M13)

(8) One (1) beltsander (M14)

(9) One (1) lock block boring machine (M15), controlled by baghouse DC7, when boring wood materials, and controlled by a cyclone, CYC1, exhausting outdoors, when boring polystyrene lock blocks.

(10) One (1) stile and rail machine (M16)

(11) One (1) Alterna door sizer (M17)

Baghouse DC7 is considered integral only when used to control woodworking operation.

(e) One (1) expandable polystyrene (EPS) block molding operation, identified as P006, constructed in 1997, approved in 2018 for modification, with a maximum throughput of 2,000 pounds of polystyrene beads per hour, containing a maximum average of 7% pentane by weight, consisting of the following:

(1) One (1) batch polystyrene beads pre-expander system, consisting of the following:

(a) One (1) pre-expander machine,

(b) Two (2) steel pipe frame supported polyester storage bags for holding reground bead, and

(c) Mix metering bags.

The emissions from this pre-expander system are captured by a hood and then controlled by an RTO.

(2) One (1) block molding press for molding pre-expanded polystyrene beads to the desired block size, utilizing steam to heat the pre-expanded beads. The emissions from this molding press are captured by a hood and then controlled by an RTO.

(3) One (1) block conditioning room, with emissions captured by a permanent total enclosure and then controlled by an RTO.

(4) One (1) bead aging room, consisting of six (6) steel pipe frame supported polyester storage bags for aging newly pre-expanded bead, with emissions captured by a permanent total enclosure and then controlled by an RTO.

The 2018 modification for P006 is to increase the polystyrene beads throughput to the expandable polystyrene (EPS) block molding operation from 1,200 pounds of beads per hour to 2,000 pounds of beads per hour.

(f) One (1) adhesive roll coating unit, identified as P010, constructed in 2015, with a maximum capacity of 80 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

(g) One (1) EPS core router, identified as P011, constructed in 2015, with a maximum capacity of 21 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

(h) One (1) EPS table saw, identified as P012, constructed in 2015, with a maximum capacity of 60 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

A.3 Insignificant Activities [326 IAC 2-7-1(21)][326 IAC 2-8-3(c)(3)(I)]

(1) This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) One (1) natural gas fired boiler, identified as P009, constructed in 2006, for producing steam used in bead expansion, with a maximum heat input capacity of 5 MMBTU per hour, uncontrolled and exhausting indoors.

(b) One (1) polystyrene scrap grinding operation, constructed prior to 2000, performed in an enclosed grinder, and uncontrolled.

(c) One (1) polystyrene block cutting operation, consisting of two (2) hot wire cutting lines, identified as Wire Cutting Line 1 and Wire Cutting Line 2, each constructed in 1997, used for cutting of polystyrene blocks, each with a maximum throughput rate of 30 blocks per hour, uncontrolled, and exhausting indoors.

(2) This stationary source also includes the following insignificant activities which are not specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) Twenty (20) natural gas combustion units, consisting of:

(i) Eleven (11) heaters, identified as H1-H11, constructed in 1968, each with a maximum heat input capacity of 0.12 MMBTU per hour, uncontrolled and exhausting indoors.

(ii) Eight (8) heaters, identified as H11-H19, constructed in 1997, each with

a maximum heat input capacity of 0.2 MMBTU per hour, uncontrolled and exhausting indoors.

(iii) One (1) heater, identified as H20, constructed in 2005, with a maximum heat input capacity of 0.105 MMBTU per hour, uncontrolled and exhausting indoors.

(b) Closed loop heating and cooling systems.

(c) Forced and induced draft cooling tower system not regulated under a NESHAP.

(d) Replacement or repair of electrostatic precipitators, bags in baghouses and filters in other air filtration equipment.

(e) Paved or unpaved roads and parking lots with public access.

(f) Enclosed systems for conveying plastic raw materials and plastic finished goods.

(g) Woodworking waste collection, transfer, and disposal activities.

A.4 FESOP Applicability [326 IAC 2-8-2]

This stationary source, otherwise required to have a Part 70 permit as described in 326 IAC 2-7-2(a), has applied to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) to renew a Federally Enforceable State Operating Permit (FESOP).

SECTION B GENERAL CONDITIONS

B.1 Definitions [326 IAC 2-8-1]

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 2-7) shall prevail.

B.2 Permit Term [326 IAC 2-8-4(2)] [326 IAC 2-1.1-9.5] [IC 13-15-3-6(a)]

(a) This permit, F113-37982-00047, is issued for a fixed term of ten (10) 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 [326 IAC 2-8-6] [IC 13-17-12]

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 [326 IAC 2-8-4(4)]

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 [326 IAC 2-8-4(5) (D)]

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

B.7 Duty to Provide Information [326 IAC 2-8-4(5) (E)]

(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. 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 [326 IAC 2-8-3(d)] [326 IAC 2-8-4(3) (C) (i)] [326 IAC 2-8-5(1)]

(a) A certification required by this permit meets the requirements of 326 IAC 2-8-5(a)(1) if:

(1) It contains a certification by an "authorized individual", as defined by 326 IAC 2-1.1-1(1), and

(2) The certification states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(b) The Permittee may use the attached Certification Form, or its equivalent 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 Compliance Certification [326 IAC 2-8-5(a) (1)]

(a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. All certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted no later than July 1 of each year to:

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

(b) The annual compliance certification report 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) The annual compliance certification report shall include the following:

(1) The appropriate identification of each term or condition of this permit that is the basis of the certification;

(2) The compliance status;

(3) Whether compliance was continuous or intermittent;

(4) The methods used for determining the compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-8-4(3); and

(5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ may require to determine the compliance status of the source.

The submittal by the Permittee does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

B.10 Compliance Order Issuance [326 IAC 2-8-5(b)]

IDEM, OAQ may issue a compliance order to this Permittee upon discovery that this permit is in nonconformance with an applicable requirement. The order may require immediate compliance or contain a schedule for expeditious compliance with the applicable requirement.

B.11 Preventive Maintenance Plan [326 IAC 1-6-3] [326 IAC 2-8-4(9)]

(a) A Preventive Maintenance Plan meets the requirements of 326 IAC 1-6-3 if it includes, at a minimum:

(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.

The Permittee shall implement the PMPs.

(b) If required by specific condition(s) in Section D of this permit where no PMP was previously required, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) no later than ninety (90) days after issuance of this permit or ninety (90) days after initial start-up, whichever is later, 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 and Enforcement 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

The Permittee shall implement the PMPs.

(c) 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. The PMPs and their submittal do not require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

(d) 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.12 Emergency Provisions [326 IAC 2-8-12]

(a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation except as provided in 326 IAC 2-8-12.

(b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a health-based or technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:

(1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;

(2) The permitted facility was at the time being properly operated;

(3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;

(4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ or Northern Regional Office within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance and Enforcement Branch), or
Telephone Number: 317-233-0178 (ask for Office of Air Quality, Compliance and Enforcement Branch)
Facsimile Number: 317-233-6865
Northern Regional Office phone: (574) 245-4870; fax: (574) 245-4877**.**

(5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

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

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-8-4(3)(C)(ii) and must contain the following:

(A) A description of the emergency;

(B) Any steps taken to mitigate the emissions; and

(C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

(6) The Permittee immediately took all reasonable steps to correct the emergency.

(c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

(d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.

(e) The Permittee seeking to establish the occurrence of an emergency shall make records available upon request to ensure that failure to implement a PMP did not cause or contribute to an exceedance of any limitations on emissions. However, IDEM, OAQ may require that the Preventive Maintenance Plans required under 326 IAC 2-8-3(c)(6) be revised in response to an emergency.

(f) Failure to notify IDEM, OAQ by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-8 and any other applicable rules.

(g) Operations may continue during an emergency only if the following conditions are met:

(1) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

(2) If an emergency situation causes a deviation from a health-based limit, the Permittee may not continue to operate the affected emissions facilities unless:

(A) The Permittee immediately takes all reasonable steps to correct the emergency situation and to minimize emissions; and

(B) Continued operation of the facilities is necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw material of substantial economic value.

Any operations shall continue no longer than the minimum time required to prevent the situations identified in (g) (2) (B) of this condition.

(h) The Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report.

B.13 Prior Permits Superseded [326 IAC 2-1.1-9.5]

(a) All terms and conditions of permits established prior to F113-37982-00047 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.14 Termination of Right to Operate [326 IAC 2-8-9] [326 IAC 2-8-3(h)]

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 nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-8-3(h) and 326 IAC 2-8-9.

B.15 Deviations from Permit Requirements and Conditions [326 IAC 2-8-4(3) (C) (ii)]

(a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported 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

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by an “authorized individual” as defined by 326 IAC 2-1.1-1(1).

(b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

B.16 Permit Modification, Reopening, Revocation and Reissuance, or Termination [326 IAC 2-8-4(5)(C)] [326 IAC 2-8-7(a)] [326 IAC 2-8-8]

(a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Federally Enforceable State Operating Permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-8-4(5)(C)] The notification by the Permittee does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

(b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ determines any of the following:

(1) That this permit contains a material mistake.

(2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.

(3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-8-8(a)]

(c) Proceedings by IDEM, OAQ to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-8-8(b)]

(d) The reopening and revision of this permit, under 326 IAC 2-8-8(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ may provide a shorter time period in the case of an emergency. [326 IAC 2-8-8(c)]

B.17 Permit Renewal [326 IAC 2-8-3(h)]

(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 2-8-3. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(42). The renewal application does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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
Permit Administration and Support Section, 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 nine (9) months 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 2-8 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, pursuant to 326 IAC 2-8-3(g), in writing by IDEM, OAQ any additional information identified as being needed to process the application.

B.18 Permit Amendment or Revision [326 IAC 2-8-10] [326 IAC 2-8-11.1]

(a) Permit amendments and revisions are governed by the requirements of 326 IAC 2-8-10 or 326 IAC 2-8-11.1 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
Permit Administration and Support Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
Any such application does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

(c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-10(b)(3)]

B.19 Operational Flexibility [326 IAC 2-8-15] [326 IAC 2-8-11.1]

(a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-8-15(b) and (c) without a prior permit revision, if each of the following conditions is met:

(1) The changes are not modifications under any provision of Title I of the Clean Air Act;

(2) Any approval required by 326 IAC 2-8-11.1 has been obtained;

(3) The changes do not result in emissions which exceed the limitations provided in this permit (whether expressed herein as a rate of emissions or in terms of total emissions);

(4) The Permittee notifies the:

Indiana Department of Environmental Management
Permit Administration and Support Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region 5
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

(5) The Permittee maintains records on-site, on a rolling five (5) year basis, which document all such changes and emission trades that are subject to 326 IAC 2-8-15(b)(1) and (c). The Permittee shall make such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ in the notices specified in 326 IAC 2-8-15(b)(1) and (c).

(b) Emission Trades [326 IAC 2-8-15(b)]
The Permittee may trade emissions increases and decreases at the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-8-15(b).

(c) Alternative Operating Scenarios [326 IAC 2-8-15(c)]
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-8-4(7). No prior notification of IDEM, OAQ or U.S. EPA is required.

(d) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.

B.20 Source Modification Requirement [326 IAC 2-8-11.1]

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

B.21 Inspection and Entry [326 IAC 2-8-5(a) (2)] [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 FESOP 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.22 Transfer of Ownership or Operational Control [326 IAC 2-8-10]

(a) The Permittee must comply with the requirements of 326 IAC 2-8-10 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
Permit Administration and Support Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

(c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-10(b)(3)]

B.23 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-8-4(6)] [326 IAC 2-8-16] [326 IAC 2-1.1-7]

(a) The Permittee shall pay annual fees to IDEM, OAQ no later than thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ the applicable fee is due April 1 of each year.

(b) Failure to pay may result in administrative enforcement action or revocation of this permit.

(c) 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.24 Credible Evidence [326 IAC 2-8-4(3)] [326 IAC 2-8-5] [62 FR 8314] [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 2-8-4(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 Overall Source Limit [326 IAC 2-8]

The purpose of this permit is to limit this source's potential to emit to less than major source levels for the purpose of Section 502(a) of the Clean Air Act.

(a) Pursuant to 326 IAC 2-8:

(1) The potential to emit any regulated pollutant, except particulate matter (PM), from the entire source shall be limited to less than one hundred (100) tons per twelve (12) consecutive month period.

(2) The potential to emit any individual hazardous air pollutant (HAP) from the entire source shall be limited to less than ten (10) tons per twelve (12) consecutive month period; and

(3) The potential to emit any combination of HAPs from the entire source shall be limited to less than twenty-five (25) tons per twelve (12) consecutive month period.

(b) Pursuant to 326 IAC 2-2 (PSD), potential to emit particulate matter (PM) from the entire source shall be limited to less than two hundred fifty (250) tons per twelve (12) consecutive month period.

(c) This condition shall include all emission points at this source including those that are insignificant as defined in 326 IAC 2-7-1(21). The source shall be allowed to add insignificant activities not already listed in this permit, provided that the source's potential to emit does not exceed the above specified limits.

(d) Section D of this permit contains independently enforceable provisions to satisfy this requirement.

C.3 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-1 (Applicability) and 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 except as provided in 326 IAC 4-2 or in this permit. The Permittee shall not operate a refuse incinerator or refuse burning equipment except as provided in 326 IAC 9-1-2 or in this permit.

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
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 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 that meets the requirements of 326 IAC 2-8-5(a)(1) 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.

Testing Requirements [326 IAC 2-8-4(3)]

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

(a) For performance testing required by this permit, a test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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 2-8-4(1)] [326 IAC 2-8-5(a) (1)]

C.10 Compliance Monitoring [326 IAC 2-8-4(3)] [326 IAC 2-8-5(a) (1)]

(a) For new units:
Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units shall be implemented on and after the date of initial start-up.

(b) For existing units:
Unless otherwise specified in this permit, for all monitoring requirements not already legally required, the Permittee shall be allowed up to ninety (90) days from the date of permit issuance to begin such monitoring. If, due to circumstances beyond the Permittee's control, any monitoring equipment required by this permit cannot be installed and operated no later than ninety (90) days after permit issuance, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:

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

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

C.11 Maintenance of Emission Monitoring Equipment [326 IAC 2-8-4(3) (A) (iii)]

(a) In the event that a breakdown of the emission monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no often less than once an hour until such time as the continuous monitor is back in operation.

(b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

C.12 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.13 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-8-4(3)] [326 IAC 2-8-5(1)]

(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. The analog instrument shall be capable of measuring values outside of the normal range.

(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 [326 IAC 2-8-4] [326 IAC 2-8-5(a) (1)]

C.14 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

(a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.

(b) These ERPs shall be submitted for approval to:

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

within ninety (90) days after the date of issuance of this permit.

The ERP does require the certification by an “authorized individual” as defined by 326 IAC 2-1.1-1(1).

(c) If the ERP is disapproved by IDEM, OAQ, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP.

(d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.

(e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.

(f) Upon direct notification by IDEM, OAQ that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level. [326 IAC 1-5-3]

C.15 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68]

If a regulated substance, as defined in 40 CFR 68, is present at a source in more than a threshold quantity, the Permittee must comply with the applicable requirements of 40 CFR 68.

C.16 Response to Excursions or Exceedances [326 IAC 2-8-4] [326 IAC 2-8-5]

Upon detecting an excursion where a response step is required by the D Section or an exceedance of a limitation in this permit:

(a) The Permittee shall take reasonable response steps to 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 excess emissions.

(b) The response shall include minimizing the period of any startup, shutdown or malfunction. The response may include, but is not limited to, the following:

(1) initial inspection and evaluation;

(2) recording that operations returned or are returning 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 normal or usual manner of operation.

(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 record the reasonable response steps taken.

C.17 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-8-4] [326 IAC 2-8-5]

(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 submit a description of its response actions to IDEM, OAQ no later than seventy-five (75) days after the date of the test.

(b) A retest to demonstrate compliance shall be performed no later than one hundred eighty (180) days after the date of the test. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred eighty (180) 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

C.18 General Record Keeping Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-5]

(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. Support information includes the following, where applicable:

(AA) All calibration and maintenance records.
(BB) All original strip chart recordings for continuous monitoring instrumentation.
(CC) Copies of all reports required by the FESOP.

Records of required monitoring information include the following, where applicable:

(AA) The date, place, as defined in this permit, and time of sampling or measurements.
(BB) The dates analyses were performed.
(CC) The company or entity that performed the analyses.
(DD) The analytical techniques or methods used.
(EE) The results of such analyses.
(FF) The operating conditions as existing at the time of sampling or measurement.

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, for all record keeping requirements not already legally required, the Permittee shall be allowed up to ninety (90) days from the date of permit issuance or the date of initial start-up, whichever is later, to begin such record keeping.

C.19 General Reporting Requirements [326 IAC 2-8-4(3) (C)] [326 IAC 2-1.1-11]

(a) The Permittee shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Proper notice submittal under Section B -Emergency Provisions satisfies the reporting requirements of this paragraph. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported except that a deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. This report shall be submitted not later than thirty (30) days after the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1). A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

(b) The address for report submittal is:

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

(c) 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.

(d) 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.

Stratospheric Ozone Protection

C.20 Compliance with 40 CFR 82 and 326 IAC 22-1

Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with applicable standards for recycling and emissions reduction.

SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

((a) One (1) surface coating operation, identified as P001, consisting of the following:

(1) One (1) surface coating spray booth, identified as Door Edge Paint Booth, constructed in 1978, approved in 2018 for modification, utilizing a HVLP spray application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E1.

(2) One (1) surface coating touch-up spray booth, identified as Door Touch-Up Booth, constructed in 1990, approved in 2018 for modification, utilizing an air atomized spray application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E2.

These door edges are for exteriors of buildings.

(b) One (1) adhesive roll coating unit, identified as P003, constructed in 1993, approved in 2018 for modification, with a maximum capacity of 200 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

The 2018 modification for P001, and P003 is to increase the maximum capacity of doors from 175 to 200 doors per hour.

(f) One (1) adhesive roll coating unit, identified as P010, constructed in 2015, with a maximum capacity of 80 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

(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 2-8-4(1)]

D.1.1 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2(d), the surface coating operation, P001, shall be controlled by a dry particulate filter, waterwash, or an equivalent control device, and the Permittee shall operate the control device in accordance with the manufacturer's specifications.

D.1.2 Volatile Organic Compounds (VOC) [326 IAC 8-2-9]

(a) Pursuant to 326 IAC 8-2-9, the Permittee shall not allow the discharge into the atmosphere of VOC in excess of three (3) pounds per gallon, excluding water as delivered to the applicator from each of the following adhesive roll coating units:

(i) P003 and
(ii) P010.

(b) Pursuant to 326 IAC 8-2-9(f) work practices shall be used to minimize VOC emissions from mixing operations, storage tanks, and other containers, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include the following:

(1) Store all VOC containing coatings, thinners, coating related waste, and cleaning materials in closed containers.

(2) Ensure that mixing and storage containers used for VOC containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials.

(3) Minimize spills of VOC containing coatings, thinners, coating related waste, and cleaning materials.

(4) Convey VOC containing coatings, thinners, coating related waste, and cleaning materials from one (1) location to another in closed containers or pipes.

(5) Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

D.1.3 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan (PMP) is required for these facilities and their control devices. Section B - Preventive Maintenance Plan contains the Permittee's obligation with regard to the preventive maintenance plan required by this condition.

Compliance Determination Requirements [326 IAC 2-8-4(1)]

D.1.4 Volatile Organic Compounds (VOC) [326 IAC 8-1-2] [326 IAC 8-1-4]

(a) Compliance with the VOC content limitation contained in Condition D.1.2(a) shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) by preparing or obtaining from the manufacturer the copies of the “as supplied” and “as applied” VOC data sheets. IDEM, OAQ reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

(b) Pursuant to 326 IAC 8-1-2(a)(7), compliance with the VOC emission limit in Condition D.1.2(a) shall be determined by the volume weighted average of coatings on a daily basis of each of the following adhesive roll coating units:

(i) P003 and
(ii) P010

using the following equation:

$$A = \frac{\sum_{i=1}^{n}(C_i \times U_i)}{\sum_{i=1}^{n} U_i}$$

Where: A = Daily volume weighted average in pounds VOC per gallon, excluding water, as applied
C = VOC content of coating in pounds VOC per gallon, excluding water, as applied
U = Usage rate of coating in gallons per day
n = Number of coatings applied

Compliance Monitoring Requirements [326 IAC 2-8-4(1)] [326 IAC 2-8-5(a) (1)]

D.1.5 Monitoring

(a) Daily inspections shall be performed to verify the placement, integrity and particle loading of the filters controlling particulate emissions from the surface coating operation (P001). To monitor the performance of the dry filters, weekly observations shall be made of the overspray from the stacks, E1 and E2, while the surface coating operation (P001) is in operation. If a condition exists which should result in a response step, the Permittee shall take a reasonable response. Section C -Response to Excursions or Exceedances contains the Permittee's obligation with regard to the reasonable response steps required by this condition. Failure to take response steps shall be considered a deviation from this permit.

(b) Monthly inspections shall be performed of the exhausts from the stacks, E1 and E2, and the presence of overspray on the rooftops and the nearby ground. When there is a noticeable change in overspray emissions, or when evidence of overspray emissions is observed, the Permittee shall take reasonable response steps. Section C - Response to Excursions or Exceedances contains the Permittee's obligation with regard to the reasonable response steps required by this condition. Failure to take response steps shall be considered a deviation from this permit.

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

D.1.6 Record Keeping Requirement

(a) To document compliance with Condition D.1.2(a), the Permittee shall maintain records in accordance with (1) through (5) below. Records maintained for (1) through (5) shall be taken as stated below and shall be complete and sufficient to establish compliance with the VOC usage limit established in Condition D.1.2(a).

(1) The VOC content of each coating material and solvent used.

(2) The amount of coating material and solvent less water used on a daily basis.

(A) Records shall include purchase orders, invoices, material safety data sheets (MSDS), or other documentation necessary to verify the type and amount used.

(B) Solvent usage records shall differentiate between those added to coatings and those used as cleanup solvents;

(3) The volume weighted average VOC content of the coatings used for each day of each of the following adhesive roll coating units:

(i) P003 and
(ii) P010.

(4) The daily cleanup solvent usage; and

(5) The total VOC usage for each day;

(b) To document the compliance status with Condition D.1.5, the Permittee shall maintain a log of the daily and monthly inspections and weekly overspray observations. The Permittee shall include in its daily record when an inspection or observation is not taken and the reason for the lack of inspection or observation, (i.e. the process did not operate that day).

(c) Section C - General Record Keeping Requirements contains the Permittee's obligations with regard to the records required by this condition.

SECTION D.2 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

(c) One (1) core burning operation, identified as P004, consisting of following:

(1) One (1) core burning unit, identified as Core Burn Unit 1, constructed in 1981, approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E5.

(2) One (1) core burning unit, identified as Core Burn Unit 2, constructed in 1997, approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E6.

The 2018 modification for P004 is to increase the maximum capacity of doors from 175 to 200 doors per hour.

(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 2-8-4(1)]

D.2.1 Volatile Organic Compounds (VOC) [326 IAC 2-8-4][326 IAC 2-2]

Pursuant to 326 IAC 2-8-4, and in order to render 326 IAC 2-2 not applicable, the Permittee shall comply with the following:

(a) The total VOC emissions from the core burning operation, identified as P004, shall not exceed 0.0307 pounds per core.

(b) The combined maximum core production from the core burning operation, identified as P004, shall not exceed 1,953,480 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

Compliance with these limits, combined with the potential to emit VOC from all other emission units at this source, shall limit the source-wide total potential to emit VOC to less than 100 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 2-7 (Part 70 Permits) and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.

D.2.2 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

(a) Core Burn Unit 1
In order to render the requirements of 326 IAC 8-1-6 not applicable, the Permittee shall comply with the following:

(1) The VOC emissions from Core Burn Unit 1 shall not exceed 0.0307 pounds per core.

(2) The maximum core production from the Core Burn Unit 1 shall not exceed 1,620,600 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

Compliance with these limits shall limit the potential to emit VOC from the Core Burn Unit 1 to less than 25 tons per twelve (12) consecutive month period and shall render the

requirements of 326 IAC 8-1-6 not applicable.

(b) Core Burn Unit 2
In order to render the requirements of 326 IAC 8-1-6 not applicable, the Permittee shall comply with the following:

(1) The VOC emissions from Core Burn Unit 2 shall not exceed 0.0307 pounds per core.

(2) The maximum core production from the Core Burn Unit 2 shall not exceed 1,620,600 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

Compliance with these limits shall limit the potential to emit VOC from the Core Burn Unit 2 to less than 25 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 8-1-6 not applicable.

D.2.3 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable PM emission rate from each of the following shall not exceed 3.2 pounds per hour when operating at a process weight rate of 1440 pounds (0.72 tons) per hour:

(a) Core Burn Unit 1
(b) Core Burn Unit 2

The pound per hour limitation was calculated with the following formula:

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:

$E = 4.10\ P^{0.67}$ Where: E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour

D.2.4 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan (PMP) is required for these facilities and their control devices. Section B - Preventive Maintenance Plan contains the Permittee's obligation with regard to the preventive maintenance plan required by this condition.

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

D.2.5 Record Keeping Requirement

(a) To document compliance with Conditions D.2.1(b), D.2.2 (a)(2), and D.2.2(b)(2), the Permittee shall maintain records of the number of cores produced per month for the following emissions units:

(1) Core Burn Unit 1,

(2) Core Burn Unit 2, and

(3) Core burning operation P004

(b) Section C - General Record Keeping Requirements contains the Permittee's obligations with regard to the records required by this condition.

D.2.6 Reporting Requirements

A quarterly summary of the information to document the compliance status with Conditions D.2.1(b), D.2.2 (a)(2), and D.2.2(b)(2), shall be submitted not later than thirty (30) days after the end of the quarter being reported. Section C - General Reporting contains the Permittee's obligation with regard to the reporting required by this condition. The report submitted by the Permittee does require a certification that meets the requirements of 326 IAC 2-8-5(a) (1) by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

SECTION D.3 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

(e) One (1) expandable polystyrene (EPS) block molding operation, identified as P006, constructed in 1997, approved in 2018 for modification, with a maximum throughput of 2,000 pounds of polystyrene beads per hour, containing a maximum average of 7% pentane by weight, consisting of the following:

(1) One (1) batch polystyrene beads pre-expander system, consisting of the following:

(a) One (1) pre-expander machine,

(b) Two (2) steel pipe frame supported polyester storage bags for holding reground bead, and

(c) Mix metering bags.

The emissions from this pre-expander system are captured by a hood and then controlled by an RTO.

(2) One (1) block molding press for molding pre-expanded polystyrene beads to the desired block size, utilizing steam to heat the pre-expanded beads. The emissions from this molding press are captured by a hood and then controlled by an RTO.

(3) One (1) block conditioning room, with emissions captured by a permanent total enclosure and then controlled by an RTO.

(4) One (1) bead aging room, consisting of six (6) steel pipe frame supported polyester storage bags for aging newly pre-expanded bead, with emissions captured by a permanent total enclosure and then controlled by an RTO.

The 2018 modification for P006 is to increase the polystyrene beads throughput to the expandable polystyrene (EPS) block molding operation from 1,200 pounds of beads per hour to 2,000 pounds of beads per hour.

(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 2-8-4(1)]

D.3.1 Volatile Organic Compounds (VOC) [326 IAC 2-8-4] [326 IAC 2-2]

Pursuant to 326 IAC 2-8-4, and in order to render the requirements of 326 IAC 2-7 (Part 70 Permits) and 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following:

(a) The total potential to emit VOC (as pentane) after control from the expandable polystyrene block molding operation shall not exceed 34 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

Compliance with this limit, combined with the potential to emit VOC from all other emission units at this source, shall limit the source-wide total potential to emit VOC to less than 100 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 2-7 (Part 70

Permits) and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.

D.3.2 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6 and following approvals:

(1) CP 113-8529-00047, issued on September 29, 1997,
(2) FESOP 113-10260-00047, issued on May 15, 2002,
(3) SPR 113-22426-00047 issued on April 21, 2006,
(4) SPR 113-26693-00047, issued on January 8, 2009 and
(5) FESOP 113-37982-00047,

the Permittee shall comply with the following:

(a) The pentane content in the polystyrene beads used in the expandable polystyrene block molding operation shall not exceed 7.0%

(b) The total potential to emit VOC (as pentane) after control from the expandable polystyrene block molding operation shall not exceed 34 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

(c) The total VOC emissions after control from the bead aging room and the block conditioning room shall not exceed 1.43 pounds per hour.

(d) The total VOC emissions after control from the pre-expander system and the block molding press shall not exceed 0.89 pounds per hour.

(e) The VOC (as pentane) emissions from the expandable polystyrene block molding operation shall be captured by the collection system and controlled by an RTO. The RTO shall achieve a minimum destruction efficiency of 98%.

(f) The collection system of the expandable polystyrene block molding operation shall consist of the following:

(i) Two (2) permanent total enclosures, each for the following rooms with emissions vented to the RTO:

(1) The bead aging room, and

(2) The block conditioning room

The permanent total enclosures shall meet the definition in 40 CFR 51, Appendix M, and Method 204.

(ii) Two (2) hoods, each for the following with emissions vented to the RTO:

(1) The pre-expander system, and

(2) The block molding press

This portion of the capture system shall achieve 60% capture efficiency or higher.

(g) As allowed under 326 8-1-2 (a)(2), the RTO is not required to be operated only when polystyrene bead is not being actively molded in the expandable polystyrene block molding operation during the months of November, December, January, February and

March.

Compliance with these limits shall satisfy the requirements of 326 IAC 8-1-6 (BACT).

D.3.3 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan (PMP) is required for these facilities and their control devices. Section B - Preventive Maintenance Plan contains the Permittee's obligation with regard to the preventive maintenance plan required by this condition.

Compliance Determination Requirements [326 IAC 2-8-4(1)]

D.3.4 Thermal Oxidizer Operation

In order to ensure compliance with Conditions D.3.1 and D.3.2, the Permittee shall operate the RTO when the EPS block molding operation is in operation, except as specified in Condition D.3.2(g).

D.3.5 Volatile Organic Compound (VOC) Emissions

Compliance with the VOC emission limits in Conditions D.3.1 and D.3.2 shall be demonstrated using the following equations:

(a) Equation 1:

$$\text{VOC Emissions} = \text{VOC}_{\text{w/EPS}} + \text{VOC}_{\text{w/o EPS}}$$

Months	EPS bead actively molded	EPS bead not actively molded
April - October	RTO in operation	RTO in operation
November - March	RTO in operation	RTO not in operation

(b) Equation 2:

$$\text{VOC}_{\text{w/EPS}} = \sum_{k=1}^{o} [f_{\text{VOC}} \text{ x U x } (1 - \text{CEF})]$$

Where:

$\text{VOC}_{\text{w/EPS}}$ = VOC emissions when the EPS is actively molded, and when the EPS is not actively molded in the months of April - October. During these periods the RTO is in operation, therefore this is VOC emissions after control.
o = total number of periods of operation
k = each specific period of operation
f_{voc} = VOC content of the polystyrene beads used (fraction by weight)
U = polystyrene bead usage by weight
CEF = overall control efficiency of the RTO (from the most recent valid compliance demonstration)

(c) Equation 3:

$$\text{VOC}_{\text{w/o EPS}} = \sum_{i=1}^{m} [f_{\text{VOC}} \text{ x U x } (55/100)] - \sum_{j=1}^{n} (-0.00001t^4 + 0.0024t^3 - 0.2715t^2 + 16.969t)$$

Where:

$\text{VOC}_{\text{w/oEPS}}$ = VOC emissions when the EPS is not actively molded in the months of November - March.

m	=	total number of EPS and RTO shutdowns per month
i	=	each specific EPS and RTO shutdown period
f_{voc}	=	VOC content of the polystyrene beads used (fraction by weight)
U	=	polystyrene bead usage by weight (if the polystyrene bead usage for the day prior to the shutdown exceeds the polystyrene bead usage on the day of the shutdown, the source shall use the average polystyrene bead usage from the day prior to the shutdown and the day of the shutdown)
n	=	total number of EPS shutdowns per month
j	=	each specific EPS shutdown period
t	=	hours elapsed between last polystyrene bead expansion and RTO shutdown

IDEM, OAQ reserves the authority to determine compliance using methods contained in 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

(d) Equation 4:

$$CEF = \left[\frac{\left(T_{pa} * t_a * \frac{CapEF_a}{100\%} * \frac{DesEF_a}{100\%} \right) + \left(T_{pb} * t_b * \frac{CapEF_b}{100\%} * \frac{DesEF_b}{100\%} \right)}{\left(T_{pa} * t_a + T_{pb} * t_b \right)} \right] * 100\%$$

$CapEF_a = (VOC_a/T_{pa}) * 100\%$

$DesEF_a = (1 - (VOC_{ca}/VOC_a)) * 100\%$

$CapEF_b = (VOC_b/T_{pb}) * 100\%$

$DesEF_b = (1 - (VOC_{cb}/VOC_b)) * 100\%$

Where:

CEF	=	Weighted average VOC control efficiency (%)
T_{pa}	=	Total pentane available to lose in the process during the pre-expansion and molding operations (lbs/hr)
t_a	=	Average time (in hours) that the pre-expansion and molding operations are in operation
$CapEF_a$	=	Capture efficiency during the pre-expansion and molding operations (%)
VOC_a	=	VOC capture rate (before RTO) during pre-expansion and molding operations (lbs/hr)
$DesEF_a$	=	Destruction efficiency during the pre-expansion and molding operations (%)
VOC_{ca}	=	VOC controlled emission rate (after RTO) during the pre-expander and block molder (lbs/hr)
T_{pb}	=	Total pentane available to lose in the process during the pre-expansion and molding shutdown (lbs/hr)
t_b	=	Average time (in hours) that the pre-expansion and molding operations are shutdown
$CapEF_b$	=	Capture efficiency during the pre-expansion and molding shutdown (%)
VOC_b	=	VOC capture rate (before RTO) during pre-expansion

and molding shutdown (lbs/hr)

$DesEF_b$ = Destruction efficiency during the pre-expansion and molding shutdown (%)

VOC_{cb} = VOC controlled emission rate (after RTO) during the pre-expander and block molder shutdown (lbs/hr)

D.3.6 Testing Requirements [326 IAC 2-1.1-11]

In order to demonstrate compliance with Conditions D.3.1 and D.3.2, the Permittee shall conduct performance testing on the collection system and the RTO, capturing and controlling VOC emissions from the EPS block molding operation (P006), utilizing methods approved by the Commissioner.

This test shall be repeated at least once every five (5) years from the date of the most recent valid compliance demonstration.

(a) The Permittee shall determine the criteria using 40 CFR 51, Appendix M, USEPA Method 204, or other methods as specified by the Commissioner for the permanent total enclosure for the following:

(1) Bead aging room and
(2) Block conditioning room.

The enclosure differential pressure measured during enclosure capture verification testing shall be recorded.

(b) The overall VOC control efficiency for the VOC emissions collection system and RTO will be determined from a weighted average of two control efficiency tests conducted during the same 24 hour bead expansion and aging cycle:

(i) The Permittee shall perform VOC testing on the pentane emissions collection system and RTO exhaust during operation of the following:

(1) Pre-expander system and
(2) Block molding press.

(ii) The Permittee shall perform VOC testing on the pentane emissions collection system and RTO exhaust during the bead and block aging period when the following are not operated:

(1) Pre-expander system and
(2) Block molding press.

(c) Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligation with regard to the performance testing required by this condition.

Compliance Monitoring Requirements [326 IAC 2-8-4(1)] [326 IAC 2-8-5(a) (1)]

D.3.7 Thermal Oxidizer

Operating Temperature:

(a) In order to ensure compliance with Conditions D.3.1 and D.3.2, a continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizer for measuring operating temperature. For purposes of this condition continuous shall mean temperature measurement no less often than once per fifteen (15) minutes. The output of this system shall be recorded as a three (3) hour average.

(b) The regenerative thermal oxidizer's temperature shall be maintained at 1500°F or the temperature determined from the most recent valid compliant stack test. On and after the date of the stack test results are available, the minimum specified temperature is the three (3) hour average temperature as observed during the most recent valid compliant stack test.

(c) On and after the stack test results are available, the Permittee shall take appropriate response steps whenever the three (3) hour average temperature of the thermal oxidizer is below the three (3) hour average temperature as observed during the most recent valid compliant stack test. A three (3) hour average temperature that is below the three (3) hour average temperature as observed during the compliant stack test is not a deviation from this permit. Failure to take response steps shall be considered as a deviation from this permit. Section C- Response to Excursions and Exceedances contains the Permittee's obligations with regard to the response steps required by this condition.

Duct pressure or fan amperage

(d) The Permittee shall determine the appropriate duct pressure or fan amperage from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.1 and D.3.2.

(e) The duct pressure or fan amperage shall be observed at least once per day when the thermal oxidizer is in operation. On and after the date the stack test results are available, the duct pressure or fan amperage shall be maintained within the normal range as established in latest compliant stack test.

(f) When for any one reading, the duct pressure or fan amperage is outside the above mentioned range, the Permittee shall take a reasonable response. Section C - Response to Excursions and Exceedances contains the Permittee's obligation with regard to the reasonable response steps required by this condition. A reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps shall be considered a deviation from this permit.

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

D.3.8 Record Keeping Requirement

(a) To document compliance with Conditions D.3.1 and D.3.2, the Permittee shall maintain records in accordance with (1) through (5) below. Records maintained for (1) through (5) shall be taken as stated below and shall be complete and sufficient to establish compliance with the VOC emissions limit established in Conditions D.3.1 and D.3.2.

(1) The pounds of polystyrene beads used on a monthly basis;

(2) The VOC content of the polystyrene beads used (fraction by weight);

(3) The Permittee shall maintain the following records during the months of November, December, January, February, and March:

(i) The pounds of polystyrene beads used on a daily basis;

(ii) The time the polystyrene bead expansion stops for each specific EPS shutdown period;

(iii) The time the RTO shutdown commences for each specific RTO shutdown period; and

(iv) The time the RTO reaches operational temperature for each specific startup period.

(4) Data verifying that the permanent total enclosure meet the design criteria of EPA Method 204; or capture efficiency for those processes that are located in an enclosure unable to meet the design criteria of EPA Method 204;

(5) Data used to develop the overall control efficiency for the pentane emissions collection system and RTO;

(c) To document the compliance status with Conditions D.3.7(a) and D.3.7(b), the Permittee shall maintain continuous temperature records (on a 3-hour average basis) for the RTO and the 3-hour average temperature used to demonstrate compliance during the most recent compliant stack test. The Permittee shall include in its records when the continuous temperature records were not taken and the reason for the lack of continuous temperature records (e.g. the process did not operate that day).

(d) To document the compliance status with Condition D.3.7(e), the Permittee shall maintain the daily records of the duct pressure or fan amperage. The Permittee shall include in its daily record when the duct pressure or fan amperage reading is not taken and the reason for the lack of a duct pressure or fan amperage reading (e.g. the process did not operate that day).

(e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.3.9 Reporting Requirements

A quarterly summary of the information to document the compliance status with Conditions D.3.1 and D.3.2(b) shall be submitted not later than thirty (30) days after the end of the quarter being reported. Section C - General Reporting contains the Permittee's obligation with regard to the reporting required by this condition. The report submitted by the Permittee does require a certification that meets the requirements of 326 IAC 2-8-5(a) (1) by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

SECTION D.4 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

(d) One (1) woodworking operation, identified as P005, constructed prior to 2000, using an integral baghouse for particulate control, identified as DC7, exhausting to stack DC7, and consisting of the following:

(1) One (1) table saw (M1)

(2) One (1) Miter saw (M2)

(3) One (1) rail machine (M4)

(4) One (1) Lockstile machine (M6)

(5) One (1) Hingestile machine (M7)

(6) One (1) tilting table saw (M9)

(7) One (1) planer (M13)

(8) One (1) beltsander (M14)

(9) One (1) lock block boring machine (M15), controlled by baghouse DC7, when boring wood materials, and controlled by a cyclone, CYC1, exhausting outdoors, when boring polystyrene lock blocks.

(10) One (1) stile and rail machine (M16)

(11) One (1) Alterna door sizer (M17)

Baghouse DC7 is considered integral only when used to control woodworking operation.

(g) One (1) EPS core router, identified as P011, constructed in 2015, with a maximum capacity of 21 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

(h) One (1) EPS table saw, identified as P012, constructed in 2015, with a maximum capacity of 60 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

Insignificant Activities

(a) One (1) natural gas fired boiler, identified as P009, constructed in 2006, for producing steam used in bead expansion, with a maximum heat input capacity of 5 MMBTU per hour, uncontrolled and exhausting indoors.

(b) One (1) polystyrene scrap grinding operation, constructed prior to 2000, performed in an enclosed grinder, and uncontrolled.

(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 2-8-4(1)]

D.4.1 PM10 and PM2.5 [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4, and in order to render the requirements of 326 IAC 2-7 (Part 70 Permits), the Permittee shall comply with the following:

(a) The PM10 emissions after control (DC-7) from the EPS Core Router (P011) shall not exceed 9.0 pounds per hour.

(b) The PM2.5 emissions after control (DC-7) from the EPS Core Router (P011) shall not exceed 9.0 pounds per hour.

Compliance with these limits, combined with the potential to emit PM10 and PM2.5 from all other emission units at this source, shall limit the source-wide total potential to emit PM and PM2.5 to less than 100 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 2-7 (Part 70 Permits) not applicable.

D.4.2 Particulate Emission Limitations for Sources of Indirect Heating [326 IAC 6-2]

Pursuant to 326 IAC 6-2-4, the PM emissions from the boiler, P009, shall not exceed 0.6 pounds per MMBtu heat input.

D.4.3 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable PM emission rate from each of the following:

(i) EPS Core Router (P011);
(ii) EPS Table Saw (P012); and
(iii) Polystyrene scrap grinding operation

shall each not exceed the pounds per hour limitations as calculated with the following formula:

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:

$E = 4.10\ P^{0.67}$ Where: E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour

D.4.4 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan (PMP) is required for these facilities and their control devices. Section B - Preventive Maintenance Plan contains the Permittee's obligation with regard to the preventive maintenance plan required by this condition.

Compliance Determination Requirements [326 IAC 2-8-4(1)]

D.4.5 Particulate Control

In order to comply with Conditions D.4.1 and D.4.3 and as an integral control to the woodworking operation, the baghouse, identified as DC7, shall be in operation at all times when the following emission units are in operation:

(i) EPS Core Router (P011);
(ii) EPS Table Saw (P012); and
(iii) Woodworking operation (P005).

Compliance Monitoring Requirements [326 IAC 2-8-4(1)] [326 IAC 2-8-5(a) (1)]

D.4.6 Visible Emissions Notations

(a) Visible emission notations of stack exhaust (DC7) from the following:

(i) EPS Core Router (P011);
(ii) EPS Table Saw (P012); and
(iii) Woodworking operation (P005).

shall be performed once per day during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

(e) If abnormal emissions are observed, the Permittee shall take a reasonable response. Section C - Response to Excursions and Exceedances contains the Permittee's obligation with regard to the reasonable response steps required by this condition. Failure to take response steps shall be considered a deviation from this permit.

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

D.4.7 Record Keeping Requirement

(a) To document compliance with Condition D.4.6, the Permittee shall maintain a log of daily visible emission notations of stack exhaust (DC7) from the following:

(i) EPS Core Router (P011);
(ii) EPS Table Saw (P012); and
(iii) Woodworking operation (P005).

The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (i.e. the process did not operate that day).

(b) Section C - General Record Keeping Requirements contains the Permittee's obligations with regard to the records required by this condition.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP) CERTIFICATION

Source Name: JELD-WEN, Inc.
Source Address: 200 Gerber Street, Ligonier, Indiana 46767
FESOP Permit No.: F113-37982-00047

This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this permit.

Please check what document is being certified:

☐ Annual Compliance Certification Letter

☐ Test Result (specify)_____

☐ Report (specify)_____

☐ Notification (specify)_____

☐ Affidavit (specify)_____

☐ Other (specify)_____

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
Phone: (317) 233-0178
Fax: (317) 233-6865

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
EMERGENCY OCCURRENCE REPORT

Source Name: JELD-WEN, Inc.
Source Address: 200 Gerber Street, Ligonier, Indiana 46767
FESOP Permit No.: F113-37982-00047

This form consists of 2 pages **Page 1 of 2**

□ This is an emergency as defined in 326 IAC 2-7-1(12)
- The Permittee must notify the Office of Air Quality (OAQ), within four (**4**) daytime business hours (1-800-451-6027 or 317-233-0178, ask for Compliance Section); and
- The Permittee must submit notice in writing or by facsimile within two (**2**) working days (Facsimile Number: 317-233-6865), and follow the other requirements of 326 IAC 2-8-12

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A **Page 2 of 2**

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency? Y N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO_2, VOC, NO_X, CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed by:_____

Title / Position:_____

Date:_____

Phone: _____

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH

FESOP Quarterly Report

Source Name: JELD-WEN, Inc.
Source Address: 200 Gerber Street, Ligonier, Indiana 46767
FESOP Permit No.: F113-37982-00047
Facility: Core burning operation (P004)
Parameter: Core production
Limit: The combined maximum core production from the core burning operation, identified as P004, shall not exceed 1,953,480 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: _____ YEAR: _____

Month	Column 1	Column 2	Column 1 + Column 2
	This Month (cores)	Previous 11 Months (cores)	12 Month Total (cores)

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____
Title / Position: _____
Signature: _____
Date: _____
Phone: _____

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH

FESOP Quarterly Report

Source Name: JELD-WEN, Inc.
Source Address: 200 Gerber Street, Ligonier, Indiana 46767
FESOP Permit No.: F113-37982-00047
Facility: Core Burn Unit 1
Parameter: Core Production
Limit: The maximum core production from the Core Burn Unit 1 shall not exceed 1,620,600 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: _____ YEAR: _____

Month	Column 1	Column 2	Column 1 + Column 2
	This Month (cores)	Previous 11 Months (cores)	12 Month Total (cores)

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____
Title / Position: _____
Signature: _____
Date: _____
Phone: _____

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH

FESOP Quarterly Report

Source Name: JELD-WEN, Inc.
Source Address: 200 Gerber Street, Ligonier, Indiana 46767
FESOP Permit No.: F113-37982-00047
Facility: Core Burn Unit 2
Parameter: Core Production
Limit: The maximum core production from the Core Burn Unit 2 shall not exceed 1,620,600 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: _____ YEAR: _____

Month	Column 1	Column 2	Column 1 + Column 2
	This Month (cores)	Previous 11 Months (cores)	12 Month Total (cores)

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____
Title / Position: _____
Signature: _____
Date: _____
Phone: _____

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH

FESOP Quarterly Report

Source Name: JELD-WEN, Inc.
Source Address: 200 Gerber Street, Ligonier, Indiana 46767
FESOP Permit No.: F113-37982-00047
Facility: Expandable block molding operation
Parameter: VOC emissions
Limit: The total potential to emit VOC (as pentane) after control from the expandable polystyrene block molding operation shall not exceed 34 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: _____ YEAR: _____

Month	Column 1	Column 2	Column 1 + Column 2
	This Month (tons)	Previous 11 Months (tons)	12 Month Total (tons)

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____
Title / Position: _____
Signature: _____
Date: _____
Phone: _____

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH
FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT

Source Name: JELD-WEN, Inc.
Source Address: 200 Gerber Street, Ligonier, Indiana 46767
FESOP Permit No.: F113-37982-00047

Months: _____ to _____ Year: _____

This report shall be submitted quarterly based on a calendar year. Proper notice submittal under Section B -Emergency Provisions satisfies the reporting requirements of paragraph (a) of Section C-General Reporting. Any deviation from the requirements of this permit, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".

□ NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.

□ THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD

Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Form Completed by:_____

Title / Position:_____

Date:_____

Phone: _____

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Federally Enforceable State Operating Permit (FESOP) Renewal with New Source Review (NSR)

Source Description and Location

Source Name:	**JELD-WEN, Inc.**
Source Location:	**200 Gerber Street, Ligonier, Indiana 46767**
County:	**Noble**
SIC Code:	**2431 (Millwork); 3086 (Plastics Foam Products) 3442 (Metal Doors, Sash, Frames, Molding, and Trim Manufacturing)**
Operation Permit No.:	**F113-23388-00047**
Operation Permit Issuance Date:	**September 14, 2007**
Permit Renewal No.:	**F113-37982-00047**
Permit Reviewer:	**Rithika Reddy**

On December 13, 2016, JELD-WEN, Inc. submitted an application to the Office of Air Quality (OAQ) requesting to renew its operating permit. OAQ has reviewed the operating permit renewal application from JELD-WEN, Inc. relating to the operation of a stationary polystyrene insulated fiberglass and steel door manufacturing facility. JELD-WEN, Inc. was issued its first FESOP Renewal (F113-23388-00047) on September 14, 2007.

As part of the renewal application, JELD-WEN requested modification of the fiberglass and steel door manufacturing facility. On July 27, 2017, JELD-WEN, Inc. was informed that the requested modification would be considered as a significant modification and would require re-evaluation of existing 326 IAC 8-1-6 BACT.

On August 25, 2017, JELD-WEN submitted an additional application (Significant Permit Revision (SPR) No.: 113-38987-00047). On August 15, 2018, IDEM, OAQ performed a plant inspection to aid the permitting process. The source provide the re-evaluated BACT analysis on September 06, 2018. For the purpose of this permitting action, the SPR application (113-38987-00047) will be combined into the FESOP Renewal application (F113-37982-00047).

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units:

Emission units' descriptions have been revised to provide clarity.

(a) One (1) surface coating operation, identified as P001, consisting of the following:

(1) One (1) surface coating spray booth, identified as Door Edge Paint Booth, constructed in 1978, approved in 2018 for modification, utilizing a HVLP spray application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E1.

(2) One (1) surface coating touch-up spray booth, identified as Door Touch-Up Booth, constructed in 1990, approved in 2018 for modification, utilizing an air atomized spray application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E2.

(As part of the renewal application (113-37982-00047), the source requested that the surface coating touch-up spray booth, identified as Door Touch-Up Booth be removed from the permit. However, during a plant inspection that was performed on August 15, 2018, it was clarified that the booth was still on-site and only the spray gun was removed. Therefore, this booth is not being removed from the permit.)

These door edges are for exteriors of buildings.

(b) One (1) adhesive roll coating unit, identified as P003, constructed in 1993, approved in 2018 for modification, with a maximum capacity of 200 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

(c) One (1) core burning operation, identified as P004, consisting of following:

(1) One (1) core burning unit, identified as Core Burn Unit 1, constructed in 1981, approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E5.

(2) One (1) core burning unit, identified as Core Burn Unit 2, constructed in 1997, approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E6.

The 2018 modification for P001, P003, and P004 is to increase the maximum capacity of doors from 175 to 200 doors per hour.

(d) One (1) woodworking operation, identified as P005, constructed prior to 2000, using an integral baghouse for particulate control, identified as DC7, exhausting to stack DC7, and consisting of the following:

(1) One (1) table saw (M1)

(2) One (1) Miter saw (M2)

(3) One (1) rail machine (M4)

(4) One (1) Lockstile machine (M6)

(5) One (1) Hingestile machine (M7)

(6) One (1) tilting table saw (M9)

(7) One (1) planer (M13)

(8) One (1) beltsander (M14)

(9) One (1) lock block boring machine (M15), controlled by baghouse DC7, when boring wood materials, and controlled by a cyclone, CYC1, exhausting outdoors, when boring polystyrene lock blocks.

(10) One (1) stile and rail machine (M16)

(11) One (1) Alterna door sizer (M17)

Baghouse DC7 is considered integral only when used to control woodworking operation.

(e) One (1) expandable polystyrene (EPS) block molding operation, identified as P006, constructed in 1997, approved in 2018 for modification, with a maximum throughput of 2,000 pounds of polystyrene beads per hour, containing a maximum average of 7% pentane by weight, consisting of the following:

(1) One (1) batch polystyrene beads pre-expander system, consisting of the following:

(a) One (1) pre-expander machine,

(b) Two (2) steel pipe frame supported polyester storage bags for holding reground bead, and

(c) Mix metering bags.

The emissions from this pre-expander system are captured by a hood and then controlled by an RTO.

(2) One (1) block molding press for molding pre-expanded polystyrene beads to the desired block size, utilizing steam to heat the pre-expanded beads. The emissions from this molding press are captured by a hood and then controlled by an RTO.

(3) One (1) block conditioning room, with emissions captured by a permanent total enclosure and then controlled by an RTO.

(4) One (1) bead aging room, consisting of six (6) steel pipe frame supported polyester storage bags for aging newly pre-expanded bead, with emissions captured by a permanent total enclosure and then controlled by an RTO.

The 2018 modification for P006 is to increase the polystyrene beads throughput to the expandable polystyrene (EPS) block molding operation from 1,200 pounds of beads per hour to 2,000 pounds of beads per hour.

Emission Units and Pollution Control Equipment Constructed and Operated without a Permit

The source also consists of the following emission units that were constructed and operated without a permit:

(a) One (1) adhesive roll coating unit, identified as P010, constructed in 2015, with a maximum capacity of 80 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

(b) One (1) EPS core router, identified as P011, constructed in 2015, with a maximum capacity of 21 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

(c) One (1) EPS table saw, identified as P012, constructed in 2015, with a maximum capacity of 60 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

Emission Units and Pollution Control Equipment Removed From the Source

The source has removed the following emission units:

(a) One (1) solvent wiping operation, identified as P002, utilizing a solvent based cleaning solution to hand wipe a maximum of 175 doors per hour and exhausting to general ventilation.

(b) One (1) adhesive roll coating unit, identified as Adhesive Roll Coater 1, constructed in 1978, coating a maximum of 175 doors per hour on a daily average, and exhausting to two (2) stacks, identified as E3 and E4, utilizing solvent for roller cleaning.

(c) One (1) fiberglass door assembly operation, with a maximum design production rate of 175 doors per hour, using wood products from the woodworking operation (P005) and adhesive coated door skins from the adhesive roll coating operation (P003).

In the renewal application (113-37982-00047) the source requested that the surface coating touch-up spray booth, identified as Door Touch-Up Booth be removed from the permit. However, during the plant inspection that was performed on August 15, 2018, it was clarified that the booth was still on-site and only the spray gun was removed. Therefore, this booth has not been removed from the permit. Additionally, it was noted during the inspection that there was no solvent wiping operation (P002) at the facility. Therefore, this has been removed from the permit.

Insignificant Activities

(1) This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) One (1) natural gas fired boiler, identified as P009, constructed in 2006, for producing steam used in bead expansion, with a maximum heat input capacity of 5 MMBTU per hour, uncontrolled and exhausting indoors.

(b) One (1) polystyrene scrap grinding operation, constructed prior to 2000, performed in an enclosed grinder, and uncontrolled.

(c) One (1) polystyrene block cutting operation, consisting of two (2) hot wire cutting lines, identified as Wire Cutting Line 1 and Wire Cutting Line 2, each constructed in 1997, used for cutting of polystyrene blocks, each with a maximum throughput rate of 30 blocks per hour, uncontrolled, and exhausting indoors.

(2) This stationary source also includes the following insignificant activities which are not specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) Twenty (20) natural gas combustion units, consisting of:

(i) Eleven (11) heaters, identified as H1-H11, constructed in 1968, each with a maximum heat input capacity of 0.12 MMBTU per hour, uncontrolled and exhausting indoors.

(ii) Eight (8) heaters, identified as H11-H19, constructed in 1997, each with a maximum heat input capacity of 0.2 MMBTU per hour, uncontrolled and exhausting indoors.

(iii) One (1) heater, identified as H20, constructed in 2005, with a maximum heat input capacity of 0.105 MMBTU per hour, uncontrolled and exhausting indoors.

(b) Closed loop heating and cooling systems.

(c) Forced and induced draft cooling tower system not regulated under a NESHAP.

(d) Replacement or repair of electrostatic precipitators, bags in baghouses and filters in other air filtration equipment.

(e) Paved or unpaved roads and parking lots with public access.

(f) Enclosed systems for conveying plastic raw materials and plastic finished goods.

(g) Woodworking waste collection, transfer, and disposal activities.

Existing Approvals

The source was issued FESOP Renewal No. 113-23388-00047 on September 14, 2007. The source has since received the following approvals:

(a) Administrative Amendment No.: 113-25666-00047, issued on January 18, 2008.

(b) Significant Permit Revision No.: 113-26693-00047, issued on January 8, 2009.

All terms and conditions of previous permits issued pursuant to permitting programs approved into the State Implementation Plan have been either incorporated as originally stated, revised, or deleted by this permit. All previous registrations and permits are superseded by this permit.

"Integral Part of the Process" Determination

In October 1993 a Final Order Granting Summary Judgment was signed by Administrative Law Judge ("ALJ") Garrettson resolving an appeal filed by Kimball Hospitality Furniture Inc. (Cause Nos. 92-A-J-730 and 92-A-J-833) related to the method by which IDEM calculated potential emissions from woodworking operations. In his findings, the ALJ determined that particulate controls are necessary for the facility to produce its normal product and are integral to the normal operation of the facility, and therefore, potential emissions should be calculated after controls. Based on this ruling, the potential to emit particulate matter from the woodworking operations were calculated after consideration of the controls for determining operating permit level and for determining the applicability of 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes).

Enforcement Issue

IDEM is aware that equipment has been constructed and operated prior to receipt of the proper permit. The subject equipment is listed in this Technical Support Document under the condition entitled "Emission Units and Pollution Control Equipment Constructed and Operated without a Permit."

(a) IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction and operation permit rules.

Emission Calculations

See Appendix A of this document for detailed emission calculations.

County Attainment Status

The source is located in Noble County. The following attainment status designations are applicable to Noble County:

Pollutant	Designation
SO_2	Better than national standards.

Pollutant	Designation
CO	Unclassifiable or attainment effective November 15, 1990.
O_3	Unclassifiable or attainment effective July 20, 2012, for the 2008 8-hour ozone standard.[1]
$PM_{2.5}$	Unclassifiable or attainment effective April 5, 2005, for the annual $PM_{2.5}$ standard.
$PM_{2.5}$	Unclassifiable or attainment effective December 13, 2009, for the 24-hour $PM_{2.5}$ standard.
PM_{10}	Unclassifiable effective November 15, 1990.
NO_2	Cannot be classified or better than national standards.
Pb	Unclassifiable or attainment effective December 31, 2011.

[1]Unclassifiable or attainment effective October 18, 2000, for the 1-hour ozone standard which was revoked effective June 15, 2005.

(a) Ozone Standards

Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) 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 NO_x emissions are considered when evaluating the rule applicability relating to ozone. Noble County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) $PM_{2.5}$

Noble County has been classified as attainment for $PM_{2.5}$. Therefore, direct $PM_{2.5}$, SO_2, and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(c) Other Criteria Pollutants

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

Fugitive Emissions

Since this type of operation is not one (1) of the twenty-eight (28) listed source categories under 326 IAC 2-2-1(ff)(1), 326 IAC 2-3-2(g), or 326 IAC 2-7-1(22)(B), and there is no applicable New Source Performance Standard or National Emission Standard for Hazardous Air Pollutants 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.

Greenhouse Gas (GHG) Emissions

On June 23, 2014, in the case of *Utility Air Regulatory Group v. EPA*, cause no. 12-1146, (available at http://www.supremecourt.gov/opinions/13pdf/12-1146_4g18.pdf) the United States Supreme Court ruled that the U.S. EPA does not have the authority to treat greenhouse gases (GHGs) as an air pollutant for the purpose of determining operating permit applicability or PSD Major source status. On July 24, 2014, the U.S. EPA issued a memorandum to the Regional Administrators outlining next steps in permitting decisions in light of the Supreme Court's decision. U.S. EPA's guidance states that U.S. EPA will no longer require PSD or Title V permits for sources "previously classified as 'Major' based solely on greenhouse gas emissions."

The Indiana Environmental Rules Board adopted the GHG regulations required by U.S. EPA at 326 IAC 2-2-1(zz), pursuant to Ind. Code § 13-14-9-8(h) (Section 8 rulemaking). A rule, or part of a rule, adopted under Section 8 is automatically invalidated when the corresponding federal rule, or part of the rule, is invalidated. Due to the United States Supreme Court Ruling, IDEM, OAQ cannot consider GHG emissions to determine operating permit applicability or PSD applicability to a source or modification.

Unrestricted Potential Emissions

This table reflects the unrestricted potential emissions of the source.

Unrestricted Potential Emissions	
Pollutant	**Tons/Year**
PM	158.92
PM_{10}	159.18
$PM_{2.5}$	159.18
SO_2	0.03
NO_x	4.64
VOC	720.71
CO	3.90
Single HAP	6.85
Total HAP	7.53

Unrestricted Potential Emissions	
HAPs	**Tons/Year**
Styrene	6.85
MDI	0.013
All other HAPs	0.667
Total	**7.53**

(a) The potential to emit (as defined in 326 IAC 2-7-1(30)) of PM10, PM2.5, and VOC is greater than 100 tons per year. However, the Permittee has agreed to limit the source's PM10, PM2.5, and VOC emissions to less than Title V levels; therefore, the Permittee will be issued a FESOP Renewal.

(b) The potential to emit (as defined in 326 IAC 2-7-1(30)) of all other criteria pollutants are less than 100 tons per year.

(c) The potential to emit (as defined in 326 IAC 2-7-1(30)) of any single HAP is less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(30)) of a combination of HAPs is less than twenty-five (25) tons per year.

Description of Proposed Revision

The Office of Air Quality (OAQ) has reviewed an application, submitted by JELD-WEN on August 25, 2017, requesting the following:

(1) Increase in the maximum capacity of doors manufactured from 175 doors per hour to 200 doors per hour.

The following is the list of emission units affected by this modification:

(a) One (1) surface coating operation, identified as P001, consisting of the following:

(1) One (1) surface coating spray booth, identified as Door Edge Paint Booth, constructed in 1978, approved in 2018 for modification, utilizing a HVLP spray

application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E1.

(2) One (1) surface coating touch-up spray booth, identified as Door Touch-Up Booth, constructed in 1990, approved in 2018 for modification, utilizing an air atomized spray application system, with a maximum capacity of 200 door edges per hour, using dry filters for particulate control, and exhausting to stack E2.

These door edges are for exteriors of buildings.

(b) One (1) adhesive roll coating unit, identified as P003, constructed in 1993, approved in 2018 for modification, with a maximum capacity of 200 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

(c) One (1) core burning operation, identified as P004, consisting of following:

(1) One (1) core burning unit, identified as Core Burn Unit 1, constructed in 1981, approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E5.

(2) One (1) core burning unit, identified as Core Burn Unit 2, constructed in 1997, approved in 2018 for modification, with a maximum capacity of 200 doors per hour (equivalent to a maximum of 1,440 pounds of polystyrene sheets per hour), using dry filters for particulate control, and exhausting to a stack, identified as E6.

(2) Increase in the polystyrene beads throughput to the expandable polystyrene (EPS) block molding operation from 1,200 pounds of beads per hour to 2,000 pounds of beads per hour.

(a) One (1) expandable polystyrene (EPS) block molding operation, identified as P006, constructed in 1997, approved in 2018 for modification, with a maximum throughput of 2,000 pounds of polystyrene beads per hour, containing a maximum average of 7% pentane by weight, consisting of the following:

(1) One (1) batch polystyrene beads pre-expander system, consisting of the following:

(a) One (1) pre-expander machine,

(b) Two (2) steel pipe frame supported polyester storage bags for holding reground bead, and

(c) Mix metering bags.

The emissions from this pre-expander system are captured by a hood and then controlled by an RTO.

(2) One (1) block molding press for molding pre-expanded polystyrene beads to the desired block size, utilizing steam to heat the pre-expanded beads. The emissions from this molding press are captured by a hood and then controlled by an RTO.

(3) One (1) block conditioning room, with emissions captured by a permanent total enclosure and then controlled by an RTO.

(4) One (1) bead aging room, consisting of six (6) steel pipe frame supported polyester storage bags for aging newly pre-expanded bead, with emissions captured by a permanent total enclosure and then controlled by an RTO.

(3) Operation of the following unpermitted emission units:

(a) One (1) adhesive roll coating unit, identified as P010, constructed in 2015, with a maximum capacity of 80 doors per hour, utilizing solvent for roller cleaning, uncontrolled, and exhausting indoors.

(b) One (1) EPS core router, identified as P011, constructed in 2015, with a maximum capacity of 21 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

(c) One (1) EPS table saw, identified as P012, constructed in 2015, with a maximum capacity of 60 cores per hour, using a baghouse for particulate control, identified as DC7, and exhausting to stack DC7.

Permit Level Determination – FESOP Revision

The following table is used to determine the appropriate permit level under 326 IAC 2-8-11.1 (Permit Revisions). This table reflects the PTE before controls of the proposed revision. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Process/ Emission Unit	PTE of Proposed Revision (tons/year)								
	PM*	**PM10**	**PM2.5****	**SO_2**	**NOx**	**VOC**	**CO**	**Single HAP**	**Combined HAPs**
Modified units									
Surface Coating Operation (P001)	33.31	33.31	33.31	-	-	0.00***	-	-	-
Adhesive Roll Coating Unit (P003)	-	-	-	-	-	0.00***	-	0.01 MDI	0.01
Core Burning Operation (P004)	11.46	11.46	11.46	-	-	30.32	-	3.51 Styrene	3.85
EPS Block Molding Operation (P006)	-	-	-	-	-	343.36	-	-	-
New emission units									
Adhesive Roll Coating Operation (P010)	-	-	-	-	-	7.48	-	0.003 MDI	0.003
EPS Core Router (P011)	76.34	76.34	76.34	-	-	-	-	-	-
EPS Table Saw (P012)	5.26	5.26	5.26	-	-	-	-	-	-
Total PTE of Proposed Revision	**126.38**	**126.38**	**126.38**	**0.00**	**0.00**	**381.15**	**0.00**	**3.51 Styrene**	**3.86**

*Under the Part 70 Permit program (40 CFR 70), PM10 and PM2.5, not particulate matter (PM), are each considered as a "regulated air pollutant."
**$PM_{2.5}$ listed is direct $PM_{2.5}$
*** Lower potential to emit VOC for the modification.

(a) Pursuant to 326 IAC 2-8-11.1(f)(1)(E), this FESOP is being revised through a FESOP Significant Permit Revision because the proposed revision is not an Administrative Amendment or Minor Permit Revision and the proposed revision involves potential to emit greater than or equal to twenty-five (25) tons per year of the following pollutants:

(i) PM, PM10, and direct PM2.5.
(ii) Volatile Organic Compounds (VOC).

(b) Pursuant to 326 IAC 2-8-11.1(f)(1)(C), this FESOP is being revised through a FESOP Significant Permit Revision because the proposed revision is not an Administrative Amendment or Minor Permit revision and the proposed revision is subject to 326 IAC 8-1-6.

Potential to Emit After Issuance

The table below summarizes the potential to emit, reflecting all limits of the emission units. Any control equipment is considered enforceable only after issuance of this FESOP and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

Process/ Emission Unit	Potential To Emit of the Entire Source After Issuance of Renewal (tons/year)								
	PM	**PM_{10}***	**$PM_{2.5}$****	**SO_2**	**NO_x**	**VOC**	**CO**	**Total HAPs**	**Worst Single HAP**
Surface Coating Operation (P001)	2.54	2.54	2.54	-	-	6.23	-	-	-
Adhesive Roll Coating Unit (P003)	-	-	-	-	-	7.48	-	0.01	0.01 MDI
Core Burning Operation (P004)	20.46	20.46	20.46	-	-	30.0(1)	-	6.85	6.31 Styrene
Woodworking Operation (P005)(4)	0.58	0.58	0.58	-	-	-	-	-	-
EPS Block Molding Operation (P006)	-	-	-	-	-	34.0(2)	-	-	-
Adhesive Roll Coating Unit (P010)	-	-	-	-	-	7.48	-	0.003	0.003 MDI
EPS Core Router (P011)	76.34	39.42(3)	39.42(3)	-	-	-	-	-	-
EPS Table Saw (P012)	5.26	5.26	5.26	-	-	-	-	-	-
Wire Cutting Lines	0.34	0.34	0.34	-	-	4.61	-	0.59	0.54 Styrene
Polystyrene Scrap Grinding(4)	5.00	5.00	5.00	-	-	-	-	-	-
Natural Gas Combustion	0.09	0.35	0.35	0.03	4.64	0.26	3.90	0.09	0.08 Hexane
Total PTE of Entire Source	**110.61**	**73.95**	**73.95**	**0.03**	**4.64**	**90.03**	**3.90**	**7.53**	6.85
Title V Major Source Thresholds	NA	100	100	100	100	100	100	25	10
PSD Major Source Thresholds	250	250	250	250	250	250	250	NA	NA

Process/ Emission Unit	Potential To Emit of the Entire Source After Issuance of Renewal (tons/year)								
	PM	PM_{10}*	$PM_{2.5}$**	SO_2	NO_x	VOC	CO	Total HAPs	Worst Single HAP
* Under the Part 70 Permit program (40 CFR 70), PM10 and PM2.5, not particulate matter (PM), are each considered as a "regulated air pollutant."									
**$PM_{2.5}$ listed is direct $PM_{2.5}$.									
(1) Limited to render to render 326 IAC 2-7 (Part 70 Permits) not applicable. The Core Burn Units 1 and 2 have independent limits to render 326 IAC 8-1-6 not applicable.									
(2) Limited pursuant to 326 IAC 8-1-6 BACT.									
(3) Limited to render 326 IAC 2-7 (Part 70 Permits) not applicable.									
(4) Woodworking control is considered integral.									
(4) Emissions were allotted exemption threshold.									

(a) This existing source is not a major stationary source, under PSD (326 IAC 2-2), because no PSD regulated pollutant is emitted at a rate of two hundred fifty (250) tons per year or more and it is not one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(ff)(1).

(b) This existing source is not a major source of HAPs, as defined in 40 CFR 63.2, because HAPs emissions are less than ten (10) tons per year for any single HAP and less than twenty-five (25) tons per year of a combination of HAPs. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA).

Federal Rule Applicability

Compliance Assurance Monitoring (CAM):

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

New Source Performance Standards (NSPS)

(b) The requirements of New Source Performance Standard for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart Dc, are not included in the permit for the natural gas fired boiler, identified as P009, because the boiler has maximum heat input capacity less than 10 MMBtu per hour.

(c) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) included in the permit for this source.

National Emission Standards for Hazardous Air Pollutants (NESHAPs)

(d) The requirements of National Emission Standards for Hazardous Air Pollutants for Wood Furniture Manufacturing Operations, 40 CFR 63, Subpart JJ, are not applicable to this source because this source is not a major source of HAPs.

(e) The requirements of National Emission Standards for Hazardous Air Pollutants: Surface Coating of Miscellaneous Metal Parts and Products, 40 CFR 63, Subpart MMMM, are not applicable to this source because this source is not a major source of HAPs.

(f) The requirements of National Emission Standards for Hazardous Air Pollutants for Surface Coating of Wood Building Products, 40 CFR 63, Subpart QQQQ, are not applicable to this source because this source is not a major source of HAPs.

(g) The requirements of National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD, are not applicable to the natural gas fired boiler, identified as P009, because this source is not a major source of HAPs.

(h) The requirements of National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, are not applicable to the boiler, identified as P009, because it burns natural gas for fuel.

(i) There are no National Emission Standards for Hazardous Air Pollutants (40 CFR Part 63), 326 IAC 14 and 326 IAC 20 included in this permit renewal

State Rule Applicability - Entire Source

326 IAC 2-2 (Prevention of Significant Deterioration (PSD))

(a) VOC

The unrestricted potential to emit VOC is greater than 250 tons per year. However, the source has continued to accept conditions limiting the potential to emit to less than 250 tons per year such that the requirements of 326 IAC 2-2 (PSD) are not applicable.

See FESOP explanation and limits below for VOC, which also renders 326 IAC 2-2 not applicable.

(b) PM, PM10 and PM2.5

The unrestricted potential to emit PM, PM10 and PM2.5 is less than 250 tons per year. This is based on the PTE after integral control for the woodworking operation.

326 IAC 2-6 (Emission Reporting)

This source is not subject to 326 IAC 2-6 (Emission Reporting) because it is not required to have an operating permit pursuant to 326 IAC 2-7 (Part 70); it is not located in Lake, Porter, or LaPorte County, and its potential to emit lead is less than 5 tons per year. Therefore, this rule does not apply.

326 IAC 2-8 (FESOP)

(a) VOC

The unrestricted potential to emit VOC is greater than 100 tons per year. However, the source has continued to accept conditions limiting the potential to emit to less than 100 tons per year such that the requirements of 326 IAC 2-7 (Part 70 Permits) are not applicable.

(1) EPS block molding operation, identified as P006:

(a) The total potential to emit VOC (as pentane) after control from the expandable polystyrene block molding operation shall not exceed 34 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

Compliance with these limits, combined with the potential to emit VOC from all other emission units at this source, shall limit the source-wide total potential to emit VOC to less than 100 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 2-7 (Part 70 Permits) and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.

In this renewal, IDEM has clarified that the limit is for emissions from the EPS block molding operation after control.

(2) Core burning operation, identified as P004:

(a) The total VOC emissions from the core burning operation, identified as P004, shall not exceed 0.0307 pounds per core.

(b) The combined maximum core production from the core burning operation, identified as P004, shall not exceed 1,953,480 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

VOC emissions = VOC emissions per core * Number of cores produced per year * (1 ton/2000 pounds)
= 0.0307 lb/core * 1,953,480 cores/ year * (1/2000) = 29.98 tons/ year

Compliance with this limit, combined with the potential to emit VOC from all other emission units at this source, shall limit the source-wide total potential to emit VOC to less than 100 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 2-7 (Part 70 Permits) and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.

This is a new applicable requirement that has been added in this renewal. Each core burn unit has independent limits to render 326 IAC 8-1-6 not applicable. See below in "State Rule Applicability - Individual Facilities".

(b) PM10 and PM 2.5
The unrestricted potential to emit PM10 and PM2.5 is greater than 100 tons per year. However, the source has accepted conditions limiting the potential to emit PM10 and PM2.5 to below Part 70 thresholds.

(1) EPS Core Router, identified as P011:

(a) The PM10 emissions after control (DC-7) from the EPS Core Router (P011) shall not exceed 9.0 pounds per hour.

(b) The PM2.5 emissions after control (DC-7) from the EPS Core Router (P011) shall not exceed 9.0 pounds per hour.

(2) Surface coating operation, P001:

P001 shall be controlled by a dry particulate filter, waterwash, or an equivalent control device.

(3) Woodworking operation P005:
The integral baghouse shall control the emissions from the woodworking operations.

Compliance with these limits, combined with the potential to emit PM and PM2.5 from all other emission units at this source, shall limit the source-wide total potential to emit PM and PM2.5 to less than 100 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 2-7 (Part 70 Permits) not applicable.

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:

(a) Opacity shall not exceed an average of forty percent (40%) 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.

326 IAC 6-4 (Fugitive Dust Emissions Limitations)
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.

326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)
This source is not subject to the requirements of 326 IAC 6-5, because it does not have potential fugitive particulate emissions greater than 25 tons per year.

State Rule Applicability – Individual Facilities

Surface coating operation (P001)
326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-2(d), the surface coating operation, P001, shall be controlled by a dry particulate filter, waterwash, or an equivalent control device, and the permittee shall operate the control device in accordance with the manufacturer's specifications.

This is an existing applicable requirement and no change has been made in this renewal.

326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Sources)
The surface coating operation has potential to emit VOC less than 25 tons per year. Therefore, the requirements of 326 IAC 8-1-6 do not apply.

326 IAC 8-2-9 (Miscellaneous Metal and Plastic Parts Coating Operations)
This rule applies to facilities existing as of July 1, 1990, located in Clark, Elkhart, Floyd, Lake, Marion, Porter, or St. Joseph counties and that have actual emissions of greater than fifteen (15) pounds of VOC per day before add-on controls, and facilities that commenced construction after July 1, 1990, located in any county that have actual emissions of greater than fifteen (15) pounds of VOC per day before add-on controls.

The surface coating operation, P001, was constructed prior to July 1, 1990, and is not located in any of the above listed counties. Therefore, the requirements of 326 IAC 8-2-9 do not apply.

326 IAC 8-2-12 (Wood Furniture and Cabinet Coating)
The requirements of 326 IAC 8-2-12 do not apply to the surface coating operation, P001, because the source manufactures and coats doors for exteriors of buildings. Doors are considered wood building products and not wood furniture or cabinets.

This determination was discussed with OAQ inspector, Greg Wingstrom. In this renewal, IDEM has removed this rule applicability for the surface coating operation, P001.

Adhesive roll coating units (P003 and P010)
326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-1(b)(6), surface coating using roll coating is exempt from the requirements of 326 IAC 6-3-2. Therefore, the requirements of 326 IAC 6-3-2 do not apply to the adhesive roll coating units, P003 and P010.

326 IAC 8-2-9 (Miscellaneous Metal and Plastic Parts Coating Operations)
The adhesive roll coating units, P003 and P010, are subject to the requirements of 326 IAC 8-2-9, because they coat metals, and they each have potential VOC emissions greater than 15 pounds per day and the actual emissions are not limited to less than 15 pounds per day.

(a) Pursuant to 326 IAC 8-2-9, the Permittee shall not allow the discharge into the atmosphere of VOC in excess of three (3) pounds per gallon, excluding water as delivered to the applicator from each of the adhesive roll coating units, P003 and P010.

The adhesive roll coating units, P003 and P010, use a non-compliant coating. In order to show compliance with 326 IAC 8-2-9, the source has chosen to demonstrate compliance with daily volume weighted average of all coatings applied.

Pursuant to 326 IAC 8-1-2(a)(7), compliance with the VOC emission limit of three (3) pounds per gallon, excluding water, as applied, shall be determined by the volume weighted average of coatings on a daily basis using the following equation:

$$A = \frac{\sum_{i=1}^{n}(C_i \times U_i)}{\sum_{i=1}^{n} U_i}$$

Where:
A = Daily volume weighted average in pounds VOC per gallon, excluding water, as applied
C = VOC content of coating in pounds VOC per gallon, excluding water, as applied
U = Usage rate of coating in gallons per day
n = Number of coatings applied

(b) Pursuant to 326 IAC 8-2-9(f) work practices shall be used to minimize VOC emissions from mixing operations, storage tanks, and other containers, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include the following:

(1) Store all VOC containing coatings, thinners, coating related waste, and cleaning materials in closed containers.

(2) Ensure that mixing and storage containers used for VOC containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials.

(3) Minimize spills of VOC containing coatings, thinners, coating related waste, and cleaning materials.

(4) Convey VOC containing coatings, thinners, coating related waste, and cleaning materials from one (1) location to another in closed containers or pipes.

(5) Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

This is an existing applicable requirement for adhesive roll coating unit, P003. However, in this renewal, IDEM has updated the rule applicability language.

This is a new requirement for adhesive roll coating unit, P010, which has been added in this renewal.

326 IAC 8-2-12 (Wood Furniture and Cabinet Coating)
The requirements of 326 IAC 8-2-12 do not apply to the adhesive roll coating units, P003 and P010, because the source manufactures and coats doors for exteriors of buildings. Doors are considered wood building products and not wood furniture or cabinets.

This determination was discussed with OAQ inspector, Greg Wingstrom. In this renewal, IDEM has removed this rule applicability for the adhesive roll coating unit, P003.

Core Burning Operation (P004)
326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-2, the allowable PM emission rate from each of the following shall not exceed 3.2 pounds per hour when operating at a process weight rate of 1440 pounds (0.72 tons) per hour:

(a) Core Burn Unit 1
(b) Core Burn Unit 2

The pound per hour limitation was calculated with the following formula:

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:

$E = 4.10\ P^{0.67}$ Where: E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour

Based on Appendix A, a control device is not required to comply with this limit.

In this renewal IDEM has revised the limit from "1.67 pounds per hour from core burning operation" to "3.2 pounds per hour core burn unit" because the process weight rate has increased.

326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Sources)
(a) Core Burn Unit 1
Core Burn Unit 1, part of the core burning operation (P004), constructed after January 01, 1980, has potential to emit VOC greater than 25 tons per year each. However, the Permittee has accepted to limit the potential VOC emissions to less than 25 tons per year for Core Burn Unit 1 such that the requirements of 326 IAC 8-1-6 do not apply.

In order to render the requirements of 326 IAC 8-1-6 not applicable, the Permittee shall comply with the following:

(1) The VOC emissions from Core Burn Unit 1 shall not exceed 0.0307 pounds per core.

(2) The maximum core production from the Core Burn Unit 1 shall not exceed 1,620,600 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

VOC emissions from Core Burn Unit 1= VOC emissions per core * Number of cores produced per year * (1 ton/2000 lbs)
= 0.0307*1,620,600 * 1/2000 = 24.88 tons/year

Compliance with these limits shall limit the potential to emit VOC from the Core Burn Unit 1 to less than 25 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 8-1-6 not applicable.

This is a new applicable requirement that has been added in this renewal.

(b) Core Burn Unit 2
Core Burn Unit 2, part of the core burning operation (P004), constructed after January 01, 1980, has potential to emit VOC greater than 25 tons per year each. However, the Permittee has accepted to limit the potential VOC emissions to less than 25 tons per year for Core Burn Unit 2 unit such that the requirements of 326 IAC 8-1-6 do not apply.

In order to render the requirements of 326 IAC 8-1-6 not applicable, the Permittee shall comply with the following:

(1) The VOC emissions from Core Burn Unit 2 shall not exceed 0.0307 pounds per core.

(2) The maximum core production from the Core Burn Unit 2 shall not exceed 1,620,600 cores per twelve (12) consecutive month period with compliance determined at the end of each month.

VOC emissions from Core Burn Unit 2= VOC emissions per core * Number of cores produced per year * (1 ton/2000 lbs)
= 0.0307*1,620,600 * 1/2000 = 24.88 tons/year

Compliance with these limits shall limit the potential to emit VOC from the Core Burn Unit 2 to less than 25 tons per twelve (12) consecutive month period and shall render the requirements of 326 IAC 8-1-6 not applicable.

This is a new applicable requirement that has been added in this renewal.

The core burning operation (P004) has independent limits under 326 IAC 2-8. See above in "State Rule Applicability - FESOP Status".

Woodworking Operation (P005)
326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-1(b)(14), the requirements of 326 IAC 6-3-2 do not apply to the woodworking operation (P005), because it has potential emissions less than 0.551 pound per hour.

EPS Block Molding Operation (P006)
326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Sources)
The EPS block molding operation, constructed after January 01, 1980, has potential to emit VOC greater than 25 tons per year.

The 326 IAC 8-1-6 BACT limits for the EPS block molding operation were re-evaluated. Appendix B of this document contains the detailed BACT analysis.

Pursuant to 326 IAC 8-1-6 and following approvals:

(1) CP 113-8529-00047, issued on September 29, 1997,
(2) FESOP 113-10260-00047, issued on May 15, 2002,
(3) SPR 113-22426-00047 issued on April 21, 2006,
(4) SPR 113-26693-00047, issued on January 8, 2009 and
(5) FESOP 113-37982-00047,

the Permittee shall comply with the following:

(a) The pentane content in the polystyrene beads used in the expandable polystyrene block molding operation shall not exceed 7.0%

(b) The total potential to emit VOC (as pentane) after control from the expandable polystyrene block molding operation shall not exceed 34 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

(c) The total VOC emissions after control from the bead aging room and the block conditioning room shall not exceed 1.43 pounds per hour.

(d) The total VOC emissions after control from the pre-expander system and the block molding press shall not exceed 0.89 pounds per hour.

(e) The VOC (as pentane) emissions from the expandable polystyrene block molding operation shall be captured by the collection system and controlled by an RTO. The RTO shall achieve a minimum destruction efficiency of 98%.

(f) The collection system of the expandable polystyrene block molding operation shall consist of the following:

(i) Two (2) permanent total enclosures, each for the following rooms with emissions vented to the RTO:

(1) The bead aging room, and

(2) The block conditioning room

The permanent total enclosures shall meet the definition in 40 CFR 51, Appendix M, and Method 204.

(ii) Two (2) hoods, each for the following with emissions vented to the RTO:

(1) The pre-expander system, and

(2) The block molding press

This portion of the capture system shall achieve 60% capture efficiency or higher.

(g) As allowed under 326 8-1-2 (a)(2), the RTO is not required to be operated only when polystyrene bead is not being actively molded in the expandable polystyrene block molding operation during the months of November, December, January, February and March.

The VOC emissions shall be calculated using the following equations:

$$\text{VOC Emissions} = \text{VOC}_{\text{w/EPS}} + \text{VOC}_{\text{w/o EPS}}$$

Months	EPS bead actively molded	EPS bead not actively molded
April - October	RTO in operation	RTO in operation
November - March	RTO in operation	RTO not in operation

$$\text{VOC}_{\text{w/EPS}} = \sum_{k=1}^{o} [\text{f}_{\text{VOC}} \text{ x U x } (1 - \text{CEF})]$$

Where:

$\text{VOC}_{\text{w/EPS}}$ = VOC emissions when the EPS is actively molded, and when the EPS is not actively molded in the months of April - October. During these periods the RTO is in operation, therefore this is VOC emissions after control.

o = total number of periods of operation

k	=	each specific period of operation
f_{voc}	=	VOC content of the polystyrene beads used (fraction by weight)
U	=	polystyrene bead usage by weight
CEF	=	overall control efficiency of the RTO (from the most recent valid compliance demonstration)

$$VOC_{w/o\ EPS} = \sum_{i=1}^{m}[f_{VOC}\ x\ U\ x\ (55/100)] - \sum_{j=1}^{n}(-0.00001t^4 + 0.0024t^3 - 0.2715t^2 + 16.969t)$$

Where:

$VOC_{w/oEPS}$	=	VOC emissions when the EPS is not actively molded in the months of November - March.
m	=	total number of EPS and RTO shutdowns per month
i	=	each specific EPS and RTO shutdown period
f_{voc}	=	VOC content of the polystyrene beads used (fraction by weight)
U	=	polystyrene bead usage by weight (if the polystyrene bead usage for the day prior to the shutdown exceeds the polystyrene bead usage on the day of the shutdown, the source shall use the average polystyrene bead usage from the day prior to the shutdown and the day of the shutdown)
n	=	total number of EPS shutdowns per month
j	=	each specific EPS shutdown period
t	=	hours elapsed between last polystyrene bead expansion and RTO shutdown

This equation has been added in this renewal.

EPS Core Router (P011) and EPS Table Saw (P012)

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-2 the allowable PM emission rate from the EPS Core Router (P011) and EPS Table Saw (P012) shall not exceed the pounds per hour limitations as calculated with the following formula:

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:

$E = 4.10\ P^{0.67}$ Where: E = rate of emission in pounds per hour; and P = process weight rate in tons per hour

The control device shall be in operation whenever the EPS Core Router (P011) or the EPS Table Saw (P012) is in operation in order to comply with this limit.

This is a new requirement that has been added in this renewal.

The process weight for the EPS Core Router (P011) was not provided to determine specific 326 IAC 6-3-2 limits.

Wire Cutting Lines of the Polystyrene Block Cutting Operation

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-1(b)(14), the requirements of 326 IAC 6-3-2 do not apply to the wire cutting lines (Wire Cutting Line 1 and Wire Cutting Line 2) of the polystyrene block cutting operation because they each have potential emissions less than 0.551 pound per hour.

326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Sources)

The wire cutting lines (Wire Cutting Line 1 and Wire Cutting Line 2) of the polystyrene block cutting operation, constructed after January 1, 1980, have potential to emit VOC less than 25 tons per year. Therefore, the requirements of 326 IAC 8-1-6 do not apply. The wire cutting lines were constructed in 1997.

Polystyrene Scrap Grinding

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-2 the allowable PM emission rate from the polystyrene scrap grinding operation shall not exceed the pounds per hour limitations as calculated with the following formula:

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:

$E = 4.10\ P^{0.67}$ Where: E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour

This is a new requirement that has been added in this renewal.

Natural Gas Combustion Units

326 IAC 6-2 (Particulate Emission Limitations for Sources of Indirect Heating)

Pursuant to 326 IAC 6-2-4, the PM emissions from the boiler, identified as P009, shall not exceed 0.6 pound per MMBtu heat input, because the boiler is an indirect heating unit that began operation after September 1983. The boiler was constructed in 2006.

This is an existing applicable requirement and no change has been made in this renewal.

Compliance Determination and Monitoring Requirements

Permits issued under 326 IAC 2-8 are required to assure that sources can demonstrate compliance with all applicable state and federal rules on a continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a continuous demonstration. When this occurs, IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-8-4. As a result, Compliance Determination Requirements are included in the permit. The Compliance Determination Requirements in Section D of the permit are those conditions that are found directly within state and federal rules and the violation of which serves as grounds for enforcement action.

If the Compliance Determination Requirements are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

(a) The compliance monitoring requirements applicable to this source are as follows:

Emission Unit	Control	Parameter	Frequency
(1) Surface Coating Operation (P001)	Dry Filters	Filter inspection	Daily
		Presence of overspray	Weekly
		Stack exhaust inspection	Monthly

Emission Unit	Control	Parameter	Frequency
(2) EPS Block Molding Operation (P006)	RTO	Temperature	Continuous
		Duct Pressure or Fan Amperage	Daily
(3) EPS Core Router (P011)	Baghouse DC7	Visible emission notations	Daily
(4) Woodworking operation (P005)			

(1) These monitoring conditions are required because the dry filters for the surface coating operation must operate properly to assure compliance with 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes).

These are existing applicable requirements and no change has been made in this renewal.

(2) These monitoring conditions are required because the RTO for the EPS block molding operation must operate properly to assure compliance with 326 IAC 8-1-6 BACT and 326 IAC 2-2 (PSD) avoidance limits.

These are existing applicable requirements and no change has been made in this renewal.

(3) This monitoring condition is required because the baghouse for the EPS core router (P011) must operate properly to assure compliance with 326 IAC 2-7 (Part 70 Permits) avoidance limits.

This determination has been made in this renewal.

(4) This monitoring condition is required because the baghouse for Woodworking operation (P005) must operate properly to assure compliance with 326 IAC 2-8 FESOP status.

This determination has been made in this renewal.

(b) The VOC emissions limit for the EPS block molding operation after control that renders the requirements of 326 IAC 2-7 (Part 70 Permits) and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable shall be calculated using the following equations:

$$\text{VOC Emissions} = \text{VOC}_{\text{w/EPS}} + \text{VOC}_{\text{w/o EPS}}$$

Months	EPS bead actively molded	EPS bead not actively molded
April - October	RTO in operation	RTO in operation
November - March	RTO in operation	RTO not in operation

$$\text{VOC}_{\text{w/EPS}} = \sum_{k=1}^{o} [f_{\text{VOC}} \text{ x U x } (1 - \text{CEF})]$$

Where:

$\text{VOC}_{\text{w/EPS}}$ = VOC emissions when the EPS is actively molded, and when the EPS is not actively molded in the months of April - October. During these periods the RTO is in operation, therefore this is VOC emissions after control.

o	=	total number of periods of operation
k	=	each specific period of operation
f_{voc}	=	VOC content of the polystyrene beads used (fraction by weight)
U	=	polystyrene bead usage by weight
CEF	=	overall control efficiency of the RTO (from the most recent valid compliance demonstration)

$$VOC_{w/o\ EPS} = \sum_{i=1}^{m}[f_{VOC}\ x\ U\ x\ (55/100)] - \sum_{j=1}^{n}(-0.00001t^4 + 0.0024t^3 - 0.2715t^2 + 16.969t)$$

Where:

$VOC_{w/oEPS}$	=	VOC emissions when the EPS is not actively molded in the months of November - March.
m	=	total number of EPS and RTO shutdowns per month
i	=	each specific EPS and RTO shutdown period
f_{voc}	=	VOC content of the polystyrene beads used (fraction by weight)
U	=	polystyrene bead usage by weight (if the polystyrene bead usage for the day prior to the shutdown exceeds the polystyrene bead usage on the day of the shutdown, the source shall use the average polystyrene bead usage from the day prior to the shutdown and the day of the shutdown)
n	=	total number of EPS shutdowns per month
j	=	each specific EPS shutdown period
t	=	hours elapsed between last polystyrene bead expansion and RTO shutdown

These are existing equations. In this renewal, IDEM has revised the language to provide more clarity.

(c) The testing requirements applicable to this to this source are as follows:

Emission Unit	Control Device	Pollutant	Timeframe for Testing	Frequency of Testing
(1) EPS Block Molding Operation (P006)	RTO	VOC	Once (1) every five (5) years from the date of the valid compliance demonstration	Every five (5) years

(1) EPS block molding operation (P006)
Testing of the RTO controlling VOC emissions from the EPS block molding operation (P006) is already required in the existing permit to assure compliance with 326 IAC 8-1-6 and 326 IAC 2-8 limits. RTO testing will continue to be required.

The most recent stack test was performed on June 16, 2015. Based on a 5-year testing cycle, the next testing would be in 2020. IDEM has determined that the existing testing cycle will be followed to demonstrate compliance with the re-evaluated 326 IAC 8-1-6 BACT limits as the RTO was tested at maximum capacity of 1,654 pounds per hour and demonstrated destruction efficiency of 98.81% on June 16, 2015.

(2) Core Burn Unit 1 and Core Burn Unit 2 of Core Burning Operation (P004)
In this renewal, IDEM is removing the requirement of PM and PM10 emissions testing for Core Burn Unit 1 and Core Burn Unit 2 of the core burning operation (P004). The most recent stack test performed on Core Burn Unit 2 on July 1, 2014, is sufficient to verify compliance with 326 IAC 2-8 FESOP status. In addition, based on Appendix A, a control device is not required to comply with the 326 IAC 6-3-2 limit.

(3) EPS Core Router (P011)
IDEM OAQ has determined that the testing of the baghouse DC-7 controlling particulate emissions from EPS core router is not required at this time to determine compliance with 326 IAC 2-7 (Part 70 Permits) avoidance limit for PM10 and PM2.5, since the control efficiency required to assure compliance with these limits is lower than 55%. The monitoring conditions listed above for the EPS core router are sufficient to ensure compliance. Although IDEM has determined that testing is not required at this time, IDEM retains the authority to require testing at a later time if necessary to demonstrate compliance with any applicable requirement.

Conclusion and Recommendation

The staff recommends to the Commissioner that the FESOP Renewal be approved. Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant. An application for the purposes of this review was received on December 13, 2016. Additional information was received on November 01, 2018.

The operation of this stationary polystyrene insulated fiberglass and steel door manufacturing facility shall be subject to the conditions of the attached FESOP Renewal No. F113-37982-00047.

IDEM Contact

(a) Questions regarding this proposed permit can be directed to Rithika Reddy 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) 234-9694 or toll free at 1-800-451-6027 and ask for Rithika Reddy or (317) 234-9694.

(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 Air Permits page on the Internet at: http://www.in.gov/idem/airquality/2356.htm; and the Citizens' Guide to IDEM on the Internet at: http://www.in.gov/idem/6900.htm.

Appendix A: Emissions Calculations
Modification Summary

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Unlimited Potential to Emit of the modification (tons/year)

Process Description	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
Surface Coating Operation (P001)	33.31	33.31	33.31	-	-	0*	-	-	-	-
Roll Coating Unit (P003)	-	-	-	-	-	0*	-	0.01	0.01	MDI
Core Burning Operation (P004)	11.46	11.46	11.46	-	-	30.32	-	3.85	3.51	Styrene
EPS Block Molding Operation (P006)	-	-	-	-	-	343.36	-	-	-	-
Roll Coating Unit (P007)	-	-	-	-	-	7.48	-	0.003	0.003	MDI
EPS Core Router (P008)	76.34	76.34	76.34	-	-	-	-	-	-	-
EPS Table Saw (P010)	5.26	5.26	5.26	-	-	-	-	-	-	-
Total	**126.38**	**126.38**	**126.38**	**0.00**	**0.00**	**381.15**	**0.00**	**3.86**	**3.51**	**Styrene**

*Lower potential to emit VOC for the modification.

Appendix A: Emissions Calculations
Emission Summary

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Unlimited Potential to Emit (tons/year)

Process Description	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
Surface Coating Operation (P001)**	50.84	50.84	50.84	-	-	6.23	-	-	-	-
Roll Coating Unit (P003)	-	-	-	-	-	7.48	-	0.01	0.01	MDI
Core Burning Operation (P004)	20.46	20.46	20.46	-	-	53.82	-	6.85	6.31	Styrene
Woodworking Operation (P005)*	0.58	0.58	0.58	-	-	-	-	-	-	-
EPS Block Molding Operation (P006)	-	-	-	-	-	640.86	-	-	-	-
Roll Coating Unit (P007)	-	-	-	-	-	7.48	-	0.003	0.003	MDI
EPS Core Router (P008)	76.34	76.34	76.34	-	-	-	-	-	-	-
EPS Table Saw (P010)	5.26	5.26	5.26	-	-	-	-	-	-	-
Wire Cutting Lines 1 and 2	0.34	0.34	0.34	-	-	4.61	-	0.59	0.54	Styrene
Polystyrene Scrap Grinding	5.00	5.00	5.00	-	-	-	-	-	-	-
Natural Gas Combustion	0.09	0.35	0.35	0.03	4.64	0.26	3.90	0.09	0.08	Hexane
Total	**158.92**	**159.18**	**159.18**	**0.03**	**4.64**	**720.72**	**3.90**	**7.53**	**6.85**	**Styrene**

Limited Potential to Emit (tons/year)

Process Description	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
Surface Coating Operation (P001)**	2.54	2.54	2.54	-	-	6.23	-	-	-	-
Roll Coating Unit (P003)	-	-	-	-	-	7.48	-	0.01	0.01	MDI
Core Burning Operation (P004)	20.46	20.46	20.46	-	-	30.0	-	6.85	6.31	Styrene
Woodworking Operation (P005)*	0.58	0.58	0.58	-	-	-	-	-	-	-
EPS Block Molding Operation (P006)	-	-	-	-	-	34.0	-	-	-	-
Roll Coating Unit (P007)	-	-	-	-	-	7.48	-	0.003	0.003	MDI
EPS Core Router (P008)	76.34	39.42	39.42	-	-	-	-	-	-	-
EPS Table Saw (P010)	5.26	5.26	5.26	-	-	-	-	-	-	-
Wire Cutting Lines 1 and 2	0.34	0.34	0.34	-	-	4.61	-	0.59	0.54	Styrene
Polystyrene Scrap Grinding	5.00	5.00	5.00	-	-	-	-	-	-	-
Natural Gas Combustion	0.09	0.35	0.35	0.03	4.64	0.26	3.90	0.09	0.08	Hexane
Total	**110.61**	**73.95**	**73.95**	**0.03**	**4.64**	**90.03**	**3.90**	**7.53**	6.85	Styrene

(1) Core Burning Operation limited to render limited to render 326 IAC 2-7 (Part 70 Permits) not applicable. The Core Burn Units 1 and 2 are also limited to render 326 IAC 8-1-6 not applicable.
(2) EPS Block Molding Operation limited pursuant to 326 IAC 8-1-6.
(3) Emissions from EPS Core Router limited to render 326 IAC 2-7 (Part 70 Permits) not applicable.
(4) No emissions calculations were performed for polystyrene scrap grinding. Emissions were allotted exemption threshold.
* PTE after integral control for woodworking operation.
** Limited PTE is after control under 326 IAC 6-3

Appendix A: Emissions Calculations
Surface Coating Operations

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Surface Coating Operation (P001)
Door Edge Paint Booth

Material	Density (lb/Gal)	Weight % Volatile (H20 & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum Throughput (doors/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	Dry Filters Control Efficiency	Controlled Particulate Potential (ton/yr)
Ace Hardware Royal 159 semi-gloss whit	10.7	3.76%	0%	4%	0.00%	30.00%	0.01563	200	0.40	0.40	1.26	30.18	5.51	49.35	1.34	65%	95%	2.47
Diamond Vogel White	10.68	1.30%	0.12%	1.18%	0.15%	31.40%	0.016	200	0.13	0.13	0.39	9.45	1.73	50.51	0.40	65%	95%	2.53
Diamond Vogel Cream	10.55	1.40%	0.00%	1.40%	0.00%	29.60%	0.016	200	0.15	0.15	0.46	11.08	2.02	49.85	0.50	65%	95%	2.49
												Total	5.51	50.51				2.53

Note:
Permit application shows use of either Diamond Vogel White or Diamond Vogel Cream. However, Ace Royal was actual paint onsite during inspection. Worst case emissions for each pollutant have been considered.

Door Touch-Up Paint Booth

Material	Density (lb/gal)	Volume % Non-Volatiles (solids)	Maximum Throughput (doors/hour)	Gal of Mat. (gal/door)	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)	Transfer Efficiency	Dry Filters Control Efficiency	Controlled Particulate Potential (ton/yr)
Touch-Up Paint	9.9	47.76%	200	0.0001600	5.15	0.16	3.96	0.72	0.33	50%	95%	0.02

Note:
The emissions for Door Touch-Up Paint Booth have been take from FESOP SPR No: 113-26693-00047, issued on January 08, 2009 and adjusted for 200 doors per hour. Refer to TSD for detailed explanation.

Adhesive Roll Coater (P003)

Material	Density (Lb/Gal)	Weight % Organics	Gal of Mat. (gal/cleaning)	Maximum cleanings per day	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
Dibasic Ester	9.10	100.00%	1.500	3.000	9.10	9.10	13.65	40.95	7.47

* VOC emissions for any hour in which the adhesive roll coating applicator is cleaned with DBE. Cleaning is done three times per day max, not hourly.

Material	Density (Lb/Gal)	Gal of Mat. (gal/unit)	Maximum (doors/hour)	MDI Emission Factor	Potential VOC/ HAP (lb/hr)	Potential VOC/ HAP (tons/year)
3210 U Adhesive	9.18	0.048	200.000	1.70E-05	0.0015	0.01
3250 Adhesive	9.18	0.048	200.000	1.70E-05	0.0015	0.01

Total VOC (tons/year) **7.5**
Total HAPs (tons/year) **0.01**

Note:
Each door is coated with either 3210 U Adhesive or 3250 Adhesive. Therefore, worst case emissions have been considered.

Adhesive Roll Coater (P007)

Material	Density (Lb/Gal)	Weight % Organics	Gal of Mat. (gal/cleaning)	Maximum cleanings per day	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
Dibasic Ester	9.10	100.00%	1.500	3.000	9.10	9.10	13.65	40.95	7.47

* VOC emissions for any hour in which the adhesive roll coating applicator is cleaned with DBE. Cleaning is done three times per day max, not hourly.

Material	Density (Lb/Gal)	Gal of Mat. (gal/unit)	Maximum (doors/hour)	MDI Emission Factor	Potential VOC/ HAP (lb/hr)	Potential VOC/ HAP (tons/year)
7250D Adhesive	10.69	0.048	80.000	1.70E-05	0.0007	0.003

Total VOC (tons/year) **7.5**
Total HAPs (tons/year) **0.003**

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 = Worst Coating + Sum of all solvents used

Appendix A: Emissions Calculations
PM Emissions from
Core Burn Units and Wire Cutting Lines

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Maximum Throughput of Cores =	200	cores/hr/unit
Number of core burn units =	2	
Maximum Wire Cuts =	2,880	cuts/hr

Emission Unit	Emission Factor		Uncontrolled PTE of PM/PM10/PM2.5		Controlled PTE of PM/PM10/PM2.5	
			(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)
Core Burn Units 1 and 2	1.17E-02	lbs/core	4.67	20.46	0.23	1.02
Wire Cutting Lines 1 and 2	2.71E-05	lbs/cut	0.08	0.34	-	-
	Total:		**4.75**	**20.80**	**0.23**	**1.02**

Methodology **1.09E-05**

Control Efficiency: 95.00%

Emission Factors:

Emission factor (lbs/cut) = (volume loss attributed to emissions for one wire cut [in^3/cut]) x (core embosser mass loss [lbs/core]) / (core embosser volume lost [in^3/core])

Volume loss attributed to emissions for one wire cut (in^3/cut) = 3.192

Volume loss attributed to emissions is calculated assuming that only one inch around the perimeter of the polystyrene core emits particulate matter. The assumption is made that particulate generated in the center of the polystyrene door core as the wire moves through the block is quickly trapped in the molted polystyrene and not released. The volume loss attributed to emissions is calculated at [2 x (1" x 78")] to account for the core lengths plus [2 x (1" x 36")] to account for the core widths multiplied by a wire thickness of 0.014".

Core embosser mass loss (lbs/core) = 0.029

Core embosser volume loss (in^3/core) = 3,420

Core Embosser Emission Factor (controlled) was provided by the source based on source testing at JELD-WEN Exterior Doors - Chiloquin, OR on May 22, 2002.

Uncontrolled PTE (lbs/hr) = Maximum throughput (units/hr) * Emission factor (lbs/unit)

Uncontrolled PTE (tons/year) = Uncontrolled PTE (lbs/hr) * (8760 hrs/1 year) * (1 ton/2000 lbs)

Controlled PTE = Uncontrolled PTE * (1-Control Efficiency)

Appendix A: Emissions Calculations
VOC/HAP Emissions from Core Burning Operation

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Estimated PTE core production per core burn unit (cores/hr) =	**200**
Number of core burn units =	**2**

Emissions Unit: P004

Pollutant	CAS #	VOC (Y/N)	HAP (Y/N)	Emission Factor [1] (lbs/core)		Estimated PTE Emissions					
						VOC			HAPs		
						lbs/hr	lbs/yr	tons/yr	lbs/hr	lbs/yr	tons/yr
Styrene	100-42-5	Y	Y	3.60E-03	(2)	1.44	12,614.4	6.31	1.44	12,614.40	6.3
Benzaldehyde	100-52-7	Y	N	4.60E-04	(2)	0.18	1,611.8	0.81	-- --	-- --	-- --
Toluene	108-88-3	Y	Y	1.20E-04	(2)	0.05	420.5	0.21	0.05	420.48	0.2
1,2,4-Trimethylbenzene	95-63-6	Y	N	1.10E-04	(3)	0.04	385.4	0.19	-- --	-- --	-- --
o-Methylstyrene	611-15-4	Y	N	8.60E-05	(3)	0.03	301.3	0.15	-- --	-- --	-- --
Acetophenone	98-86-2	Y	Y	4.80E-05	(3)	0.02	168.2	8.4E-02	0.02	168.19	8.4E-02
Benzene	71-43-2	Y	Y	4.60E-05	(3)	0.02	161.2	8.1E-02	0.02	161.18	8.1E-02
Substituted Benzene [4]	N/A	Y	N	4.50E-05	(3)	0.02	157.7	7.9E-02	-- --	-- --	-- --
Isopropylbenzene	98-82-8	Y	Y	4.10E-05	(3)	0.02	143.7	7.2E-02	0.02	143.66	7.2E-02
Ethyl Benzene	100-41-4	Y	Y	3.00E-05	(3)	0.01	105.1	5.3E-02	0.01	105.12	5.3E-02
n-Propylbenzene	103-65-1	Y	N	1.80E-05	(3)	0.01	63.1	3.2E-02	-- --	-- --	-- --
Dimethylethoxybenzene	N/A	Y	N	1.00E-05	(3)	0.00	35.0	1.8E-02	-- --	-- --	-- --
Phenol	108-95-2	Y	Y	9.00E-06	(3)	0.00	31.5	1.6E-02	0.00	31.54	1.6E-02
Tetrachloroethylene	127-18-4	Y	Y	8.00E-06	(3)	0.00	28.0	1.4E-02	0.00	28.03	1.4E-02
C10-C12 hydrocarbons	N/A	Y	N	7.00E-06	(3)	0.00	24.5	1.2E-02	-- --	-- --	-- --
m,p-Xylene	1330-20-7	Y	Y	6.00E-06	(3)	0.00	21.0	1.1E-02	0.00	21.02	1.1E-02
2-Methylbutane	78-78-4	Y	N	1.00E-03	(5)	0.40	3,504.0	1.75	-- --	-- --	-- --
Methyl Ethyl Ketone	78-93-3	Y	N	5.40E-04	(5)	0.22	1,892.2	0.95	-- --	-- --	-- --
Isopropanol	67-63-0	Y	N	9.10E-05	(5)	0.04	318.9	0.16	-- --	-- --	-- --
C4-C6 Hydrocarbons	N/A	Y	N	2.44E-02	(3)(6)	9.76	85,497.6	42.7	-- --	-- --	-- --
Cyclopentane	287-92-3	Y	N	4.20E-05	(3)	0.02	147.2	7.4E-02	-- --	-- --	-- --
n-Pentane[7]	109-66-0	Y	N	8.10E-03	(5)	3.24	28,382.4	14.2	-- --	-- --	-- --
				TOTAL		**12.29**	**107,632.37**	**53.82**	**1.56**	**13,694**	**6.85**

Methodology:
For VOC and HAPs 3.07E-02
PTE emissions (lbs/hr) = Core production (cores/hr) x Emission factor (lbs/core)
PTE emissions (lbs/yr) = PTE emissions (lbs/hr) x 8760 (hr/yr)
PTE emissions (tons/yr) = PTE emissions (lbs/yr) x (1 ton/2000 lbs)

References:
[1] Emission factors are from a source test conducted at JELD-WEN Exterior Door Division, Chiloquin, Oregon on May 22, 2002 on similar equipment.

[2] This compound was quantified in both the volatile organic and semi-volatile organic compound test. The results from the semi-volatile organic compound test were

[3] Semi-Volatile Organic Compounds.

[4] Per conversation with Prism Analytical Technologies, Inc., the lab who performed the analytical analysis on the source test samples, substituted benzene is most likely ethylmethylbenzene & phenetole, neither of which is a HAP or a TAP.

[5] Volatile Organic Compounds.

[6] The C4-C6 Hydrocarbon value is thought to include n-Pentane & cyclopentane emissions. The n-Pentane & cyclopentane emissions were subtracted from the C4-C6 Hydrocarbon value to prevent this value from being calculated twice.

[7] The pentane emissions are accounted for in the bead expansion process.

Appendix A: Emissions Calculations
VOC and HAPs Emissions from Wire Cutting Lines

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Maximum usage (wire cuts/hr) = 2,880

Emissions Unit: P004

Pollutant	CAS #	VOC (Y/N)	HAP (Y/N)	Emission Factor [1] (lbs/wire cut)		Estimated PTE Emissions					
						VOC			HAPs		
						lbs/hr	lbs/yr	tons/yr	lbs/hr	lbs/yr	tons/yr
Styrene	100-42-5	Y	Y	4.28E-05	(2)	1.23E-01	1,079.8	0.54	0.12	1,079.79	0.5
Benzaldehyde	100-52-7	Y	N	5.47E-06	(2)	1.58E-02	138.0	0.07	-- --	-- --	-- --
Toluene	108-88-3	Y	Y	1.43E-06	(2)	4.12E-03	36.08	0.02	0.00	36.08	0.0
1,2,4-Trimethylbenzene	95-63-6	Y	N	1.31E-06	(3)	3.77E-03	33.05	0.02	-- --	-- --	-- --
o-Methylstyrene	611-15-4	Y	N	1.02E-06	(3)	2.94E-03	25.73	0.01	-- --	-- --	-- --
Acetophenone	98-86-2	Y	Y	5.70E-07	(3)	1.64E-03	14.38	7.2E-03	0.00	14.38	7.2E-03
Benzene	71-43-2	Y	Y	5.47E-07	(3)	1.58E-03	13.80	6.9E-03	0.00	13.80	6.9E-03
Substituted Benzene [4]	N/A	Y	N	5.35E-07	(3)	1.54E-03	13.50	6.7E-03	-- --	-- --	-- --
Isopropylbenzene	98-82-8	Y	Y	4.87E-07	(3)	1.40E-03	12.29	6.1E-03	0.00	12.29	6.1E-03
Ethyl Benzene	100-41-4	Y	Y	3.56E-07	(3)	1.03E-03	8.98	4.5E-03	0.00	8.98	4.5E-03
n-Propylbenzene	103-65-1	Y	N	2.14E-07	(3)	6.16E-04	5.40	2.7E-03	-- --	-- --	-- --
Dimethylethoxybenzene	N/A	Y	N	1.19E-07	(3)	3.43E-04	3.00	1.5E-03	-- --	-- --	-- --
Phenol	108-95-2	Y	Y	1.07E-07	(3)	3.08E-04	2.70	1.3E-03	0.00	2.70	1.3E-03
Tetrachloroethylene	127-18-4	Y	Y	9.51E-08	(3)	2.74E-04	2.40	1.2E-03	0.00	2.40	1.2E-03
C10-C12 hydrocarbons	N/A	Y	N	8.32E-08	(3)	2.40E-04	2.10	1.0E-03	-- --	-- --	-- --
m,p-Xylene	1330-20-7	Y	Y	7.13E-08	(3)	2.05E-04	1.80	9.0E-04	0.00	1.80	9.0E-04
2-Methylbutane	78-78-4	Y	N	1.19E-05	(5)	3.43E-02	300.2	0.15	-- --	-- --	-- --
Methyl Ethyl Ketone	78-93-3	Y	N	6.42E-06	(6)	1.85E-02	162.0	0.08	-- --	-- --	-- --
Isopropanol	67-63-0	Y	N	1.08E-06	(5)	3.11E-03	27.25	0.01	-- --	-- --	-- --
C4-C6 Hydrocarbons	N/A	Y	N	2.90E-04	(3)(6)	8.35E-01	7,316.4	3.66	-- --	-- --	-- --
Cyclopentane	287-92-3	Y	N	4.99E-07	(3)	1.44E-03	12.6	6.3E-03	-- --	-- --	-- --
n-Pentane[7]	109-66-0	Y	N	9.62E-05	(5)	2.77E-01	2,427.0	1.21	-- --	-- --	-- --
				TOTAL		**1.05**	**9,211.38**	**4.61**	**0.13**	**1,172**	**0.59**

Note:
Hourly wire cuts (cuts/hr) = (wire cuts per block on Line 1 [cuts/block]) x (wire cutting production rate Line 1 [blocks/hr]) + (wire cuts per block on Line 2 [cuts/block]) x (wire cutting production rate Line 2 [blocks/hr])

Wire cuts per block on Line 1 (cuts/block) =	46	(4)
Wire cuts per block on Line 2 (cuts/block) =	50	(5)
Wire cutting production rate (blocks/hr/line) =	30	(6)

Methodology:
For VOC and HAPs
PTE emissions (lbs/hr) = Core production (cores/hr) x Emission factor (lbs/core)
PTE emissions (lbs/yr) = PTE emissions (lbs/hr) x 8760 (hr/yr)
PTE emissions (tons/yr) = PTE emissions (lbs/yr) x (1 ton/2000 lbs)

References:
[1] Emission factors are from a source test conducted at JELD-WEN Exterior Door Division, Chiloquin, Oregon on May 22, 2002 on similar equipment.

[2] This compound was quantified in both the volatile organic and semi-volatile organic compound test. The results from the semi-volatile organic compound test were
[3] Semi-Volatile Organic Compounds.

[4] Per conversation with Prism Analytical Technologies, Inc., the lab who performed the analytical analysis on the source test samples, substituted benzene is most likely ethylmethylbenzene & phenetole, neither of which is a HAP or a TAP.
[5] Volatile Organic Compounds.

[6] The C4-C6 Hydrocarbon value is thought to include n-Pentane & cyclopentane emissions. The n-Pentane & cyclopentane emissions were subtracted from the C4-C6 Hydrocarbon value to prevent this value from being calculated twice.
[7] The pentane emissions are accounted for in the bead expansion process.

Appendix A: Emission Calculations
Woodworking Operation

Company Name: **JELD-WEN, Inc.**
Address: **200 Gerber Street, Ligonier, IN 46767**
Permit No.: **F113-37982-00047**
Reviewer: **Rithika Reddy**

Process	Airflow (dscfm)	Grain Loading (gr/dscf)	Control Efficiency	Uncontrolled PM PTE (lbs/hr)	Uncontrolled PM PTE (tons/yr)	Controlled PM PTE (lbs/hr)	Controlled PM PTE (tons/yr)
Woodworking (P005)	17,500	8.80E-04	99.90%	132.00	578.16	0.132	0.578

Methodology

PM = PM10 = PM2.5

Uncontrolled PM PTE (lbs/hr) = Number of Units * Airflow (acfm) * Grain Loading per acf of Outlet Air * 60 min/hr * 1 lb/7,000 grain * (1/(1 - Control Efficiency))

Uncontrolled PM PTE (ton/yr) = Uncontrolled PM PTE (lbs/hr) *8,760 hrs/yr * 1 ton/2,000 lbs

Controlled PM PTE (lbs/hr) = Uncontrolled PM PTE (lbs/hr) * (1 - Control Efficiency)

Controlled PM PTE (ton/yr) = Controlled PM PTE (lbs/hr) * 8,760 hrs/yr * 1 ton/2,000 lbs

Note:

In October 1993 a Final Order Granting Summary Judgment was signed by Administrative Law Judge (“ALJ”) Garrettson resolving an appeal filed by Kimball Hospitality Furniture Inc. (Cause Nos. 92-A-J-730 and 92-A-J-833) related to the method by which IDEM calculated potential emissions from woodworking operations. In his findings, the ALJ determined that particulate controls are necessary for the facility to produce its normal product and are integral to the normal operation of the facility, and therefore, potential emissions should be calculated after controls. Based on this ruling, potential emissions for particulate matter were calculated after consideration of the controls.

Appendix A: Emissions Calculations
EPS Block Molding Operation

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Process Step	Process Step Number	Bead in Process Step (lbs/hr)		Pentane Content at End of Process Step (% by weight)	PTE Pentane (lbs/hr)	PTE Pentane (tons/yr)	Total Pentane Collected		Total Pentane Not Collected		Controlled PTE Pentane	
							(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)
Virgin Raw Material (Highest Initial Pentane Cont	1	2,000	(1)	7.00%	-- --							
Pre-Expander/Dryer	2	2,000	(1)	6.60%	8.0	35.0	4.8	21.0	3.2	14.0	0.1	0.4
Bead Aging (24 hour period)	3	2,000	(1)	6.57%	0.6	2.6	0.6	2.6	0.0	0.0	0.0	0.1
Block Molding (fresh block)	4	2,857	(2)	4.24%	66.6	291.6	39.9	174.9	26.6	116.6	0.8	3.5
Aging - Day 1 (0 to 24 hours)	5	2,857	(2)	3.08%	33.1	145.2	33.1	145.2	0.0	0.0	0.7	2.9
Aging - Day 2 (25 to 48 hours)	6	2,857	(2)	1.75%	38.0	166.4	38.0	166.4	0.0	0.0	0.8	3.3
					Total Emissions Not Collected:				29.83	130.6	---	---
					Total Controlled Emissions				---	---	2.33	10.20
					Total Pentane Emissions (tons/year)				640.9			

Methodology
PTE Pentane (lb/hr) = Beads in process (lbs/hr) * [Pentane content at beginnning of process step - Pentane Content at end of process step] (wt%)
PTE Pentane (tons/yr) = PTE Pentane (lb/hr)* (8760 hrs/1 year) * (1 ton/2000 lbs)
Total Pentane Collected (lb/hr)= PTE Pentane (lb/hr) * Capture Efficiency
Total Pentane Collected (tons/year) = Total Pentane Collected (lb/hr)*(8760 hrs/1 year) * (1 ton/2000 lbs)
Total Pentane not Collected (lb/hr)= PTE Pentane (lb/hr) - Total Pentane Collected (lb/hr)
Total Pentane not Collected (tons/year) = Total Pentane not Collected (lb/hr)*(8760 hrs/1 year) * (1 ton/2000 lbs)
Controlled PTE Pentane (lb/hr)= Total Pentane Collected (lb/hr) * (1- Control Efficiency)
Controlled PTE Pentane (tons/year) = Controlled PTE Pentane (lb/hr)*(8760 hrs/1 year) * (1 ton/2000 lbs)

Capture System	Efficiency
Permanent Total Enclosure	100%
Hoods	60%
Thermal Oxidizer Control Efficiency (%) =	98.00%

References:
(1) 2000 pounds per hour of virgin bead represents the maximum throughput.

(2) 70% of 2,857 lbs is comprised of virgin material (2000 lbs). The remaining 30% of the 2,857 lbs consist of material that has been trimmed off the finished cores, reground and then recycled back into the process at step 4. The reground material is from the final trimming of the finished product. It is estimated that roughly 30% of the material in aging, day 2, is trimmed off and reground. Pentane content feeding into the block molder at step 4, is comprised of 30% of regrind material, with an assumed pentane content of 1.0%, and 70% virgin bead, with a pentane content of 3.16% by weight. The weighted average is ([0.70 x 3.16] + [0.30 x 1.0]) = 2.51%. The pentane lost is 2.51% - 2.11% = 0.40% by weight.

(3) Calculated pentane content by weight assuming a maximum initial bead pentane content of 7.0%. Pentane contents at each stage are based on pentane losses proportional to those measured from bead analysis at a similar facility in Chiloquin, Oregon on September 18-22, 2006.

Process Stage	% Pentane Content by Weight Sample Results (09/06)	Ratio to Raw Bead Pentane Content (4)	Calculated Maximum Pentane Content (5) (% by wt)
Virgin Raw Bead -			
Sept. 2006 Pentane Content	**6.225**	-- --	-- --
Highest Initial Pentane Content	-- --	-- --	**7.0**
Pre-expander	5.87	0.943	6.60
Bead Aging	5.84	0.938	6.57
Block Molding	3.77	0.606	4.24
Block Aging 24 hours	2.74	0.440	3.08
Block Aging 48 hours (6)	1.56	0.251	1.75
In Product	1.32	0.212	1.48

(4) Ratio to raw bead pentane content = Process stage pentane content (%wt) / Virgin bead, September 18-22, 2006 pentane content (%wt)
(5) Calculated maximum pentane content (%wt) = Raw bead, highest initial pentane content (%wt) x Ratio to raw bead pentane content
(6) 48-hour aged block pentane content estimated by assuming a linear decrease in pentane content from fresh block to block that is 48 hours old. Recommended method by Mr. Bob Coughanour of Nova Chemical. Estimated assuming a straight line through fresh block content (1.85% pentane content by weight) and 24-hour block pentane content (1.55% pentane content by weight).

Appendix A: Emissions Calculations
EPS Core Router and EPS Table Saw

Company Name: JELD-WEN, Inc.
Address: 200 Gerber Street, Ligonier, IN 46767
Permit No.: F113-37982-00047
Reviewer: Rithika Reddy

Emission Unit	Maximum Capacity (cores/hr)	Waste Generated (lb/core)	Uncontrolled PTE PM (lbs/hr)	Uncontrolled PTE PM (tons/yr)	Controlled PTE PM (lbs/hr)	Controlled PTE PM (tons/yr)	Control Efficiency
EPS Table Saw P010	60	0.02	1.2	5.26	0.012	0.05	99.00%
EPS Core Router P008	21	0.83	17.43	76.34	0.17	0.76	99.00%

Methodology:
Uncontrolled PTE PM (lbs/hr) = maximum capacity (cores/hr) * waste generated (lb/core)
Uncontrolled PTE PM (tons/yr) = uncontrolled PTE PM (lbs/hr) * (8760 hrs/1 yr)*(1ton/2000 lbs)
Controlled PTE PM (lbs/hr) = uncontrolled PTE PM (lbs/hr) * (1- control efficiency)
Controlled PTE PM (tons/yr) = uncontrolled PTE PM (tons/yr)* (1- control efficiency)
The lb waste per core data was provided by the source.
Assumes PM=PM10=PM2.5

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: **JELD-WEN, Inc.**
Address: **200 Gerber Street, Ligonier, IN 46767**
Permit No.: **F113-37982-00047**
Reviewer: **Rithika Reddy**

Emission Unit	Qty	Heat Input Rate (MMBtu/hr)	Total Heat Input Rate (MMBtu/hr)
Heater	1	0.105	0.105
Heater	11	0.12	1.32
Heater	8	0.2	1.6
Boiler	1	5	5
RTO	1	2.785	2.785
		Total	**10.81**

HHV
mmBtu
mmscf
1020

Potential Throughput	
MMCF/yr	
66.9	Existing
26.0	New
92.8	Total

	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	7.6	0.6	100 **see below	5.5	84
Potential Emission in tons/yr (Existing)	0.06	0.25	0.25	0.02	3.34	0.18	2.81
Potential Emission in tons/yr (New)	0.02	0.10	0.10	0.01	1.30	0.07	1.09
Potential Emission in tons/yr (Total)	0.09	0.35	0.35	0.03	4.64	0.26	3.90

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
PM2.5 emission factor is filterable and condensable PM2.5 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
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
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Hazardous Air Pollutants (HAPs)

	HAPs - Organics					
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene	**Total - Organics**
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03	
Potential Emission in tons/yr (Existing)	7.0E-05	4.0E-05	2.5E-03	0.06	1.1E-04	**0.06**
Potential Emission in tons/yr (New)	2.7E-05	1.6E-05	9.7E-04	2.3E-02	4.4E-05	0.02
Potential Emission in tons/yr (Total)	9.7E-05	5.6E-05	3.5E-03	0.08	1.6E-04	0.09

	HAPs - Metals							
	Lead	Cadmium	Chromium	Manganese	Nickel	**Total - Metals**	**Total HAPs**	**Worst HAP**
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03		-	-
Potential Emission in tons/yr (Existing)	1.7E-05	3.7E-05	4.7E-05	1.3E-05	7.0E-05	**1.8E-04**	**0.063**	**0.060**
Potential Emission in tons/yr (New)	6.5E-06	1.4E-05	1.8E-05	4.9E-06	2.7E-05	**7.1E-05**	**0.025**	**0.023**
Potential Emission in tons/yr (Total)	2.3E-05	5.1E-05	6.5E-05	1.8E-05	9.7E-05	**2.5E-04**	**0.088**	**0.084**

Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Indiana Department of Environmental Management Office of Air Quality

Appendix B
Best Available Control Technology (BACT) Determination

Source Description and Location

Source Name:	**JELD-WEN**
Source Location:	**200 Gerber Street, Ligonier, Indiana 46767**
County:	**Noble**
SIC Code:	**2431 (Millwork); 3086 (Plastic Foam Products) 3442 (Metal Doors, Sash, Frames, Molding and Trim Manufacturing)**
Operation Permit No.:	**F113-23388-00047**
Operation Permit Issuance Date:	**September 14, 2007**
Permit Renewal No.:	**F113-37982-00047**
Permit Reviewer:	**Rithika Reddy**

Background Information

On December 13, 2016, the Office of Air Quality received an application from JELD-WEN requesting to renew its operating permit. In addition, the source requested to:

(1) Increase the polystyrene beads throughput to the expandable polystyrene (EPS) block molding operation from 1,200 pounds of beads per hour to 2,000 pounds of beads per hour.

On July 27, 2017, JELD-WEN was informed that the requested modification would be considered as a significant modification because the EPS block molding operation is subject to 326 IAC 8-1-6 BACT and increasing the polystyrene beads throughput will result in re-opening the existing BACT limits.

On August 25, 2017, JELD-WEN submitted an additional application requesting the above mentioned modification. On August 15, 2018, IDEM, OAQ performed a plant inspection during which it was clarified that the maximum capacity of the EPS block molding operation was incorrectly permitted and that the operation was capable of processing up to 2,000 pounds of beads per hour. The source provide the re-evaluated BACT analysis on September 06, 2018.

Permitting History of the Expandable Polystyrene Block Molding Operation

Emissions Units Involved in this BACT Re-evaluation

One (1) expandable polystyrene (EPS) block molding operation, identified as P006, constructed in 1997, approved in 2018 for modification, with a maximum throughput of 2,000 pounds of polystyrene beads per hour, containing a maximum average of 7% pentane by weight, consisting of the following:

(1) One (1) batch polystyrene beads pre-expander system, consisting of the following:

(a) One (1) pre-expander machine,

(b) Two (2) steel pipe frame supported polyester storage bags for holding reground bead, and

(c) Mix metering bags.

The emissions from this pre-expander system are captured by a hood and then controlled by an RTO.

(2) One (1) block molding press for molding pre-expanded polystyrene beads to the desired block size, utilizing steam to heat the pre-expanded beads. The emissions from this molding press are captured by a hood and then controlled by an RTO.

(3) One (1) block conditioning room, with emissions captured by a permanent total enclosure and then controlled by an RTO.

(4) One (1) bead aging room, consisting of six (6) steel pipe frame supported polyester storage bags for aging newly pre-expanded bead, with emissions captured by a permanent total enclosure and then controlled by an RTO.

The 2018 modification is to increase the polystyrene beads throughput to the expandable polystyrene (EPS) block molding operation from 1,200 pounds of beads per hour to 2,000 pounds of beads per hour.

Below is the air permitting history of the EPS block molding operation:

(a) 1997 - Initial Construction Permit and BACT (CP 113-8529-00047, September 29, 1997)

JELD- WEN received its initial construction permit CP 113-8529-00047, on September 29, 1997. The initial BACT for the EPS block molding operation was established in this construction permit. The EPS block molding operation was permitted at a maximum capacity of 1,200 pounds of polystyrene beads per hour and at a maximum average of 7% pentane by weight. The source was required to reduce VOC (as pentane) emissions from the EPS block molding operation by using a boiler oxidation steam system (BOSS) to achieve an 80% emissions capture efficiency and a 98% emissions destruction efficiency (78% overall control efficiency). Such requirements were determined as best available control technology (BACT) for this facility.

After construction, a compliance test was performed on July 13-14, 1999, which revealed that the BOSS was achieving a VOC capture efficiency of only 53% and 98% destruction efficiency (52% overall control efficiency) . As a result, IDEM requested that JELD- WEN prepare a new BACT analysis for the affected facility.

(b) 2002 - Initial FESOP and BACT Re-evaluation (FESOP 113-10260-00047, May 15, 2002)

The initial BACT was revised in the FESOP 113-10260-00047, issued on May 15, 2002.

As per IDEM's request for BACT re-evaluation, dated March 28, 2001, JELD- WEN prepared a new BACT analysis for the affected facility and evaluated all potential methods of VOC control, both with and without the BOSS. The analysis was received by IDEM on June 4, 2001. The EPS block molding operation was still permitted at a maximum capacity of 1,200 pounds of polystyrene beads per hour and at a maximum average of 7% pentane by weight.

Based on the revised BACT analysis, JELD- WEN proposed construction of two (2) permanent enclosures for the pre-expander and bead aging bags, and the block mold aging room to achieve 100% capture efficiency. In addition, the source added a regenerative thermal oxidizer as an additional control device for the EPS block molding operation. The BOSS and the RTO were run in parallel, each controlling part of the process air and ventilation air from the permanent total enclosures, with a combined VOC emissions limit of 3.83 tons per twelve (12) consecutive month period from the two control devices. The source also limited their throughput to the EPS block molding operation to 15,000 pounds of beads per day.

(c) 2006 – BACT Re-evaluation and 2001 Agreed Order (SPR 113-22426-00047, April 21, 2006)

IDEM, OAQ received an application from JELD-WEN on January 03, 2006, requesting to replace the existing Boiler Oxidation Steam System (BOSS) and the RTO, operating in parallel, at the facility used to control the pentane released from the EPS block molding operation, based on Agreed Order No. 200-9530-A (paragraph II.2.A) dated January 31, 2001. The BOSS was only capable of operating during the expansion and molding phase due to steam demand of the processes and was unable to control the molding operations due to the extreme pressure fluctuations and moisture caused by the release of the mold. BOSS was ineffective at controlling emissions from the bead aging and the block conditioning processes because of the batch nature of the processes. There were uncontrolled emissions from bead aging and block conditioning processes.

Pursuant to Agreed Order No. 200-9530-A (paragraph II.2.A), JELD- WEN installed a new RTO in place of the BOSS and the existing RTO at the source, with the new RTO required to achieve an overall VOC control efficiency of 78%. In addition, the permanent total enclosures were modified. JELD-WEN proposed permanent total enclosures to capture pentane emissions from the bead aging bags and the block condition room.

The BACT was revised in the SPR 113-22426-00047, issued on April 21, 2006.

(d) 2009 – BACT Re-evaluation (SPR 113-26693-00047, January 8, 2009)

On June 24, 2008, JELD-WEN submitted an application requesting shut down of the existing regenerative thermal oxidizer (RTO), which controls VOC emissions from the Expandable Polystyrene (EPS) block molding operation, during periods of downtime when polystyrene bead is not being actively molded. Due to the declining emission rate and low concentration of VOC emissions during these periods of downtime, the cost of operating the RTO was disproportionate to the cost of control during normal operations. This request is in accordance with 326 IAC 8-1-2(a)(2) (Compliance Methods), which provides the source the option to not operate the RTO during the months of November, December, January, February, and March.

The detailed analysis made in 2009 by JELD-WEN to support this request is presented in Appendix D of this Technical Support Document.

The existing BACT was revised in the SPR 113-26693-00047, issued on January 8, 2009 to incorporate the option of the RTO not required to be operated when polystyrene bead is not being actively molded in the EPS block molding operation during the months of November, December, January, February, and March.

(e) 2018 - BACT Re-evaluation (SPR 113-38987-00047) (combined into FESOP renewal F113-37982-00047)

On August 25, 2017, JELD-WEN submitted an application requesting to increase the throughput of polystyrene beads to the EPS block molding operation from 1,200 pounds of beads per hour to 2,000 pounds of beads per hour. On August 15, 2018, IDEM, OAQ performed a plant inspection during which it was clarified that the maximum capacity of the EPS block molding operation was initially determined incorrectly and that this line was capable of processing 2,000 pounds of beads per hour from its initial operation. This increase in throughput results in an increase in potential to emit pentane by 357.35 tons per year. The source has requested to incorporate the current 326 IAC 2-2 VOC PSD Minor avoidance limit of 34 tons per twelve (12) consecutive month period for the EPS block molding operation into the proposed 326 IAC 8-1-6 BACT emissions limit.

As a result of this application, the Office of Air Quality (OAQ) has performed the following 326 IAC 8-1-6 (VOC) Best Available Control Technology (BACT) review for JELD- WEN relating to the existing EPS block molding operation.

The following BACT analysis for the one (1) EPS block molding operation uses the "Top Down BACT Guidance" published by the U.S. EPA, Office of Air Quality Planning and Standards, March 15, 1990.

Current Best Available Control Technology (BACT) Limits

The emission units identified in the previous section currently have the following BACT limits for VOC:

Pursuant to 326 IAC 8-1-6 (New Facilities, General Reduction Requirements), the Permittee shall comply with the BACT for the expandable polystyrene block molding operation:

(a) VOC (as pentane) emissions from the expandable polystyrene (EPS) block molding operation, identified as P006, shall be captured by the pentane emissions collection system and ducted to one (1) regenerative thermal oxidizer (RTO). The pentane emissions collection system and RTO shall achieve an overall VOC control efficiency of 78%.

(b) The pentane emissions collection system will include two (2) permanent total enclosures that meet the definition in 40 CFR 51, Appendix M, Method 204, each vented to the RTO, to capture VOC (as pentane) emitted from the EPS block molding operation at:

(1) The bead aging bags, and

(2) The block conditioning room.

(c) Pursuant to 326 IAC 8-1-2(a)(2), the RTO is not required to be operated only when polystyrene bead is not being actively molded in the Expandable Polystyrene (EPS) block molding operation during the months of November, December, January, February, and March.

Summary of the Best Available Control Technology (BACT) Process

BACT is a mass emission limitation based on the maximum degree of pollution reduction of emissions, which is achievable on a case-by-case basis. BACT analysis takes into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, work practices, and operational limitations.

Federal guidance on BACT requires an evaluation that follows a “top down” process. In this approach, the applicant identifies the best-controlled similar source on the basis of controls required by regulation or controls achieved in practice. The highest level of control is then evaluated for technical and economic feasibility.

The five (5) basic steps of a top-down BACT analysis are listed below:

Step 1: Identify Potential Control Technologies

The first step is to identify potentially “available” control options for each emission unit and for each pollutant under review. Available options should consist of a list of those technologies with a potentially practical application to the emissions unit in question. The list should include lowest achievable emission rate (LAER) technologies and controls applied to similar source categories.

Step 2: Eliminate Technically Infeasible Options

The second step is to eliminate technically infeasible options from further consideration. To be considered feasible, a technology must be both available and applicable. It is important in this step that any presentation of a technical argument for eliminating a technology from further consideration be documented based on physical, chemical, engineering, and source-specific factors related to safe and successful use of the controls. Innovative control means a control that has not been demonstrated in a commercial application on similar units. Only available and proven control technologies are evaluated. A control technology is considered available when there are sufficient data indicating that the technology results in confirmed reductions in emissions of regulated pollutants.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

The third step is to rank the technologies not eliminated in Step 2 in order of descending control effectiveness for each pollutant of concern. The ranked alternatives are reviewed in terms of environmental, energy, and economic impacts specific to the proposed modification. If the analysis determines that the evaluated alternative is not appropriate as BACT due to any of the impacts, then the next most effective is evaluated. This process is repeated until a control alternative is chosen as BACT. If the highest ranked technology is proposed as BACT, it is not necessary to perform any further technical or economic evaluation.

Step 4: Evaluate the Most Effective Controls and Document the Results

The fourth step entails an evaluation of energy, environmental, and economic impacts for determining a final level of control. The evaluation begins with the most stringent control option and continues until a technology under consideration cannot be eliminated based on adverse energy, environmental, or economic impacts.

Step 5: Select BACT

The fifth and final step is to select as BACT the most effective of the remaining technologies under consideration for each pollutant of concern. For the technologies determined to be feasible, there may be several different limits that have been set as BACT for the same control technology. The final BACT determination would be the technology with the most stringent corresponding limit that is economically feasible. BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits.

The Office of Air Quality (OAQ) makes BACT determinations by following the five steps identified above.

A summary of the BACT review for the EPS block molding operation is provided below. This BACT determination is based on the following information:

(1) BACT analysis information submitted by JELD-WEN
(2) The EPA RACT/BACT/LAER (RBLC) Clearinghouse; and
(3) State and local air quality permits.

VOC BACT Analysis

Step 1 − Identify All Potentially Available Control Options

Based on the information reviewed for this BACT determination, the following potentially available control technologies were identified for controlling VOC emissions from the EPS block molding operation:

(a) Regenerative Thermal Oxidizer
Thermal oxidation is the process of oxidizing organic contaminants in a waste gas stream by raising the temperature above the auto ignition point in the presence of oxygen for sufficient time to completely oxidize the organic contaminants to carbon dioxide and water. The residence time, temperature, flow velocity and mixing, and the oxygen concentration in the combustion chamber affect the oxidation rate and destruction efficiency. Thermal oxidizers typically require combustion of an auxiliary fuel (e.g., natural gas) to maintain combustion chamber temperature high enough to completely oxidize the contaminant gases. Thermal oxidizers are typically designed to have a residence time of one second or less and combustion chamber temperatures between 1,200 and 2,000°F.

A regenerative thermal oxidizer uses a high-density media such as a packed ceramic bed, which was heated in a previous cycle, to preheat the incoming waste gas stream, resulting in improved oxidizer efficiency and significant fuel cost savings. Process gases pass through the RTO inlet isolation damper before entering the inlet of the RTO. Upon entering the RTO, the gases pass up through a heat recovery section (pre-heating mode), enter the combustion chamber where the VOCs are destroyed and then pass through another heat recovery section (heat recovery mode), and exit the system via the exhaust duct. A regenerative thermal oxidizer can be configured to have a two pass or three pass system, where the heat regeneration beds are passed by the gases either 2 or 3 times. For this application the theoretical thermal efficiency is increased from 90% for a two-pass system to 95% for a three pass system. However, the three pass system initial cost is higher and the required fan energy is also higher.

(b) Recuperative Thermal Oxidizer
Thermal recuperative oxidizers have a primary and/or secondary heat exchanger within the system. The difference between a recuperative oxidizer and a regenerative oxidizer is simply where the reclaimed heat is used. Essentially, the regenerative oxidizer puts the heat back into the process of destroying the VOCs, whereas a recuperative oxidizer routes the heat to another process instead (like cogeneration).

(c) Boiler Oxidation Steam System (BOSS)
A BOSS uses VOC-laden air streams, or natural gas supplemented with a VOC-laden air stream, as a fuel source for combustion to produce steam. Combustion must be regulated to allow for flexibility in combustion conditions to accommodate variability in moisture and VOC content of the fuel streams.

(d) Catalytic Incinerator
In a catalytic incinerator, a catalyst is used to lower the activation energy for oxidation. When a preheated gas stream is passed through a catalytic oxidizer, the catalyst bed initiates and promotes the oxidation of VOCs without being permanently altered itself. In catalytic incineration, combustion occurs at significantly lower temperatures than that of direct flame units and can achieve a destruction efficiency of 95%. However, steps must be taken to ensure complete combustion. Common types of catalysts used include platinum, platinum alloys, copper chromate, copper oxide, chromium, manganese, and nickel. These catalysts are typically deposited in thin layers on an inert substrate, usually a honeycomb shaped ceramic. Catalytic incineration are not suited to systems with high exhaust volumes, variable types and concentrations of VOC, and where catalyst poisons or fouling contaminants are present.

(e) Carbon Adsorption

Carbon adsorption is a process, by which VOC is retained on a granular carbon surface, which is highly porous and has a very large surface-to-volume ratio. Adsorption is rapid and removes most of the VOC in the stream. Eventually, the adsorbent becomes saturated with the vapors and the system's efficiency drops. The adsorbent must be regenerated or replaced soon after efficiency begins to decline. In regenerative systems, the adsorbent is reactivated with steam or hot air and the adsorbate (solvent) is recovered for reuse or disposal. Non-regenerative systems require the removal of the adsorbent and replacement with fresh or previously regenerated carbon.

(f) Bio-filtration
A Bio-filtration system is a land intensive setup in which contaminated air is fed under an active bed of soil or other substrate containing living microorganisms. As the air rises through the soil, the microorganisms consume and convert the organic materials in the air stream to carbon dioxide and water.

Step 2 − Eliminate Technically Infeasible Control Options

(a) Regenerative Thermal Oxidizer
Regenerative thermal oxidation without preheat or heat recovery is not recommended for control of streams characterized by high flow rate and low VOC concentration, such as the uncaptured emissions that would be present at JELD-WEN without a permanent total enclosure. The addition of a permanent total enclosure to collect and concentrate the VOC emissions results in greater capital costs, but higher overall efficiency of the RTO. Therefore, this technology is technically feasible.

(b) Recuperative Thermal Oxidizer
Recuperative thermal oxidation is technically feasible; however, capital cost for this technology are expected to be 30% greater than regenerative thermal oxidation for the equivalent VOC destruction efficiency. Therefore, no further evaluations will be made.

(c) BOSS
The BOSS is only capable of operating when there is a steam demand at the facility. This control technology was previously installed at the facility. It was deemed insufficient as a stand-alone control unit and ineffective when paired with an RTO due to extreme pressure fluctuations and steam demand fluctuations for batch processes (bead aging and block conditioning processes). Therefore, this is considered technically infeasible and no further evaluations will be made.

(d) Catalytic Incinerator
Catalytic oxidizers are not recommended for control of streams containing unsaturated monomers, as catalyst surface fouling occurs more rapidly, generating increased maintenance costs and pressure drops. Fouling due to monomer surface accumulation has been estimated to shorten catalyst life cycle by about 50%. Thermal reduction of polystyrene creates unsaturated styrene monomer; therefore, catalytic oxidation is technically infeasible. No further evaluations will be made.

(e) Carbon Adsorption
Carbon adsorption is primarily applied to situations where, like vapor condensation, there is some value to the recovery of the solvents. The technology offers the ability to recover and reuse the vapors removed from the exhaust stream. When the recovered vapors are a waste material that must be paid to be disposed, the commercial advantages of these technologies are substantially decreased.
Carbon adsorption is not applicable to low molecular weight hydrocarbons. Pentane is very volatile at normal room temperatures. This complicates the regeneration of the carbon and the removal and concentration of the captured vapors from the adsorption system. Also, in particular, activated carbon adsorption beds are negatively affected by the presence of moisture in controlled streams as water competes with the contaminant for active sites. Where stream humidity is greater than 50%, effectiveness can be reduced by about 33%. Because the exhaust

stream would contain process steam from pre-puff expansion and block formation and would be of high volume and low VOC concentration, adsorption is technically infeasible. No further evaluations will be made

(f) Bio-filtration
Bio-filtration is a developmental technology that has very limited demonstration in industrial air quality control. The effectiveness of bio-filtration is dependent upon and sensitive to many operational variables including stream VOC concentration and speciation, humidity, and ambient temperature. Furthermore, large flow rate streams require high volumes of bedding. Due to these sensitive parameters and potential for variation in control efficiency, bio-filtration is technically infeasible. No further evaluations will be made

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

IDEM, OAQ has ranked the technically feasible control technologies and combinations of control technologies as follows:

Rank	Control Technology	Capture Efficiency	Control Efficiency (%)
1	RTO with Permanent Total Enclosure	100%	98%

Step 4 – Evaluate the Most Effective Controls and Document Results

A review of EPA's RACT/BACT/LAER Clearinghouse (RBLC) and Indiana Air Permits identified the following previous BACT determinations for sources that operate under the SIC CODE 3086 (Plastic Foam Products) in the RBLC. The table below is arranged based on how stringent the BACT determination is. Therefore, the table begins with the most stringent BACT determination, which requires the use of an add-on control device and ends with the least stringent BACT determination.

(a) The following table shows the existing and proposed BACT for the EPS block molding operation:

Expandable polystyrene block molding operation	Existing BACT	Proposed BACT
Add-On Controls	1 RTO (Overall control efficiency of 78%)	1 RTO (Destruction efficiency of 98%)
Collection System	2 Permanent total enclosures (100 % capture): (1) Bead aging room (2) Block conditioning room	2 Permanent total enclosures (100 % capture): (1) Bead aging room (2) Block conditioning room RTO overall efficiency = 98% VOC = 1.43 lb/hr after control from the bead aging room and block conditioning room

	*	2 Hoods (60% capture efficiency): (1) Pre-expander system (2) Block molding press RTO overall efficiency = 58.8% VOC = 0.89 lb/hr after control from the pre-expander system and block molding press
Limited VOC Emissions (tons/year)	-	34
Maximum average pentane content	**	7%
RTO Operation	Pursuant to 326 IAC 8-1-2(a)(2), the RTO is not required to be operated only when polystyrene bead is not being actively molded in the Expandable Polystyrene (EPS) block molding operation during the months of November, December, January, February, and March. ***	Pursuant to 326 IAC 8-1-2(a)(2), the RTO is not required to be operated only when polystyrene bead is not being actively molded in the Expandable Polystyrene (EPS) block molding operation during the months of November, December, January, February, and March.

* The pre-expander system and the block molding press are currently controlled by two (2) hoods which capture 60% of the emissions from these emission units and route them to the RTO. This is the configuration when the initial BACT was established, however it was not clearly specified as such in the permit. This existing configuration is being clarified and added as a BACT requirement.

** The existing BACT does not specify that the maximum average pentane content of 7%. This has been the pentane content since the determination of the initial BACT. This is added as a BACT requirement.

*** This was added in Significant Permit Revision (SPR) 113-26693-00047, issued on January 8, 2009.

Existing BACT Determinations		
Source	**Facility**	**BACT Determination**
JELD-WEN Proposed Limits *113-38987-00047 (State BACT) Pending IN*	*Expandable polystyrene block molding operation* *SIC 3086*	*RTO: 98% destruction efficiency* *100 % capture permanent total enclosures for the bead aging room and block conditioning room (RTO overall efficiency 98%); 60% capture efficiency for the pre-expander system and the block molding press (RTO overall efficiency 58.8%)* *VOC emissions limit: 34 tons/year,* *VOC = 1.43 lb/hr after control from the bead aging room and block conditioning room,* *VOC = 0.89 lb/hr after control from the pre-expander system and block molding press* *Pentane content = 7%* RTO is not required to be operated only when polystyrene bead is not being actively molded in the EPS block molding operation

Existing BACT Determinations		
Source	**Facility**	**BACT Determination**
		during the months of November, December, January, February, and March.
Carpenter Company 039-37587-00086 (State BACT) 05/25/2017 IN (Superseded SSM 039-35547-00086, issued on 12/28/2015)	Expanded polystyrene (EPS) foam manufacturing line SIC 3086	100% capture permanent total enclosure for pre-expander, drying bed, pre-puff aging silos, and the controlled portion of the block molding process RTO: 98% Overall control efficiency Pentane content: 7.0% Limited input of beads: 11,000,000 lbs/yr 1.29 lbs VOC/ton from the RTO (pre-expander, drying bed, pre-puff aging silos, and the controlled portion of the block molding process) 6.72 lbs VOC/ton from the uncontrolled portion of the block molding machine 33.60 lbs VOC/ton from the storage and fabrication area. (Equivalent to 114.44 tons VOC/ yr)
Both Carpenter and JELD-WEN manufacture polystyrene foam. The most stringent BACT identified is the use of RTO with 100% capture and 98% destruction. This is the BACT for Carpenter. JELD-WEN is proposing to use the most stringent BACT (RTO with 100% capture) for certain portion of the EPS block molding operation. Carpenter's BACT is RTO for 100% capture of emissions from pre-expander, drying bed, pre-puff aging silos. Carpenter also only captures about 60% of the steam when pressure is released from the block molding process which is similar to JELD-WEN. Carpenter does not control the final product storage area. Carpenter does not capture the mold filling or the steaming operation of the molding operation. This BACT is based on the initial design of the EPS line. The difference in BACT between Carpenter and JELD-WEN is that Carpenter captures 100 % of the emissions from the pre-expander, while JELD-WEN is proposing to maintain the existing capture system (2 hoods) for the pre-expander. A cost analysis was conducted by JELD-WEN to show that such retrofit is not cost effective (see below for the cost analysis).		
Genpak, LLC 143-37545-00016 (State BACT) 05/08/2017 IN	Foam Scrap Repelletizer SIC 3086	100% capture permanent total enclosure for repelletizer only RTO: 98% destruction efficiency RTO: 98% overall control efficiency for repelletizer only VOC emissions limit: 0.64 lbs VOC/ hr (2.8 tons/yr)
Fagerdala Packaging Inc. 063-35542-00071 (State BACT) 06/08/2015 IN	Polyethylene Sheet Foam Extruder SIC 3086	100% capture permanent total enclosure for the sheet foam extruder and temporary storage area only RTO: 98% destruction efficiency RTO: 98% overall control efficiency Blowing agent input limited to 366.61 tons/yr (equivalent to 1.67 lb VOC/hr or 7.33 tons VOC/yr);

Existing BACT Determinations		
Source	**Facility**	**BACT Determination**
Genpak, LLC 143-35401-00016 (State BACT) 07/06/2015 IN	Food Trays Production Line (Butane Blowing Agent) SIC 3086	RTO for repelletizer RTO: 100% capture efficiency RTO: 98% destruction efficiency RTO: 98% overall control efficiency Blowing agent (butane) usage limited to 677.44 tons/yr; Butane release rate for each processing line (extrusion, roll storage, and thermoform) limited to 5.10 lb of uncontrolled VOC/hr, combined; Butane release rate for each fluff silo limited to 25.62 lb of uncontrolled VOC/hr, combined; Butane release rate for the repelletizer limited to 0.64 lb of VOC/hr after controls;
The most stringent BACT identified is the use of RTO with 100% capture and 98% destruction. This was used in Genpak, LLC, Fagerdala Packaging, Inc., and Carpenter (see above). Both Genpak, LLC and Fagerdala Packaging, Inc., also capture 100% emissions from certain unit or a portion of the process such as the repelletizer or extruder, but not the entire line. JELD-WEN is proposing to use the most stringent BACT (RTO with 100% capture) for certain portion of the EPS block molding operation.		
Dart Container Corporation Of Florida 0570320-008-AC / PSD-FL-439 (PSD BACT) Draft 12/20/2016 FL	Polystyrene Container Manufacturing Facility SIC 3086	Boilers for the pre-expander systems Boilers: 90.0% capture efficiency Boilers: 95.0% destruction efficiency Boiler: 85.5 % overall control efficiency
Genpak, LLC 143-25032-00016 (State BACT) 12/13/2007 IN	Food Trays Production Line (Isopentane Blowing Agent) SIC 3086	RTO for repelletizer RTO: 85% capture efficiency RTO: 95% destruction efficiency RTO: 80.75% overall control efficiency Blowing agent (isopentane) usage limited to 906.66 tons/yr; No add-on controls for the fluff silos; (Equivalent to 216.19 tons VOC/yr)
JELD-WEN *Current Limits* 113-22426-00047 (State BACT) 04/21/2006 IN	Expandable polystyrene block molding operation SIC 3086	Permanent total enclosures in the Bead aging room and Block conditioning room only; RTO: 100% capture efficiency RTO: 78% destruction efficiency RTO: 78% Overall control efficiency The most recent compliance test for this RTO was conducted on April 28, 2015 and the RTO was tested at 98.81% overall control efficiency.

Existing BACT Determinations		
Source	**Facility**	**BACT Determination**
Dart Container Corporation MI-0384 LAER 03/08/2007 MI	EUCUP: Production of Foam Containers SIC 3086	Three (3) Steam Boilers from pre-expansion system Boiler: 30% Capture Efficiency Boiler: 95% Destruction Efficiency Boiler: 28.5 Overall control efficiency VOC Limit : 75.33 pounds of VOC per hour VOC Limit : 219.95 tons of VOC per year

The BACT for Dart Container and the 2007 BACT for Genpak have been eliminated from consideration because they are less stringent than the BACT proposed by JELD-WEN.

In addition, JELD-WEN's proposed BACT is more stringent than the current BACT that the EPS block molding operation is operating under, which was established in 2006.

Sources that have performed BACT determination but have no control have not been listed in the above table. The following is the list of these sources: New NGC, Inc., D/B/A National Gypsum Company (165-35908-00081, Indiana), EFP, LLC (039-29482-00099, Indiana), Fagerdala – Paclite Incorporated (MI-0273, Michigan)

(b) Cost analysis:

(1) Bead aging room and block conditioning room
Since the emissions from the bead aging room and the block conditioning room are already captured by a permanent total enclosure, no additional or updated cost analysis has been performed.

(2) Pre-expander system and block molding press
The emissions from the pre-expander system and block molding press are currently captured by two (2) hoods. As part of this BACT analysis, JELD-WEN was required to conduct a cost analysis for retro-fitting this portion of the line to have a permanent total enclosure to capture emissions from the pre-expander system and the block molding press.

The detailed cost analysis for the construction of a permanent total enclosure to capture emissions from the pre-expander system and the block molding press is presented in Appendix C of this Technical Support Document. The cost analysis involves expenditure JELD-WEN will have to incur to retrofit a permanent total enclosure over the pre-expander system and block molding press. The cost effectiveness of this BACT option is $12,146 per ton of VOC (as pentane) removed.

Based on the information presented above, it would be economically infeasible to construct a permanent total enclosure to capture emissions from the pre-expander system and the block molding press.

Step 5: Select BACT

Pursuant to 326 IAC 8-1-6 and based on a review of the RBLC database and the evaluation of potential control technologies above, IDEM, OAQ has determined that the following requirements are determined to represent BACT for the EPS block molding operation, identified as P006:

(a) The pentane content in the polystyrene beads used in the expandable polystyrene block molding operation shall not exceed 7.0%

(b) The total potential to emit VOC (as pentane) after control from the expandable polystyrene block molding operation shall not exceed 34 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

(c) The total VOC emissions after control from the bead aging room and the block conditioning room shall not exceed 1.43 pounds per hour.

(d) The total VOC emissions after control from the pre-expander system and the block molding press shall not exceed 0.89 pounds per hour.

(e) The VOC (as pentane) emissions from the expandable polystyrene block molding operation shall be captured by the collection system and controlled by an RTO. The RTO shall achieve a minimum destruction efficiency of 98%.

(f) The collection system of the expandable polystyrene block molding operation shall consist of the following:

(i) Two (2) permanent total enclosures, each for the following rooms with emissions vented to the RTO:

(1) The bead aging room, and

(2) The block conditioning room

The permanent total enclosures shall meet the definition in 40 CFR 51, Appendix M, and Method 204.

(ii) Two (2) hoods, each for the following with emissions vented to the RTO:

(1) The pre-expander system, and

(2) The block molding press

This portion of the capture system shall achieve 60% capture efficiency or higher.

(g) As allowed under 326 8-1-2 (a)(2), the RTO is not required to be operated only when polystyrene bead is not being actively molded in the expandable polystyrene block molding operation during the months of November, December, January, February and March.

TSD Appendix C: Cost Analysis

Company Name: JELD-WEN, Inc.
Company Address: 200 Gerber Street, Ligonier, IN 46767
SPR No.: 113-38987-00047
FESOP No.: F113-38987-00047
Reviewer: Rithika Reddy

Permanent Total Enclosure Collection System Cost[1]

PTE #1 - Block Molder and Expander

					Details
Direct Installation Costs	Modular panel walls	$15.32/ft²	$	85,809.92	95' x 45' x 20' (high) - 5,600 ft²
	Retrofits/Modifications To Existing Building Wall and Ceiling[2]	$4.85/ft²	$	34,313.75	95' x 45' x 20' wall & 4275 ft² ceiling area
	Doors - Personnel (1), Bump (2), Rollup (2)	Misc Costs	$	38,567.05	8' x8' bump and highspeed rollup doors
	Louvers	$175.84/each	$	527.52	3 louvers - 2 ft² each
	%LFL monitor using flame ionization detectors	$17,026.65/each	$	17,026.65	
	Safety Equipment	--	$	10,066.84	Ceiling mount smoke detector (4), alarm siren (2), flame detector (2)
	Ductwork	Misc Costs	$	203,312.83	700 feet; 2 ft diameter, 2(dampe 2,199 ft² (Air ducting $91/ft)
	Makeup Fans	$5,235.44/each	$	10,470.89	2 fans at 30" diameter
	Relocation of Existing Utilities, Structures and Equipment to Accommodate PTE and Ductwork		$	175,000.00	Includes fire systems, piping, utilities, equipment moves, etc.
	Differential Pressure Monitors	$830.53		$1,661.06	dP monitor (2), surge damper (2), alarm (2)
	Installation	Misc Costs	$	202,446.33	Entire PTE system with instrumentation
		Total	**$**	**779,202.84**	
	Engineering		$	15,700.00	
	Additional Engineer Work (Retrofit)		$	15,700.00	
	Testing		$	31,400.00	Capture and Destruction Efficiency Testing
	Electrical	0.04A	$	31,168.11	
	Sales Taxes	0.07A[3]	$	54,544.20	
	Freight	0.05A	$	38,960.14	
		Total	**$**	**966,675**	
	Equipment Life	10 years			
	Interest Rate	7%			
	Capital Recovery Factor	Calculated		0.1424	
		Annualized Capital Cost	**$**	**137,633**	
Annual Operating Cost	Utilities - Electric		$	5,256.00	3 kW fans (2); Hours per Year : 8760; Cost ($/ KW-hr): 0.10
	Maintenance and Repairs				
	Labor	1 man-hr/shift @ $25/hr for 52 days	$	2,600.00	
	Materials	100% of maintenance labor	$	2,600.00	
	Replacement Parts	3% of equipment	$	29,000.26	
	Property Taxes	2% of Fixed Capital Investment	$	19,333.51	
	Insurance	1% of Fixed Capital Investment	$	9,666.75	
	Plant Overhead	60% of Maintenance	$	3,120.00	
	Administrative Costs	2% of Fixed Capital Investment	$	19,333.51	
		Total Annual Operating Cost	**$**	**90,910**	

1. Cost calculation from EPA Control Cost Manual (Section 2, Chapter 3 - Permanent Total Enclosures)
   (cost adjusted from 1997 dollars to 2018 dollars)
2. Based on similar PTE cost estimates and engineering judgement.
3. Based on Indiana 7% state-wide sales tax and no local sales tax.
4. Ratio of 1997 to 2018 dollars:
   1.57

TSD Appendix C: Cost Analysis

Company Name: JELD-WEN, Inc.
Company Address: 200 Gerber Street, Ligonier, IN 46767
SPR No.: 113-38987-00047
FESOP No.: F113-38987-00047
Reviewer: Rithika Reddy

Cost Effectiveness Calculations - Potential Emissions

Control Option	Direct Installation Cost[1]	Annualized Capital Cost	Annual Operating Cost	Total Annual Cost	Potential VOC Captured[2] (tons)	Potential VOC Controlled (tons)	Cost Effectiveness ($/ton)
Existing RTO + PTE	$ 966,675	$ 137,633	$ 90,910	$ 228,543	19.2	18.8	$ 12,146

Notes:

1.PTE cost determined from EPA Control Cost Manual (2002).

2. Currently the hoods controlling the pre-expander system and the block molding process capture 60% of the emissions from these emission units. The potential VOC captured listed above is the other 40% that would be captured when a permanent total enclosure is constructed to capture 100 % emissions from the pre-expander sytem and the block molding press. The potential VOC captured listed is after taking into consideration the 326 IAC 8-1-6 limit of 34 tons per year for the EPS block molding operation.

Indiana Department of Environmental Management Office of Air Quality

Appendix D
Best Available Control Technology (BACT) Determination in 2009
for RTO non-operation during periods when EPS beads are not actively molded

Source Description and Location

Source Name:	**JELD-WEN**
Source Location:	**200 Gerber Street, Ligonier, Indiana 46767**
County:	**Noble**
SIC Code:	**2431 (Millwork); 3086 (Plastic Foam Products) 3442 (Metal Doors, Sash, Frames, Molding and Trim Manufacturing)**
Operation Permit No.:	**F113-23388-00047**
Operation Permit Issuance Date:	**September 14, 2007**
Permit Renewal No.:	**F113-37982-00047**
Permit Reviewer:	**Rithika Reddy**

Background Information

On June 24, 2008, the Office of Air Quality received an application from JELD-WEN requesting significant revision of its permit. The source requested the option not operate the existing regenerative thermal oxidizer (RTO) controlling the VOC emissions from the expandable polystyrene (EPS) block molding operation during periods of downtime when polystyrene bead was not actively molded during the months of November, December, January, February, and March. The request was made due to the significant decline of emission rates and low concentration of VOC emissions during periods of downtime (no polystyrene is being expanded) and the cost of operating the RTO was disproportionate to the cost of control during normal operations.

A Significant Permit Revision (113-26693-00047) was issued on January 09, 2009, which allows JELD-WEN the option not to operate the existing RTO when polystyrene bead was not actively molded during the months of November, December, January, February, and March.

BACT Analysis

Below is the actual BACT analysis that was submitted by JELD-WEN as part of application submitted on June 24, 2008:

No polystyrene being expanded and emissions significantly decreases:

> JELD-WEN operates an exterior door manufacturing facility in Ligonier, Indiana. As part of the manufacturing process a polystyrene foam core is created to fill the doors and provide insulation. The foam cores are produced in a batch process in the expandable polystyrene (EPS) system. This system has periods of "shutdown" for which no polystyrene is being expanded and the rate of emissions decreases noticeably. The continued emissions are from off-gassing from already expanded product. The emissions during EPS shutdown period require significantly more resources to control per ton of VOC compared with times the system is actively expandable polystyrene.
>
> JELD-WEN is providing a more in depth cost analysis of the EPS system with the intention of demonstrating the appropriateness of idling the RTO during the EPS system shutdown periods.

Case by Case BACT analysis:

A BACT analysis was conducted for control emissions from the EPS system in June 2001. The analysis only focused on the annual emissions and costs of control following the normal BACT protocol. The BACT re-evaluation and calculations in this submittal consider current annual control measures and costs during active expansion and EPS expansion shutdown times. The purpose of this re-evaluation is to highlight the different emission profiles and costs of VOC control during the periodic down times. As the EPS system is operated in a semi-continuous manner, this approach to a BACT analysis is useful to show how the normal BACT analysis does not truly fit this EPS process at Ligonier. The incremental analysis uses many of the same assumptions as the original BACT analysis. Changes were made to reflect the actual costs of the RTO installation and updated energy costs.

The emission estimation is based on a source test for a similar EPS operation at a sister facility in Chiloquin, Oregon. Both facilities are equipped with Megtec RTO VOC emission control technology. The test data was used to extrapolate the emissions over longer time periods using an exponential regression line. The exponential fit was chosen other regression analysis based on the observed behavior of the data over time. The slope of the exponential fit approaches zero after some time, approximating the expected behavior of pentane emissions from the inactive EPS process. Other regression lines behaved erratically when extrapolated providing negative, infinite, or otherwise improbable emission values. Using this source test data, an estimate of 12 tons of emissions as a result of the weekend RTO shutdown has been made. The polystyrene bead aging bags used at the facility in Ligonier are 50% larger than the bags in Chiloquin while the block aging room is slightly smaller. Considering this, JELD-WEN increased our estimated emissions by 50% to be conservative.

Operating Schedules and Emissions Profile:

A graph of the emission profile after the last polystyrene bead expansion and block molding is shown in Figure A-1. The equation shown represents the best fit to the data and can be used to estimate short term emissions. The emissions estimates for EPS expansion shutdown times were calculated assuming the process would be shut down at 4:00 pm at the beginning of a shift and restarted at 8:00 am at the beginning of a shift on the day when operation of the EPS resumes.

JELD-WEN's normal operating schedule includes forty-nine 2-day, three 3-day, and two 4-day weekends during which no active expansion occurs. The expansion process is shutdown for approximately 3,624 hours per year. The shutdown time emissions and natural gas reductions are summarized in Table A-1.

Figure A-1
Pentane Emitted After Last Expansion (lbs)

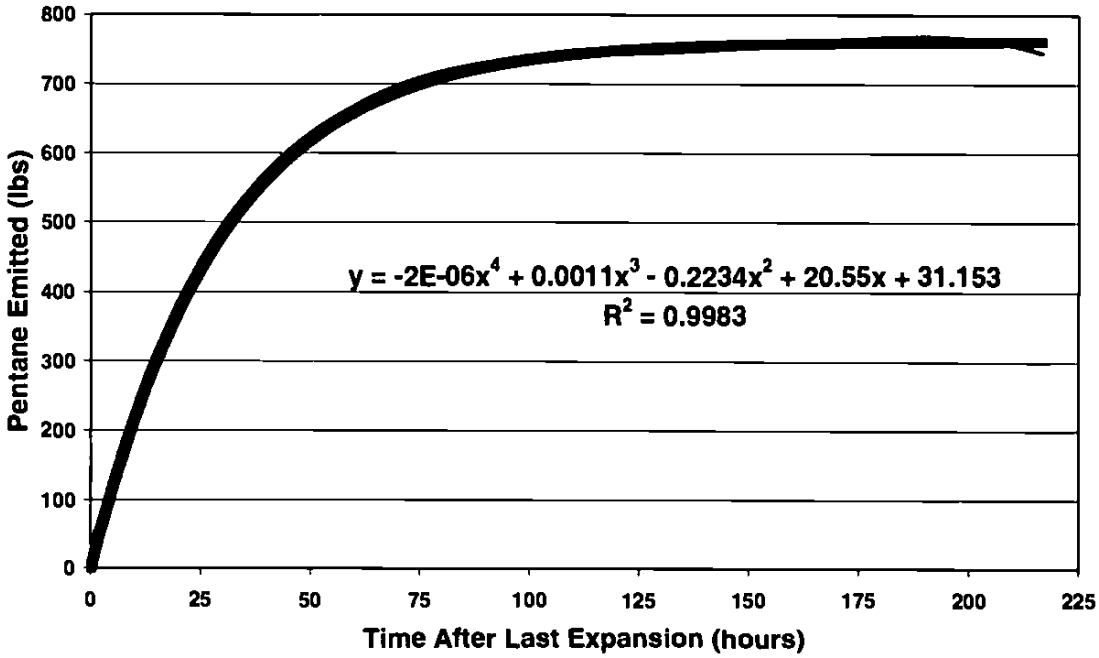

Table A-1 Estimated Emissions and Savings During EPS Expansion Shutdown Times Typical of JELD-WEN's Operating Schedule.

Time Elapsed (hours)	Days Elapsed	Pentane Emissions [1] (lbm - Pentane / time elapsed)	Estimated EPS Shutdown Times per Year [2]	Annual Emissions (lbm - pentane)	Natural Gas Reductions (Mcf)
24	1 day	421.83	0.0	0.00	0.00
48	2 days	610.16	0.0	0.00	0.00
64	2 - Day Weekend	673.33	49.0	32992.99	6191.51
72	3 days	694.24	0.0	0.00	0.00
88	3 - Day Weekend	722.44	3.0	2167.33	521.22
96	4 days	731.78	0.0	0.00	0.00
112	4 - Day weekend	744.37	2.0	1488.74	442.25
120	5 days	748.54	0.0	0.00	0.00
144	6 days	756.02	0.0	0.00	0.00
168	7 days	759.36	0.0	0.00	0.00
192	8 days	760.86	0.0	0.00	0.00
216	9 days	761.52	0.0	0.00	0.00
		Total shut down time (hours) =	3624.0		

References:
(1) Calculated by 2006 from source test data for the RTO at JELD-WEN's Chiloquin facility. Source Test was completed by Horizon Engineering.

pentane (lbs) = $0.000002t^4 + 0.0011t^3 - 0.2234t^2 + 22.55t + 31.153$

t= time after last expansion

(2) There will be an estimated 49 (2-day) weekend shutdowns, 3 (3-day) weekend shutdowns and 2 (4-day) weekend shutdowns. 115 total days shutdown.

The calculations demonstrated an increase in emitted pentane of approximately 18 tons per year. In actuality, this number may be less depending on the time the RTO is idled after the expansion process stops. A flexible approach to monitoring the down time and resulting uncontrolled emissions is necessary due to the variable nature of the operations at such facilities. For example, if the RTO was shut down 8 hours after the last expansion for every weekend of the year, the annual emissions would be only 14 tons. The actual emissions would be calculated by subtracting time the RTO remained on after the time of the last expansion.

The estimates can be made by using the following equation.

Pentane (lbs) = $-0.000002t^4 + 0.0011\ t^3 - 0.2234t^2 + 22.55t + 31.153$
t = time since last expansion

In the cases where the RTO idling is delayed after the last expansion, the pentane emitted until the RTO is turned on can be subtracted from the total pentane off-gassed between expansion activities. For this BACT analysis and re-evaluation, to be conservative it is assumed the RTO will be idled immediately after the last expansion.

The following calculations depict two EPS expansion shutdown time scenarios:

Scenario 1:

RTO is idled at 5:30 PM on Friday immediately after the last block is molded. The expansion process is restarted at 8:30 am on Monday with the RTO fully operational. This is a 63.0 hour

EPS expansion shutdown time with all the potential pentane emissions being exhausted to the atmosphere.

Pentane (lbs) = $- 0.000002*63^4 + 0.0011*63^3 - 0.2234*63^2 + 22.55*63 + 31.153$
= 682.7 lbs pentane

Scenario 2:

The last block is molded at 3:30 on Friday. The RTO is idled at 11:30 PM on Friday. The expansion process is restarted at 8:30 am on Monday with the RTO fully operational. This is a 65.0 hour EPS expansion process shutdown with 57.0 hour RTO idling. Only the last 57 hours of emissions is vented to the atmosphere.

Pentane (lbs) = $Pentane_{EXP} - Pentane_{RTO}$

$Pentane_{EXP}$ = lbs pentane emitted after last expansion

$Pentane_{RTO}$ = lbs pentane emitted before RTO idled

$Pentane_{EXP} = - 0.000002*65^4 + 0.0011*65^3 - 0.2234*65^2 + 22.55*65 + 31.153$
= 689.4 lbs pentane

$Pentane_{RTO} = - 0.000002*8^4 + 0.0011*8^3 - 0.2234*8^2 + 22.55*8 + 31.153$
= 181.8 lbs pentane

Pentane (lbs) = 689.4 - 181.8
= 507.6 lbs pentane

The estimation of weekday emissions is based on subtracting the estimated EPS expansion shutdown time emissions from the annual potential emissions of 250 tons. The potential is based on the maximum operational capacity of the equipment and the maximum pentane lost from the fully processed bead. This PTE value is considerably higher in comparison to actual operating schedules and actual pentane content in the EPS beads. The EPS line only operates one 8 hour shift 5 days a week. The highest annual bead usage was a quarter of the permitted levels.

Cost Differential Summary

The BACT analysis was evaluated for all applicable annualized costs and for annual energy costs alone. The energy costs include the natural gas and electrical costs. The costs for the controls during facility workdays and EPS expansion shutdown times were also evaluated. The costs during EPS expansion shutdown times were estimated by multiplying the total annualized cost by the fraction of the cost incurred during the idle times. This is demonstrated in the following calculations:

$$\textit{Cost Fraction} = \frac{\textit{Hours in Shutdown}}{\textit{Total Hours of Operation}} \times \textit{Total Annualized Cost}$$

$$\textit{Cost Fraction} = \frac{\textit{3624 hours}}{\textit{8760 hours}} \times \textit{\$363,973.00} = \textit{\$150,575.00}$$

The BACT costs are shown in Table A-2.

The intent of this incremental BACT analysis is to demonstrate the high cost of control during periods where the expansion processes are not running.

Table A-2 Incremental BACT Costs Summary

	Annual	Expansion Operation	Expansion Shutdown
Total Annual ($/ton)	$1,738	$696	$4,703
Energy Usage Costs ($/ton)	$701	$482	$4,307
Pentane Controlled (tons)	250	231.7	18.3
Greenhouse Gasses (Tons CO_2e)			465

The overall BACT cost and related Energy Usage Cost is fairly reasonable at $1,738 and $702 per ton respectively. However, the semi-continuous nature of the process must be considered. The differential pentane removal cost between normal operation and times of facility weekend or other period when the expansion process is shutdown is on the higher end of BACT ($4,703/ton).

The cost for energy alone is higher by a factor of 10. This is a high cost for a small amount of potential uncontrolled pentane emissions (18 tons/yr) without considering the associated environmental impacts of the combustion of natural gas and additional electricity demand.

Minimize Environmental Impact and Energy Used:

The proposed change aims to minimize the environmental impact and cost of the EPS line. The potential increase of 18 tons of pentane is 7% of the total potential emissions from the EPS process line and is expected to be lower based on actual operating conditions. A major benefit of this change is improved resource utilization. The idling of the RTO during these times of EPS expansion shutdown result in the environment seeing a reduction of almost 500 tons of CO_2e from the use of a fossil fuel and electricity.

The RTO idling will reduce the energy requirements and conserves a significant amount of natural resources. The natural gas savings from this change is enough to heat approximately 100 average households. This change provides cost benefits and additional operational flexibility for JELD-WEN, without jeopardizing the air quality status of the region. Processes will continue to be monitored to ensure emissions remain within the federally enforceable synthetic minor limitations (e.g. 99 tons per year VOC (rolling 12-month basis)).

Cost Analysis:

The following are documents as provided by JELD-WEN as part of the application submitted on June 24, 2008 for cost analysis.

REGENERATIVE THERMAL OXIDATION UNIT COST DATA FOR CONTINUOUS OPERATION

CONTROL EQUIPMENT ANALYSIS

JELD-WEN Door of Indiana, Ligonier, Indiana

Source	Control Device	Pollutant
EPS Process	**RTO**	VOC

TOTAL CAPITAL COST FOR 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT

DIRECT COSTS (capital investment)	
(1) Purchased Equipment Costs:	
(a) Basic Equipment and Auxiliaries (A) (From Equipment Purchase Orders)	$529,500
(b) Instrumentation	Included in (1)
(c) Freight and Taxes	Included in (1)
Total Equipment Cost (B):	$529,500
(2) Direct Installation Costs:	
(a) Foundations and Supports	Included in (1)
(b) Erection and Handling	Included in (1)
(c) Electrical	Included in (1)
(d) Piping	Included in (1)
(e) Insulation for ductwork	Included in (1)
(f) Painting	Included in (1)
(g) Building and Site Preparation (permanent and total enclosure meeting EPA Method 204)	Included in (1)
Total Installation Cost (C)	Included in (1)
Total Direct Costs of Capital Investment (DCCI) = (B + C)	$529,500
INDIRECT COSTS (capital investment):	
(1) Engineering Costs (provided)	$28,000
(2) Construction and Field Expenses (0.05 B)	Included in (1)
(3) Contractor Fees	Included in (1)
(4) Startup (Based on actual start up costs for three similar projects)	Included in (1)
(5) Performance Test	$10,000
(6) Permits (Environmental, Building, Electrical)	$15,000
(7) Contingencies (provided)	Included in (1)
Total Indirect Costs of Capital Investment (ICCI)	$53,000
TOTAL CAPITAL INVESTMENT (TCI) = (DCCI + ICCI):	$582,500
ANNUALIZED COST OF CAPITAL INVESTMENT	
(1) Interest Rate	10.0%
(2) Control System Economic Life (years)	(10)
(3) Capital Recovery Factor (CRF)	(0.163)
(4) Capital Recovery Cost (CRC) = (CRF X TCI)	$94,800

REGENERATIVE THERMAL OXIDATION UNIT COST DATA FOR CONTINUOUS OPERATION

CONTROL EQUIPMENT ANALYSIS

JELD-WEN Door of Indiana, Ligonier, Indiana

Source	Control Device	Pollutant
EPS Process	RTO	VOC

TOTAL ANNUAL O&M COST FOR 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT

DIRECT COSTS (O&M):					
(1) Variable Costs					
(a) Raw Materials					
(b) Utilities					
(b1) Electricity -	Cost:	$0.0700	$/kW	(Provided by JELD-WEN)	
	Rate:	25	kWh	(Based on Megtec Proposal)	
	Usage:	365	day/yr	(365 day/yr)	$15,400
(b2) Natural Gas -	Cost:	$1.000	$/therm	(Provided by JELD-WEN)	
	Rate:	20.00	therm/hr	(Based on Megtec Proposal)	
	Usage:	365	day/yr	(365 day/yr)	$175,200
Total Direct Variable Costs (D)					$190,600
(2) Semivariable Costs					
(a) Labor	O = $13.04		M = $17.20	(Provided by JELD-WEN)	
(a1) Operating (O) = (0.5 hrs/shift X 3 shifts/day X day/24hrs X 8760 hrs/yr X $13.02/hr)					$7,139
(a2) Supervisory (0.15O)					$1,100
(a3) Maintenance (M) = (0.5 hrs/shift X 3 shifts/day X day/24hrs X 8760 hrs/yr X $17.20/hr)					$9,417
(b) Maintenance Materials (M)					$9,417
(c) Replacement Parts					
(c1) Initial cost of replacement parts (Cp) = (0.05B)					$26,500
(c2) Cost of parts replacement labor (Cpl) = (0.01B)					$5,300
(c3) Interest rate (i)					(7%)
(c4) Replacement parts Economic Life (n) (years)					(2)
(c5) Capital recovery factor of replacement parts (CRFp)					0.55
(c6) Capital Recovery Cost of replacement parts ([Cp+Cpl] X CRFp)					$17,600
Total Semivariable Costs (E)					$44,673
Total Annual Direct Cost of O&M (DCO&M) = (D + E)					$235,273
INDIRECT COSTS (O&M):					
(1) Overhead (60% of Sum of Operating, Supervisory, & Maintenance Labor)					$10,600
(2) Property Tax (0.01 TCI)					$5,800
(3) Insurance (0.01 TCI)					$5,800
(4) Administration (0.02 TCI)					$11,700
Total Annual Indirect Costs of O&M (ICO&M)					$33,900
TOTAL ANNUAL COSTS of O&M (TAO&M) = (DCO&M + ICO&M):					$269,173

COST EFFECTIVENESS OF 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT FOR CONTINUOUS OPERATION

Capital Recovery Cost (CRC)			$94,800
Total Annual Costs of O&M (TAO&M)			$269,173
Total Annualized Cost (TAC) = (CRC + TAO&M)			$363,973
Control Device Loading Rate (F)	pentane tons/yr		250.0
Control Device efficiency (G)			83.8%
Pentane Units Removed (H) = (F X G)			209.4
COST EFFECTIVENESS (TAC / H):	$/pentane ton removed	**$1,737.97**	
Energy use per ton pentane removed		**$700.80**	

REGENERATIVE THERMAL OXIDATION UNIT COST DATA DURING ACTIVE EXPANSION

CONTROL EQUIPMENT ANALYSIS

JELD-WEN Door of Indiana, Ligonier, Indiana

Source	Control Device	Pollutant
EPS Process	**RTO**	VOC

TOTAL CAPITAL COST FOR 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT

DIRECT COSTS (capital investment)	
(1) Purchased Equipment Costs:	
(a) Basic Equipment and Auxiliaries (A) (From Equipment Purchase Orders)	$529,500
(b) Instrumentation	Included in (1)
(c) Freight and Taxes	Included in (1)
Total Equipment Cost (B):	$529,500
(2) Direct Installation Costs:	
(a) Foundations and Supports	Included in (1)
(b) Erection and Handling	Included in (1)
(c) Electrical	Included in (1)
(d) Piping	Included in (1)
(e) Insulation for ductwork	Included in (1)
(f) Painting	Included in (1)
(g) Building and Site Preparation (permanent and total enclosure meeting EPA Method 204)	Included in (1)
Total Installation Cost (C)	Included in (1)
Total Direct Costs of Capital Investment (DCCI) = (B + C)	$529,500
INDIRECT COSTS (capital investment):	
(1) Engineering Costs (provided)	$28,000
(2) Construction and Field Expenses (0.05 B)	Included in (1)
(3) Contractor Fees	Included in (1)
(4) Startup (Based on actual start up costs for three similar projects)	Included in (1)
(5) Performance Test	$10,000
(6) Permits (Environmental, Building, Electrical)	$15,000
(7) Contingencies (provided)	Included in (1)
Total Indirect Costs of Capital Investment (ICCI)	$53,000
TOTAL CAPITAL INVESTMENT (TCI) = (DCCI + ICCI):	$582,500
ANNUALIZED COST OF CAPITAL INVESTMENT	
(1) Interest Rate	10.0%
(2) Control System Economic Life (years)	(10)
(3) Capital Recovery Factor (CRF)	(0.163)
(4) Capital Recovery Cost (CRC) = (CRF X TCI X (5136/8760))	$55,600

REGENERATIVE THERMAL OXIDATION UNIT COST DATA DURING ACTIVE EXPANSION

CONTROL EQUIPMENT ANALYSIS

JELD-WEN Door of Indiana, Ligonier, Indiana

Source	Control Device	Pollutant
EPS Process	RTO	VOC

TOTAL ANNUAL O&M COST FOR 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT

DIRECT COSTS (O&M):					
(1) Variable Costs					
(a) Raw Materials					
(b) Utilities					
(b1) Electricity -	Cost:	$0.0700	$/kW	(Provided by JELD-WEN)	
	Rate:	25	kWh	(Based on Megtec Proposal)	
	Usage:	214	day/yr	(365 day/yr)	$9,000
(b2) Natural Gas -	Cost:	$1.000	$/therm	(Provided by JELD-WEN)	
	Rate:	20.00	therm/hr	(Based on Megtec Proposal)	
	Usage:	214	day/yr	(365 day/yr)	$102,700
Total Direct Variable Costs (D)					$111,700
(2) Semivariable Costs					
(a) Labor	O = $13.04		M = $17.20	(Provided by JELD-WEN)	
(a1) Operating (O) = (0.5 hrs/shift X 3 shifts/day X day/24hrs X 5136 hrs/yr X $13.02/hr)					$4,186
(a2) Supervisory (0.15O)					$600
(a3) Maintenance (M) = (0.5 hrs/shift X 3 shifts/day X day/24hrs X 8760 hrs/yr X $17.20/hr)					$5,521
(b) Maintenance Materials (M)					$5,521
(c) Replacement Parts					
(c1) Initial cost of replacement parts (Cp) = (0.05B)					$26,500
(c2) Cost of parts replacement labor (Cpl) = (0.01B)					$5,300
(c3) Interest rate (i)					(7%)
(c4) Replacement parts Economic Life (n) (years)					(2)
(c5) Capital recovery factor of replacement parts (CRFp)					0.55
(c6) Capital Recovery Cost of replacement parts ([Cp+Cpl] X CRFp)					$17,600
Total Semivariable Costs (E)					$33,428
Total Annual Direct Cost of O&M (DCO&M) = (D + E)					$145,128
INDIRECT COSTS (O&M):					
(1) Overhead (60% of Sum of Operating, Supervisory, & Maintenance Labor)					$6,200
(2) Property Tax (0.01 TCI)					$5,800
(3) Insurance (0.01 TCI)					$5,800
(4) Administration (0.02 TCI)					$11,700
Total Annual Indirect Costs of O&M (ICO&M)					$29,500
TOTAL ANNUAL COSTS of O&M (TAO&M) = (DCO&M + ICO&M):					$174,628

COST EFFECTIVENESS OF 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT FOR OPERATION DURING ACTIVE EXPANSION

Capital Recovery Cost (CRC)			$55,600
Total Annual Costs of O&M (TAO&M)			$174,628
Total Annualized Cost (TAC) = (CRC + TAO&M)			$230,228
Partial Annualized Cost (TAC) = (CRC + TAO&M)			$134,983
Control Device Loading Rate (F)	pentane tons/yr		231.7
Control Device efficiency (G)			83.8%
Pentane Units Removed (H) = (F X G)			194.1
COST EFFECTIVENESS (TAC / H):	$/pentane ton removed	**$695.51**	
Energy use per ton pentane removed		**$482.13**	

REGENERATIVE THERMAL OXIDATION UNIT COST DATA DURING EXPANSION SHUTDOWN

CONTROL EQUIPMENT ANALYSIS
JELD-WEN Door of Indiana, Ligonier, Indiana

Source	Control Device	Pollutant
EPS Process	RTO	VOC

TOTAL CAPITAL COST FOR 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT DURING EXPANSION SHUTDOWN

DIRECT COSTS (capital investment)	
(1) Purchased Equipment Costs:	
(a) Basic Equipment and Auxiliaries (A) (From Equipment Purchase Orders)	$529,500
(b) Instrumentation	Included in (1)
(c) Freight and Taxes	Included in (1)
Total Equipment Cost (B):	$529,500
(2) Direct Installation Costs:	
(a) Foundations and Supports	Included in (1)
(b) Erection and Handling	Included in (1)
(c) Electrical	Included in (1)
(d) Piping	Included in (1)
(e) Insulation for ductwork	Included in (1)
(f) Painting	Included in (1)
(g) Building and Site Preparation (permanent and total enclosure meeting EPA Method 204)	Included in (1)
Total Installation Cost (C)	Included in (1)
Total Direct Costs of Capital Investment (DCCI) = (B + C)	$529,500
INDIRECT COSTS (capital investment):	
(1) Engineering Costs (provided)	$28,000
(2) Construction and Field Expenses (0.05 B)	Included in (1)
(3) Contractor Fees	Included in (1)
(4) Startup (Based on actual start up costs for three similar projects)	Included in (1)
(5) Performance Test	$10,000
(6) Permits (Environmental, Building, Electrical)	$15,000
(7) Contingencies (provided)	Included in (1)
Total Indirect Costs of Capital Investment (ICCI)	$53,000
TOTAL CAPITAL INVESTMENT (TCI) = (DCCI + ICCI):	$582,500
ANNUALIZED COST OF CAPITAL INVESTMENT	
(1) Interest Rate	10.0%
(2) Control System Economic Life (years)	(10)
(3) Capital Recovery Factor (CRF)	(0.163)
(4) Capital Recovery Cost (CRC) = (CRF X TCI X (3624/8760))	$39,200

REGENERATIVE THERMAL OXIDATION UNIT COST DATA DURING EXPANSION SHUTDOWN

CONTROL EQUIPMENT ANALYSIS

JELD-WEN Door of Indiana, Ligonier, Indiana

Source	Control Device	Pollutant
EPS Process	**RTO**	VOC

TOTAL ANNUAL O&M COST FOR 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT

DIRECT COSTS (O&M):					
(1) Variable Costs					
(a) Raw Materials					
(b) Utilities					
(b1) Electricity -	Cost:	$0.0700	$/kW	(Provided by JELD-WEN)	
	Rate:	25	kWh	(Based on Megtec Proposal)	
	Usage:	151	day/yr	(365 day/yr)	$6,400
(b2) Natural Gas -	Cost:	$1.000	$/therm	(Provided by JELD-WEN)	
	Rate:	20.00	therm/hr	(Based on Megtec Proposal)	
	Usage:	151	day/yr	(365 day/yr)	$72,500
Total Direct Variable Costs (D)					$78,900
(2) Semivariable Costs					
(a) Labor	O = $13.04		M = $17.20	(Provided by JELD-WEN)	
(a1) Operating (O) = (0.5 hrs/shift X 3 shifts/day X day/24hrs X 3624 hrs/yr X $13.02/hr)					$2,954
(a2) Supervisory (0.15O)					$400
(a3) Maintenance (M) = (0.5 hrs/shift X 3 shifts/day X day/24hrs X 8760 hrs/yr X $17.20/hr)					$3,896
(b) Maintenance Materials (M)					$3,896
(c) Replacement Parts					
(c1) Initial cost of replacement parts (Cp) = (0.05B)					$26,500
(c2) Cost of parts replacement labor (Cpl) = (0.01B)					$5,300
(c3) Interest rate (i)					(7%)
(c4) Replacement parts Economic Life (n) (years)					(2)
(c5) Capital recovery factor of replacement parts (CRFp)					0.55
(c6) Capital Recovery Cost of replacement parts ([Cp+Cpl] X CRFp)					$17,600
Total Semivariable Costs (E)					$28,745
Total Annual Direct Cost of O&M (DCO&M) = (D + E)					$107,645
INDIRECT COSTS (O&M):					
(1) Overhead (60% of Sum of Operating, Supervisory, & Maintenance Labor)					$4,300
(2) Property Tax (0.01 TCI)					$5,800
(3) Insurance (0.01 TCI)					$5,800
(4) Administration (0.02 TCI)					$11,700
Total Annual Indirect Costs of O&M (ICO&M)					$27,600
TOTAL ANNUAL COSTS of O&M (TAO&M) = (DCO&M + ICO&M):					$135,245

COST EFFECTIVENESS OF 12,000 SCFM REGENERATIVE THERMAL OXIDATION UNIT DURING EXPANSION SHUTDOWN

Capital Recovery Cost (CRC)			$39,200
Total Annual Costs of O&M (TAO&M)			$135,245
Total Annualized Cost (TAC) = (CRC + TAO&M)			$174,445
Partial Annualized Cost (TAC) = (CRC + TAO&M)			$72,168
Control Device Loading Rate (F)	pentane tons/yr		18.3
Control Device efficiency (G)			83.8%
Pentane Units Removed (H) = (F X G)			15.3
COST EFFECTIVENESS (TAC / H):	$/pentane ton removed	**$4,702.50**	
Energy use per ton pentane removed		**$4,306.77**	

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

November 28, 2018

JELD-WEN, Inc.
Mr. Steven Crawford
P. O. Box 259
Ligonier, IN 46767

Re: Public Notice
JELD-WEN, Inc.
Permit Level: FESOP - Renewal
Permit Number: 113-37982-00047

Dear: Mr. Steven Crawford:

Enclosed is a copy of your draft FESOP Renewal, Technical Support Document, emission calculations, and the Public Notice which will be printed in your local newspaper.

The Office of Air Quality (OAQ) has prepared two versions of the Public Notice Document. The abbreviated version will be published in the newspaper, and the more detailed version will be made available on the IDEM's website and provided to interested parties. Both versions are included for your reference. The OAQ has requested that the News – Sun in Kendallville, Indiana publish the abbreviated version of the public notice no later than December 4, 2018. You will not be responsible for collecting any comments, nor are you responsible for having the notice published in the newspaper.

OAQ has submitted the draft permit package to the Ligonier Public Library, 300 South Main Street in Ligonier, Indiana 46767 As a reminder, you are obligated by 326 IAC 2-1.1-6(c) to place a copy of the complete permit application at this library no later than ten (10) days after submittal of the application or additional information to our department. We highly recommend that even if you have already placed these materials at the library, that you confirm with the library that these materials are available for review and request that the library keep the materials available for review during the entire permitting process.

Please review the enclosed documents carefully. This is your opportunity to comment on the draft permit and notify the OAQ of any corrections that are needed before the final decision. Questions or comments about the enclosed documents should be directed to Rithika Reddy, Indiana Department of Environmental Management, Office of Air Quality, 100 N. Senate Avenue, Indianapolis, Indiana, 46204 or call (800) 451-6027, and ask for extension 4-9694or dial (317) 234-9694.

Sincerely,

Vicki Biddle

Vicki Biddle
Permits Branch
Office of Air Quality

Enclosures
PN Applicant Cover Letter 1/9/2017

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Governor

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Commissioner

ATTENTION: PUBLIC NOTICES, LEGAL ADVERTISING

November 28,, 2018

News - Sun
102 N. Main
Kendallville, IN 46755

Enclosed, please find one Indiana Department of Environmental Management Notice of Public Comment for JELD – WEN, Inc., in Ligonier, Indiana.

Since our agency must comply with requirements which call for a Notice of Public Comment, we request that you print this notice one time, no later than December 4, 2018.

Please send the invoice, notarized form, clippings showing the date of publication to Bo Liu, at the Indiana Department of Environmental Management, Accounting, Room N1340, 100 North Senate Avenue, Indianapolis, Indiana, 46204.

To ensure proper payment, please reference account # 100174737.

We are required by the Auditor's Office to request that you place the Federal ID Number on all claims. If you have any conflicts, questions, or problems with the publishing of this notice or if you do not receive complete public notice information for this notice, please call Vicki Biddle at 800-451-6027 and ask for extension 3-6867or dial 317-233-6867.

Sincerely,

Vicki Biddle

Vicki Biddle
Permit Branch
Office of Air Quality

Permit Level: FESOP - Renewal
Permit Number: 113-37982-00047

Enclosure

PN Newspaper Letter 8/22/2018

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

November 28, 2018

To: Ligonier Public Library

From: Jenny Acker, Branch Chief
Permits Branch
Office of Air Quality

Subject: **Important Information to Display Regarding a Public Notice for an Air Permit**

Applicant Name: JELD-WEN, Inc.
Permit Number: 113-37982-00047

Enclosed is a copy of important information to make available to the public. This proposed project is regarding a source that may have the potential to significantly impact air quality. Librarians are encouraged to educate the public to make them aware of the availability of this information. The following information is enclosed for public reference at your library:

- Notice of a 30-day Period for Public Comment
- Request to publish the Notice of 30-day Period for Public Comment
- Draft Permit and Technical Support Document

You will not be responsible for collecting any comments from the citizens. Please refer all questions and request for the copies of any pertinent information to the person named below.

Members of your community could be very concerned in how these projects might affect them and their families. **Please make this information readily available until you receive a copy of the final package.**

If you have any questions concerning this public review process, please contact Joanne Smiddie-Brush, OAQ Permits Administration Section at 1-800-451-6027, extension 3-0185. Questions pertaining to the permit itself should be directed to the contact listed on the notice.

Enclosures
PN Library 1/9/2017

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

Notice of Public Comment

November 28, 2018
JELD-WEN, Inc.
113-37982-00047

Dear Concerned Citizen(s):

You have been identified as someone who could potentially be affected by this proposed air permit. The Indiana Department of Environmental Management, in our ongoing efforts to better communicate with concerned citizens, invites your comment on the draft permit.

Enclosed is a Notice of Public Comment, which has been placed in the Legal Advertising section of your local newspaper. The application and supporting documentation for this proposed permit have been placed at the library indicated in the Notice. These documents more fully describe the project, the applicable air pollution control requirements and how the applicant will comply with these requirements.

If you would like to comment on this draft permit, please contact the person named in the enclosed Public Notice. Thank you for your interest in the Indiana's Air Permitting Program.

Please Note: *If you feel you have received this Notice in error, or would like to be removed from the Air Permits mailing list, please contact Patricia Pear with the Air Permits Administration Section at 1-800-451-6027, ext. 3-6875 or via e-mail at PPEAR@IDEM.IN.GOV. If you have recently moved and this Notice has been forwarded to you, please notify us of your new address and if you wish to remain on the mailing list. Mail that is returned to IDEM by the Post Office with a forwarding address in a different county will be removed from our list unless otherwise requested.*

Enclosure
PN AAA Cover Letter 1/9/2017

Mail Code 61-53

IDEM Staff	VBIDDLE 11/28/2018 JELD WEN 113-37982-00047 DRAFT		AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING
Name and address of Sender		Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204	Type of Mail: **CERTIFICATE OF MAILING ONLY**

Line	Article Number	Name, Address, Street and Post Office Address	Postage	Handing Charges	Act. Value (If Registered)	Insured Value	Due Send if COD	R.R. Fee	S.D. Fee	S.H. Fee	Rest. Del. Fee Remarks
1		Steven Crawford JELD WEN PO Box 259 Ligonier IN 46767 (Source CAATS)									
2		Mr. Roger Schneider The Goshen News 114 S. Main St Goshen IN 46526 *(Affected Party)*									
3		Noble County Board of Commissioners 101 North Orange Street Albion IN 46701 *(Local Official)*									
4		Noble County Health Department 2090 N. State Rd 9, Suite C Albion IN 46701-9566 *(Health Department)*									
5		Mr. Steve Roosz NISWMD 2320 W 800 S, P.O. Box 370 Ashley IN 46705 *(Affected Party)*									
6		Frederick & Iva Moore 6019 W 650 N Ligonier IN 46767 *(Affected Party)*									
7		Ligonier City Council and Mayors Office 301 S. Cavin St. #2 Ligonier IN 46767 *(Local Official)*									
8		Ligonier Public Library 300 S Main St Ligonier IN 46767-1812 *(Library)*									
9		Blaine Kussatz JELD-WEN, INC 820 Industrial Ave. Grinnell IA 50112 *(Source – addl contact)*									
10		Lisa Green The Journal Gazette 600 W Main St Fort Wayne IN 46802 *(Affected Party)*									
11											
12											
13											
14											
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