



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

**ENGINEERING
EVALUATION / FACT SHEET**

BACKGROUND INFORMATION

Application No.: R13-2192N
Plant ID No.: 067-00095
Applicant: JELD-WEN, Inc.
Facility Name: Craigsville, WV
Location: Nicholas County
NAICS Code: 321219/325510
Application Type: Modification
Received Date: August 3, 2011
Engineer Assigned: Steven R. Pursley, PE
Fee Amount: \$4,500
Date Received: August 16, 2011 (\$3,500)/ October 3, 2011 (\$1,000)
Complete Date: November 16, 2011
Due Date: February 14, 2012
Applicant Ad Date: August 4, 2011
Newspaper: *The Nicholas Chronicle*
UTM's: Easting: 529.8 km Northing: 4,243.8 km Zone: 17
Description: Application to increase maximum permitted production and emissions.

DESCRIPTION OF PROCESS

The facility manufactures door skins in a process similar to the hardboard manufacturing process. The fiber-containing material, or furnish, consists of green poplar chips. The furnish is mechanically separated into fiber by the refiner and is then dried in a tube dryer. Next, the fiber is blended with a no-added formaldehyde resin and a fiber mat is formed. The mat continues into a cold pre-compressor, which is followed by trimming operations. The mat is then consolidated in a steam-heated press. After the press, the door skins are cut to the final dimensions and painted with waterborne primer.

A wood-fired boiler burns wood residuals from the production process, as well as purchased hogged fuel to generate steam for the facility. Additional combustion sources at the facility include a natural gas-fired backup boiler and natural gas-heated ovens

associated with the priming operations. The fiber dryer is heated by both steam and natural gas (direct fired).

SITE INSPECTION

No site inspection was performed by the writer since JELD WEN is an existing, well known facility. The facility was inspected by Eric Ray of DAQ's enforcement section on August 18, 2011. The facility was deemed out of compliance. As discussed below under the Regulatory Applicability section of this document, JELD WEN has entered into a consent decree with USEPA and has a negotiated timeline in which to come into compliance.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Permit application R13-2192N represents a significant change in the way JELD-WEN has calculated their emissions. Previously, VOC and HAP emissions from the facility were calculated on a mass balance basis, while most other criteria pollutants were based on AP-42 emission factors. With this application JELD-WEN wishes to change that methodology and base some emission calculations on previous stack testing of the dryer, boilers and press. Additionally, JELD-WEN has incorporated a "cushion" of two standard deviations into the calculations.

Controlled emissions from the facility should be as follows (based on a combination of AP-42 emission factors, source stack testing, and mass balance):

POST MODIFICATION HOURLY CRITERIA EMISSIONS

Emission Unit	Emission Point ID	Hourly Emission Point Limit (lb/hr)						
		CO	Lead	NO _x	TSP	PM ₁₀	SO ₂	VOC
Truck Dump	E1	--	--	--	3.23	0.81	--	--
E. Furnish Silo	E2	--	--	--	1.62	0.40	--	--
W. Furnish Silo	E3	--	--	--	1.62	0.40	--	--
Fuel Silos Fiber Line (Pre-Press) Cyclones (2-6)	E4	--	--	--	0.30	0.30	--	0.20
Wood Boiler	E5	20.25	0.01	33.24	1.03	1.03	1.56	1.08
Nat. Gas Boiler	E6	0.03	--	6.20	0.28	0.28	0.02	0.20

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV

Fiber Dryer(Pre-Press)	E7,E8,E9	1.62	--	1.93	0.15	0.15	0.02	27.41
Fiber Line	E10	--	--	--	0.73	0.73	--	0.21
Press Vents	E11a, E11b	0.12	--	0.11	0.90	0.90	--	3.13
Fiber Line (After Press)	E12	--	--	--	6.26	6.26	--	0.24
Primeline (Ovens)	E13	0.31	--	0.37	0.03	0.03	0.01	0.02
Primeline (Paint Booth)	E14	--	--	--	0.6	0.6	--	21.31
Paint Manu.	E15	--	--	--	0.01	0.01	--	0.03
Rotary Valve	E16	--	--	--	2.35	0.59	--	0.81
Die Coating	E17	--	--	--	0.01	0.01	--	0.48
Conveyors	CV1-5	--	--	--	3.67	1.73	--	--
Total		22.33	0.01	41.85	22.79	14.23	3.61	55.12

POST MODIFICATION ANNUAL CRITERIA EMISSIONS

Emission Unit	Emission Point ID	Annual Emission Point Limit (tons per year)						
		CO	Lead	NO _x	TSP	PM ₁₀	SO ₂	VOC
Truck Dump	E1	--	--	--	4.7	1.2	--	--
E. Furnish Silo	E2	--	--	--	1.9	0.5	--	--
W. Furnish Silo	E3	--	--	--	1.9	0.5	--	--
Fuel Silos Fiber Line (Pre-Press) Cyclones (2-6)	E4	--	--	--	2.30	2.30	--	0.78
Wood Boiler	E5	79.8	0.02	131.0	12.87	12.87	6.2	4.3
Nat. Gas Boiler	E6	13.39	--	25.46	1.21	1.21	0.10	0.88
Fiber Dryer(Pre-Press)	E7,E8,E9	6.4	--	7.6	0.32	0.32	0.05	51.5
Fiber Line	E10	--	--	--	1.4	1.4	--	0.81

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV

Press Vents	E11a, E11b	0.48	--	0.43	7.93	7.93	--	12.34
Fiber Line (After Press)	E12	--	--	--	4.32	4.32	--	0.16
Primeline (Ovens)	E13	1.35	--	1.61	0.11	0.11	0.01	0.08
Primeline (Paint Booth)	E14	--	--	--	2.11	2.11	--	75.96
Paint Manu.	E15	--	--	--	0.02	0.02	--	0.05
Rotary Valve	E16	--	--	--	4.4	1.1	--	1.5
Die Coating	E17	--	--	--	0.01	0.01	--	0.2
Conveyors	CV1-5	--	--	--	14.45	6.84	--	--
Total		101.4	0.02	166.1	59.95	42.74	6.36	148.6

POST MODIFICATION ANNUAL HAP EMISSIONS:

HAP emissions from natural gas combustion were estimated using AP-42. HAP emissions from the Primeline Paint Booth, Die Coating operations and paint manufacturing were estimated using a mass balance approach and HAP emissions from every other source were based on source testing performed at the facility in 2008.

HAP	tpy
Acetaldehyde	2.2
Acrolein	2.6
Benzene	1.1
Chlorine	0.19
Formaldehyde	4.2
Glycol Ethers	0.54
Hexane	0.42
HCl	4.7
Manganese	0.39

Methanol	26.1
Methylene Diphenyl Diisocyanate	2.2
Phenol	4.7
Propionaldehyde	1.4
Toluene	0.23
Styrene	0.56
Other HAPs	0.08
Total	51.61

POST MODIFICATION ANNUAL CO_{2e} EMISSIONS

Emission Unit	Emission Point ID	tons per year
Wood Boiler	E5	52,027
Nat. Gas Boiler	E6	21,124
Fiber Dryer(Pre-Press)	E7,E8,E9	11,206
Primeline (Ovens)	E13	2,129
Total		86,486

EXISTING ANNUAL CRITERIA EMISSIONS

Emission Unit	Emission Point ID	Annual Emission Point Limit (tons per year)						
		CO	Lead	NO _x	TSP	PM ₁₀	SO ₂	VOC
Truck Dump	E1	-----	-----	-----	4.9	1.2	-----	-----
E. Furnish Silo	E2	-----	-----	-----	-----	-----	-----	-----
W. Furnish Silo	E3	-----	-----	-----	-----	-----	-----	-----
Fuel Silos Fiber Line (Pre-Press) Cyclones (2-6)	E4	-----	-----	-----	2.30	2.30	-----	-----
Wood Boiler	E5	68.44	0.01	96.36	12.87	12.87	2.28	27.38

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV

Nat. Gas Boiler	E6	13.39	-----	25.46	1.21	1.21	0.1	0.88
Fiber Dryer(Pre-Press)	E7,E8,E9	2.37	-----	2.82	0.32	0.32	0.02	43.25
Fiber Line	E10	-----	-----	-----	0.72	0.72	-----	-----
Press Vents	E11a, E11b	-----	-----	-----	7.93	7.93	-----	-----
Fiber Line (After Press)	E12	-----	-----	-----	4.32	4.32	-----	-----
Primeline	E13, E14	1.35	-----	1.61	0.12	0.12	0.01	56.70
Paint Manu.	E15	-----	-----	-----	0.02	0.02	-----	2.0
Rotary Valve	E16	-----	-----	-----	0.04	0.04	-----	0.01
Conveyors	CV1-5	-----	-----	-----	0.03	0.02	-----	-----
Total		85.55	0.01	126.3	34.78	31.07	2.41	130.2

The current permit limits total HAP emissions to 32.16 tons per year.

Therefore, the total annual increase in permitted PTE is as follows (tons per year):

CO	Lead	NO _x	TSP	PM ₁₀	SO ₂	VOC	HAPs
15.85	0.01	39.8	25.17	11.67	3.95	18.4	19.45

REGULATORY APPLICABILITY

STATE RULES

45CSR2 To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

B1 (wood fired boiler) and B2 (natural gas boiler) will comply with the weight emission standards as determined by 45CSR2. For B1, PM allowables are 5.625 lb/hr while the potential to emit is 2.94 lb/hr. For B2 the allowables are 3.393 lb/hr and the potential to emit is 0.28 lb/hr. If operated correctly all other requirements should be met.

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV

45CSR7 To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

The process weight rate for the facility is 23,942 pounds per hour. This would equate to a 45CSR7 limit of 17.58 pounds per hour. Total stack PM emissions from the facility (except for PM emissions from the Boilers which are regulated under 45CSR2 as outlined above) are 14.58 pounds per hour.

45CSR10 To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

Since this rule was written for fuels which, when combusted, have significant emissions of sulfur dioxide (i.e. coal, fuel oils), the emission standards are much higher than the potential emissions from the wood fired boiler and the natural gas boiler in this application. The boilers in this application will meet any emission standard in this rule.

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation

The modification is subject to 45CSR13 because it results in an emission increase of several criteria pollutants of more than 6 pounds per hour and 10 tons per year and results in an increase of HAPs of more than 2 pounds per hour and 5 tons per year. Additionally, the modification addresses sources subject to NSPS and MACT.

45CSR16 Standards of Performance for New Stationary Sources

The facility is subject to 45CSR16 because it is subject to 40 CFR 60 Subpart Dc.

45CSR30 Requirements for Operating Permits

The facility is subject to 45CSR30 because it has the potential to emit more than 100 tons per year of CO, NO_x and VOCs.

FEDERAL RULES

40 CFR 60 Subpart Dc Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV

40 CFR 60 Subpart Dc applies to B1 and B2. Sulfur dioxide standards do not apply for these sources. The particulate matter standard for B1 is 0.10 lb/MMBtu and the potential to emit is 0.047 lb/MMBtu. There is no particulate matter standard for the natural gas boiler.

40 CFR 63 Subpart DDDD Plywood and Composite Wood Products MACT

JELD-WEN is not currently in compliance with the PCWP MACT. However, they have entered into a Consent Decree (Civil Action No. 11-453ST, DOJ No. 90-5-2-1-09567) with USEPA which requires final compliance with all MACT requirements by August 4, 2014.

40 CFR 63 Subpart QQQQ Surface Coating of Wood Building Products MACT

The facility has previously chosen to comply with the MACT by using the compliant materials option as specified in 40 CFR 63.4691(a). 40 CFR 63.4690 (when combined with the compliant materials option) requires that the primer contain no more than 0.06 pounds of HAP per gallon of solids. The facility must maintain records as required by 40 CFR 63.4730 to demonstrate compliance with this limit. The initial compliance status notification requirements have been met. The facility shall submit semi-annual reports and maintain records as applicable in §§63.4730 and 63.4731 as required within this subpart.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

In addition to the non-criteria regulated pollutants that are a normal by product of natural gas combustion the facility also has the potential to emit the following Hazardous Air Pollutants in amounts of at least 0.1 tons per year:

Acetaldehyde, Acrolein, Benzene, Chlorine, Formaldehyde, Glycol ethers, Hexane, HCl, Manganese, Methanol, Methylene Diphenyl Diisocyanate (MDI), Phenol, Propionaldehyde, Toluene and Styrene.

The following information comes directly from EPA's Air Toxics Website:

Acetaldehyde:

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV

ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

Acrolein:

Acrolein is primarily used as an intermediate in the synthesis of acrylic acid and as a biocide. It may be formed from the breakdown of certain pollutants in outdoor air or from the burning of organic matter including tobacco, or fuels such as gasoline or oil. It is toxic to humans following inhalation, oral or dermal exposures. Acute (short-term) inhalation exposure may result in upper respiratory tract irritation and congestion. No information is available on its reproductive, developmental, or carcinogenic effects in humans, and the existing animal cancer data are considered inadequate to make a determination that acrolein is carcinogenic to humans.

Benzene:

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

Chlorine:

Chlorine is a commonly used household cleaner and disinfectant. Chlorine is a potent irritant to the eyes, the upper respiratory tract, and lungs. Chronic (long-term) exposure to chlorine gas in workers has resulted in respiratory effects, including eye and throat irritation and airflow obstruction. No information is available on the carcinogenic effects of chlorine in humans from inhalation exposure. A National Toxicology Program (NTP) study showed no evidence of carcinogenic activity in male rats or male and female mice, and equivocal evidence in female rats, from ingestion of chlorinated water. EPA has not classified chlorine for potential carcinogenicity.

Formaldehyde:

Formaldehyde is used mainly to produce resins used in particleboard products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

Glycol Ethers:

Glycol ethers have many uses; these include use as solvents and as an ingredient in cleaning compounds, liquid soaps, and cosmetics. Acute (short-term) exposure to high levels of the glycol ethers in humans results in narcosis, pulmonary edema, and severe liver and kidney damage. Chronic (long-term) exposure to the glycol ethers in humans may result in neurological and blood effects, including fatigue, nausea, tremor, and anemia. No information is available on the reproductive, developmental, or carcinogenic effects of the glycol ethers in humans. Animal studies have reported reproductive and developmental effects from inhalation and oral exposure to the glycol ethers. EPA has not classified the glycol ethers for carcinogenicity.

Hexane:

Hexane is used to extract edible oils from seeds and vegetables, as a special-use solvent, and as a cleaning agent. Acute (short-term) inhalation exposure of humans to high levels of hexane causes mild central nervous system (CNS) effects, including dizziness, giddiness, slight nausea, and headache. Chronic (long-term) exposure to hexane in air is associated with polyneuropathy in humans, with numbness in the extremities, muscular weakness, blurred vision, headache, and fatigue observed. Neurotoxic effects have also been exhibited in rats. No information is available on the carcinogenic effects of hexane in humans or animals. EPA has classified hexane as a Group D, not classifiable as to human carcinogenicity.

HCl:

Hydrochloric acid has many uses. It is used in the production of chlorides, fertilizers, and dyes, in electroplating, and in the photographic, textile, and rubber industries. Hydrochloric acid is corrosive to the eyes, skin, and mucous membranes. Acute (short-term) inhalation exposure may cause eye, nose, and respiratory tract irritation and inflammation and pulmonary edema in humans. Acute oral exposure may cause corrosion of the mucous membranes, esophagus, and stomach and dermal contact may produce severe burns, ulceration, and scarring in humans. Chronic (long-term) occupational exposure to hydrochloric acid has been reported to cause gastritis, chronic bronchitis, dermatitis, and photosensitization in workers. Prolonged exposure to low concentrations may also cause dental discoloration and erosion. EPA has not classified hydrochloric acid for carcinogenicity.

Manganese:

Manganese is naturally ubiquitous in the environment. Manganese is essential for normal physiologic functioning in humans and animals, and exposure to low levels of manganese in the diet is considered to be nutritionally essential in humans. Chronic (long-term) exposure to high levels of manganese by inhalation in humans may result in central nervous system (CNS) effects. Visual reaction time, hand steadiness, and eye-hand coordination were affected in chronically-exposed workers. A syndrome named manganism may result from chronic exposure to higher levels; manganism is characterized by feelings of weakness and lethargy, tremors, a mask-like face, and psychological disturbances. Respiratory effects have also been noted in workers chronically exposed by inhalation. Impotence and loss of libido have been noted in male workers afflicted with manganism.

Methanol:

Methanol is released to the environment during industrial uses and naturally from volcanic gases, vegetation, and microbes. Exposure may occur from ambient air and during the use of solvents. Acute (short-term) or chronic (long-term) exposure of humans to methanol by inhalation or ingestion may result in blurred vision, headache, dizziness, and nausea. No information is available on the reproductive, developmental, or carcinogenic effects of methanol in humans. Birth defects have been observed in the offspring of rats and mice exposed to methanol by inhalation. EPA has not classified methanol with respect to carcinogenicity.

Methylene Diisocyanate (MDI):

The commercial form of 4,4'-methylenediphenyl diisocyanate (MDI) is used to produce polyurethane foams. Acute (short-term) inhalation of high concentrations of MDI may cause sensitization and asthma in humans. Acute dermal contact with MDI has induced dermatitis and eczema in workers. MDI has been observed to irritate the skin and eyes of rabbits. Chronic (long-term) inhalation exposure to MDI has been shown to cause asthma, dyspnea, and other respiratory impairments in workers. Respiratory effects have also been observed in animals. No adequate information is available on the reproductive, developmental, or carcinogenic effects of MDI in humans. EPA has classified MDI as a Group D, not classifiable as to human carcinogenicity.

Phenol:

Exposure to phenol may occur from the use of some medicinal products (including throat lozenges and ointments). Phenol is highly irritating to the skin, eyes, and mucous membranes in humans after acute (short-term) inhalation or dermal exposures. Phenol is considered to be quite toxic to humans via oral exposure. Anorexia, progressive weight loss, diarrhea, vertigo, salivation, a dark coloration of the urine, and blood and liver effects have been reported in chronically (long-term) exposed humans. Animal studies have reported reduced fetal body weights, growth retardation, and abnormal development in the offspring of animals exposed to phenol by the oral route. EPA has classified phenol as a Group D, not classifiable as to human carcinogenicity.

Propionaldehyde:

Propionaldehyde is used in the manufacture of plastics, in the synthesis of rubber chemicals, and as a disinfectant and preservative. Limited information is available on the health effects of propionaldehyde. No information is available on the acute (short-term), chronic (long-term), reproductive, developmental or carcinogenic effects of propionaldehyde in humans. Animal studies have reported that exposure to high levels of propionaldehyde, via inhalation, results in anesthesia and liver damage, and intraperitoneal exposure results in increased blood pressure. EPA has not classified propionaldehyde for carcinogenicity.

Toluene:

Toluene is added to gasoline, used to produce benzene, and used as a solvent. Exposed to toluene may occur from breathing ambient or indoor air. The central nervous system (CNS) is the primary target organ for toluene toxicity in both humans and animals

for acute (short-term) and chronic (long-term) exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to toluene by inhalation; symptoms include fatigue, sleepiness, headaches, and nausea. CNS depression has been reported to occur in chronic abusers exposed to high levels of toluene. Chronic inhalation exposure of humans to toluene also causes irritation of the upper respiratory tract and eyes, sore throat, dizziness, and headache. Human studies have reported developmental effects, such as CNS dysfunction, attention deficits, and minor craniofacial and limb anomalies, in the children of pregnant women exposed to toluene or mixed solvents by inhalation. Reproductive effects, including an association between exposure to toluene and an increased incidence of spontaneous abortions, have also been noted. However, these studies are not conclusive due to many confounding variables. EPA has classified toluene as a Group D, not classifiable as to human carcinogenicity.

Styrene:

Styrene is primarily used in the production of polystyrene plastics and resins. Acute (short-term) exposure to styrene in humans results in mucous membrane and eye irritation, and gastrointestinal effects. Chronic (long-term) exposure to styrene in humans results in effects on the central nervous system (CNS), such as headache, fatigue, weakness, and depression, CNS dysfunction, hearing loss, and peripheral neuropathy. Human studies are inconclusive on the reproductive and developmental effects of styrene; several studies did not report an increase in developmental effects in women who worked in the plastics industry, while an increased frequency of spontaneous abortions and decreased frequency of births were reported in another study. Several epidemiologic studies suggest there may be an association between styrene exposure and an increased risk of leukemia and lymphoma. However, the evidence is inconclusive due to confounding factors. EPA has not given a formal carcinogen classification to styrene.

AIR QUALITY IMPACT ANALYSIS

Since this is a minor modification to an existing minor stationary source (as defined in 45CSR14), no modeling was performed.

MONITORING OF OPERATIONS

Permit application R13-2192N represents a significant change in the way JELD-WEN has calculated their emissions and thus also represents a significant change in the way compliance with the emission limits will be determined. Previously, VOC and HAP emissions from the facility were calculated on a mass balance basis. With this application JELD-WEN wishes to change that methodology and base some emission calculations on

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV

previous stack testing of the dryer and press. Therefore, instead of the current permit conditions that require monitoring and recording HAP and VOC content and usages of resins, waxes and primers and then calculating emissions, JELD-WEN will now just have to maintain records on site documenting that no resin, or wax was used that has a higher HAP or VOC content than was used during the most recent stack testing that showed compliance with the emission limits in the permit (emissions from the primer will continue to be calculated using a mass balance approach since it is not applied to the product until after the product goes through the dryer and press).

CHANGES TO PERMIT R13-2192L

The following changes will be made to the existing permit (Note that the current effective permit is R13-2192L since permit application R13-2192M was withdrawn):

- * The permit was put into the most recent boilerplate
- * The MDI concentration limit in condition 4.1.1 was removed since the testing that served as a basis for the emission calculations was performed using 100% MDI.
- * The production limits in conditions 4.1.2-4.1.4 were increased.
- * Maximum resin and wax usages in old conditions 4.1.5 and 4.1.6 were removed.
- * The emission limits in conditions 4.1.8, 4.1.11, 4.1.12, 4.1.13 and 4.1.14 were increased.
- * Conditions 4.1.13 and 4.1.14 were added.
- * Old conditions 4.1.10, 4.3.8, 4.3.11, and 4.3.12 were removed (they all concerned mass balance based emission compliance).
- * Old conditions 4.1.9, 4.1.15 and 4.1.16 were combined into a table which now limits styrene, formaldehyde and methanol from each emission point instead of just a facility wide limit.
- * Old condition 4.2.1 was removed since said testing has already been performed.
- * Condition 4.3.7 was changed to add monitoring and recordkeeping of styrene content and usage of the polymer.
- * Condition 4.3.8 was added to require recordkeeping of methanol content of the die coating.

- * Condition 4.3.9 was added to require recordkeeping of formaldehyde content of the primer and preservative.
- * Condition 4.3.11 was added.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations (except as noted under regulatory applicability) will be achieved. Therefore it is the recommendation of the writer that permit R13-2192N for the modification of an door skin manufacturing facility be granted to JELD-WEN, Inc.

Steven R. Pursley, PE
Engineer

December 21, 2011

Fact Sheet R13-2192N
JELD-WEN, Inc.
Craigsville, WV