

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection**

N223929373

FACILITY: Kirtland Products LLC - Arete Industries, Inc.		SRN / ID: N2239
LOCATION: 1 ALTAIR DR., BOYNE CITY		DISTRICT: Cadillac
CITY: BOYNE CITY		COUNTY: CHARLEVOIX
CONTACT: Tom Johnson ,		ACTIVITY DATE: 04/21/2015
STAFF: Kurt Childs	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: 2015 FCE compliance inspection and records review.		
RESOLVED COMPLAINTS:		

**Full Compliance Evaluation (FCE)**

Kirtland Products LLC is a manufacturing plant that produces wood pellet fuel for wood fired heaters. The pellets are produced from a mixture of green softwood and hardwood chips in a process that includes material transfer, grinding drying, pelletizing, cooling, storage and packaging. Some of the dried chips are used to produce fuel for the dryer. Cyclones and baghouses are used as air emission control and raw material capture for the processes.

The current PTI is 47-11D which was previously revised as 47-11C on 9/22/2014 to rebalance emission limits across the plant following the last stack test. The current FGGRINDER/DRYER emission limits are:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Visible emissions	15% opacity	6-minute average except one 6-minute average per hour of not more than 20% opacity	FGGRINDER/DRYER	SC V.1, VI.2	R 336.1301(1)(c)
2. PM	0.06 lb per 1000 lb of exhaust gases, calculated on a dry gas basis	Test protocol*	FGGRINDER/DRYER	GC 13, SC V.1	R 336.1331(1)(c)
3. PM10	10.0 pph	Test protocol*	FGGRINDER/DRYER	GC 13, SC V.1	40 CFR 52.21(c) & (d)
4. PM2.5	10.0 pph	Test protocol*	FGGRINDER/DRYER	GC 13, SC V.1	40 CFR 52.21(d)
5. NOx	8.3 pph	Test protocol*	EUDRYER portion of FGGRINDER/DRYER	GC 13	40 CFR 52.21(c) & (d)
6. CO	13.5 pph	Test protocol*	EUDRYER portion of FGGRINDER/DRYER	GC 13	40 CFR 52.21(d)
7. VOC (as carbon)	27.2 pph	Test protocol*	EUDRYER portion of FGGRINDER/DRYER	GC 13	R 336.1702(a)
8. Formaldehyde (CAS No. 50-00-0)	1.18 pph <sup>1</sup>	Test protocol*	EUDRYER portion of FGGRINDER/DRYER	GC 13	R 336.1225(1)

At the time of the inspection stack testing of FGGRINDER/DRYER and EUBAGHOUSE was taking place (see Activity Report N223929240). One of the two pellet mills is not currently operating due to mechanical failure of the molds used in that mill. However the dryer was operating at a production rate of over 20,000 lbs per hour and temperatures of around 800 degrees for the test which is normal production even with 2 mills operating. The weather was overcast with winds from the WSW at 10-15 mph and a temperature of 43 degrees. The FGGRINDER/DRYER stack had an attached water vapor plume and a faint bluish condensable VOC plume at the tail of the water vapor. None of the other stacks exhibited any visible emissions. Kirtland collects data about the process on a daily basis and these records are maintained in monthly files. I reviewed these records and my comments are included in the breakdown of individual Emission Unit requirements that follows.

**Odor survey**

I conducted an Odor survey of the area around and downwind of the plant as detailed in the stack test observation activity report. Mild wood smoke odors were detected at the two closest locations to the plant but were not objectionable.

**VE Reading**

I conducted a USEPA Method 9 reading of stack opacity for the FGGRINDER/DRYER stack. The reading was taken from the Boyne Hills subdivision approximately ¼ mile from the stack with the brown hills across the valley as the background. This position offers better contrast for observing the plume on overcast days. The VE observation form is attached to the stack test observation activity report. The highest six minute average opacity was 4.8%.

**FGGRINDER/DRYER**

**Emissions:**

I.1. 15% opacity. Opacity was less than 15%. Records of daily readings by Kirtland Products staff also indicate Opacity is less than 15%. EUGRINDER and EUDRYER have been combined into one flexible group under PTI 47-11D and have shared emission limits. Stack testing is being conducted to demonstrate compliance with the combined limit. EUGRINDER (hammer mill) emissions are controlled by a cyclone and combined into the FGGRINDER/DRYER stack. As noted above, there were visible emissions from the stack but they appeared to be primarily from dryer operations and were less than 15%. Grinder emissions would be tan/wood colored particulate and the stack emissions were blue/white.

**Material Limits:**

II.1. Combust only propane gas for start-up, and dried wood in the burner of FGRINDER/DRYER. Wood is the only fuel used in the drier aside from propane at start-up.

II.2. Process only virgin hardwood and softwood materials through FGRINDER/DRYER. Hardwoods and softwoods are the only materials processed, no additives are used in the process.

II.3. Material and process limits for EUDRYER.

Moisture Content of Green Wood Material in % by weight	Maximum Allowed Dryer Inlet Temperature	Maximum Allowed Green Wood Input (pounds per hour)
48% (and less)	888°F	24,952
49% to 50%	923°F	24,452
51% to 52%	960°F	24,033
53% to 54%	997°F	23,626
55% to 56%	1035°F	23,257

Moisture content, maximum dryer temperature, and maximum allowed green wood input were compliant with these limits during the observed testing and as reflected in the facility records "Daily Legal Record Log Sheet" (DLRLS).

**Process:**

III.1. MAP. Submitted and approved 1-17-12.

III.2. Annual burner tuning. Kirtland Products maintains records of burner maintenance.

III.3. Start-up shut-down Plan. Included with MAP and approved 1-17-12.

**Equipment:**

IV.1. Maximum heat input limit 22.0 MMBtu. This is a design limit that has been met.

IV.2. Cyclone installed and operating properly. The cyclone is installed and was being tested to determine proper operation at the time of the inspection.

**Testing:**

V.1. Testing completed? Testing was being conducted in accordance with the schedule in the PTI.

**Monitoring/Recordkeeping:**

VI.1. Emission calculations. Kirtland Products maintains monthly and 12-month rolling average emissions calculations based on data from the last stack test. Calculations will be updated with new stack test results once they are available.

VI.2. Daily VE readings. Daily records include VE readings as required. Readings indicate compliance with opacity limit.

VI.3. Monitor and record green wood throughput. Throughput is tracked on a daily basis on the DLRLS.

VI.4. Monitor and record green wood moisture content. Moisture content is also tracked on the DLRLS and is used to demonstrate compliance with the material use limits in III.3.

VI.5. Maintain records of annual burner tune ups. These records were being maintained at the time of the inspection.

VI.6. Monitor the temperature at the inlet of EUDRYER. EUDRYER is equipped with a circular chart recorder for daily temperature records and the charts are maintained on file.

**Stack:**

VII.1. Max dia. 40", Min Height 63'. Stack appears to meet the specified dimensions.

**EUHAMMERMILL**

**Emissions:**

I.1. 5% opacity. This process is controlled by a baghouse, at the time of the inspection there were no visible emissions from the baghouse stack.

I.2.-4. PM, PM10, PM2.5 emission limits.

2. PM	0.002 lb per 1000 lb of exhaust gases, calculated on a dry gas basis
3. PM10	0.045 pph
4. PM2.5	0.045 pph

Compliance was verified during 2012 testing.

**Process:**

III.1. MAP

Yes, approved 1-17-2012.

**Equipment:**

VI.1. Baghouse installed and operating properly. The baghouse appeared to be installed and operating properly (there were no visible emissions during operation).

**Testing:**

Testing has been completed and demonstrated compliance with the emission limits in a test report dated 12/13/2012. PM emissions are 0.001 lb/1000 lb.

**Monitoring/Recordkeeping:**

VI.1. Emission calculations. There is not an emission limit that requires emissions calculations for verification but Kirtland Products maintains a "Chargeable Total Dryer Hours" spreadsheet (attached) that summarizes facility wide PM as well as VOC, NOx, CO, and formaldehyde emissions. The emission factor(attached) for EUHAMMERMILL is 0.03PPH from 2012 testing and monthly and 12-month rolling average totals are maintained.

VI.2. Monitor and record baghouse differential pressure. Records indicate the baghouse differential pressure is being continuously monitored and differential pressure readings are recorded during each shift.

**Stack:**

VII.1. Max dia. 12", Min Height 47'. Stack appears to meet the specified dimensions.

**EUPELLET****Emissions:**

I.1. 10% opacity.

<b>2. PM</b>	0.040 lb per 1000 <b>lb of exhaust gases, calculated on a dry gas basis</b>
<b>3. PM10</b>	0.55 pph
<b>4. PM2.5</b>	0.55 pph

This process is controlled by a cyclone, at the time of the inspection there were no visible emissions from the cyclone stack.

**Process:**

III.1. MAP

Yes, approved 1-17-2012.

**Equipment:**

IV.1. Cyclone installed and operating properly. At the time of the inspection the cyclone appeared to be operating properly, there were no visible emissions during operation.

**Testing:**

Testing has been completed and demonstrated compliance with the emission limits in a test report dated 12/13/2012. PM emissions are 0.029 lb/1000 lb.

**Monitoring/Recordkeeping:**

VI.1. Emission calculations. There is not an emission limit that requires emissions calculations for verification but Kirtland Products maintains a "Chargeable Total Dryer Hours" spreadsheet (attached) that summarizes facility wide PM as well as VOC, NOx, CO, and formaldehyde emissions. The emission factor (attached) for EUPELLET is 0.5PPH from 2012 testing and monthly and 12-month rolling average totals are maintained.

VI.2. Daily VE readings. Daily records include VE readings as required. Readings indicate compliance with opacity limit.

**Stack:**

VII.1. Max dia. 13", Min Height 47'. Stack appears to meet the specified dimensions.

**EUCOOLER****Emissions:**

I.1. 5% opacity.

<b>2. PM</b>	0.01 lb per 1000 <b>lb of exhaust gases, calculated on a dry gas basis</b>
<b>3. PM10</b>	0.16 pph
<b>4. PM2.5</b>	0.16 pph

This process is controlled by a cyclone, at the time of the inspection there were no visible emissions from the cyclone stack.

**Process:**

III.1. MAP. Yes, approved 1-17-2012.

**Equipment:**

IV.1. Cyclone installed and operating properly. At the time of the inspection the cyclone appeared to be operating properly, there were no visible emissions.

**Testing:**

Testing has been completed and demonstrated compliance with the emission limits in a test report dated 12/13/2012. PM emissions are 0.006 lb/1000 lb.

**Monitoring/Recordkeeping:**

VI.1. Emission calculations. There is not an emission limit that requires emissions calculations for verification but Kirtland Products maintains a "Chargeable Total Dryer Hours" spreadsheet (attached) that summarizes facility wide PM as well as VOC, NOx, CO, and formaldehyde emissions. The emission factor (attached) for EUCOOLER is 0.14PPH from 2012 testing and monthly and 12-month rolling average totals are maintained.

VI.2. Daily VE readings. Daily records include VE readings as required. Readings indicate compliance with opacity limit.

**Stack:**

VII.1. Max dia. 20", Min Height 47'. Stack appears to meet the specified dimensions.

**EUPELLETSTORAGE**

**Equipment:**

IV.1. Baghouse installed and operating properly. EUPELLETSTORAGE shares a baghouse with the fuel grinder and the packaging system. Additional requirements are found in EUBAGHOUSE. At the time of the inspection there were no visible emissions from the baghouse stack and it appeared to be operating properly.

**EUBAGHOUSE**

**Emissions:**

I.1. 5% opacity.

2. PM	0.002 lb per 1000 lb of exhaust gases, calculated on a dry gas basis
3. PM10	0.09 pph
4. PM2.5	0.09 pph

At the time of the inspection there were no visible emissions from the baghouse stack.

**Process:**

III.1. MAP. Yes, approved 1-17-2012.

**Equipment:**

IV.1. Baghouse installed and operating properly. The baghouse appeared to be operating properly, there were no visible emissions during operation and the differential pressure was 0.6" – 0.8" which is within the recommended range.

**Testing:**

V.1. Conduct PM, PM10 and PM2.5 testing by April 30, 2015. Testing was completed on the day of the inspection.

**Monitoring/Recordkeeping:**

VI.1. Emission calculations. There is not an emission limit that requires emissions calculations for verification but EUBAGHOUSE is being tested and a process specific emission factor will result. Kirtland Products currently uses the 0.09 PPH PTI limit for "Chargeable Total Dryer Hours" spreadsheet (attached) calculations.

VI.2. Monitor and record baghouse differential pressure. Differential pressure is continuously monitored and recorded during each shift. At the time of the inspection the reading was 0.6" – 0.8".

**Stack:**

VII.1. Max dia. 18", Min Height 47'. Stack appears to meet the specified dimensions.

**FGWOODPELLET**

**Process:**

III.1. 5930 hours per 12-month rolling time period. The plant ran 3,372 hours in 2014.


III.1. Fugitive Dust Plan. FDP approved 1-18—2012. All plant roads and yard areas are paved. At the time of the inspection the plant roads and yard were free from accumulations of wood and other sources of fugitive dust. Records are being maintained of cleaning activities on the "Shift to Shift Changeover Form". Conveyors and material handling equipment are enclosed. I did not observe any fugitive emissions during the inspection.

**Monitoring/Recordkeeping:**

VI.1. Emission calculations. None required.

VI.2. Monitor and record the hours of operation, monthly and 12-month rolling. Hours of plant operation are maintained.

As a result of the inspection it appears that Kirtland Products, LLC is currently in compliance with the requirements of PTI 47-11D and the Air Pollution Control Rules.

NAME  DATE 4-30-15 SUPERVISOR 