

217/782-2113

CONSTRUCTION PERMIT  
NSPS SOURCE

PERMITTEE

Akzo Nobel Surface Chemistry LLC  
Attn: Charley Plank  
8005 North Tabler Road  
Morris, Illinois 60450

Application No.: 10080056

I.D. No.: 063800AAE

Applicant's Designation:

Date Received: August 20, 2010

Subject: Boilers, Process Heater

Date Issued: December 21, 2010

Location: 8005 North Tabler Road, Morris

This Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of one new boiler, one new Dowtherm heater, and a change to an existing boiler, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1.1 Description

This project involves changes to heating equipment at the source: replacement of a boiler, replacement of a process heater, and changes to the method of operation of one of the existing boilers. Each of these units will be equipped with low NO<sub>x</sub> burners for control of nitrogen oxide (NO<sub>x</sub>) emissions. This permit does not alter requirements for the manufacturing operations at the source.

New Boiler

The existing Keystone Boiler will be decommissioned and replaced by a Volcano Boiler. The "new" boiler will be relocated from Akzo's McCook facility. This boiler will have five modes of operation: (A) natural gas only, (B) natural gas and nitrile pitch, (C) natural gas and fatty acid pitch, (D) natural gas and distillate fuel oil, and (E) natural gas and scrap fat.

New Dowtherm Heater

The existing Dowtherm Process Heater will be decommissioned and replaced by a new Dowtherm Process Heater. This new heater will also have five modes of operation, as discussed above.

Modified Nebraska Boiler

The existing Nebraska Boiler will be authorized to fire at up to its capacity, 55.8 mmBtu/hour. The firing rate of this boiler was previously limited to 41 mmBtu/hour. This permit will also authorize the firing of scrap fat (Mode E), in addition to use of natural gas, distillate oil, nitrile pitch and fatty acid pitch in this boiler.

For purposes of applicable rules, pitch fuels and scrap fat fuel are considered a solid fuel because they are solid at standard conditions, unlike fuel oil.

1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
New Volcano Boiler	Boiler with a nominal rated capacity of 66.9 mmBtu/hour	Low NO <sub>x</sub> Burners
New Dowtherm Heater	Heater with a nominal rated capacity of 34.5 mmBtu/hour	Low-NO <sub>x</sub> Burners
Existing Nebraska Boiler	Boiler with a nominal rated capacity of 55.8 mmBtu/hour	Low-NO <sub>x</sub> Burners

1.3 Applicable Provisions and Emission Standards

- a. For purposes of this permit:
  - i. The "affected boilers" are the Nebraska Boiler and the Volcano Boiler described in Conditions 1.1 and 1.2.
  - ii. The "affected heater" is the Dowtherm Process Heater described in Conditions 1.1 and 1.2.
  - iii. Collectively, the affected boilers and affected heater are referred to as the "affected units."
  
- b. The affected units are subject to the New Source Performance Standards (NSPS) for Small Industrial, Commercial, and Institutional Steam Generating Units, 40 CFR 60, Subparts A and Dc. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement. The Permittee shall comply with the following standards for the affected units when combusting oil alone or in combination with other fuels.
  - i. Standard for sulfur dioxide (SO<sub>2</sub>).
 

Oil that contains greater than 0.5 weight percent sulfur shall not be combusted in the affected units. [40 CFR 60.42c(d)] Compliance with this limit shall be determined based on a certification from the fuel supplier, as described under 40 CFR 60.48c(f). [40 CFR 60.42c(h)]
  - ii. Standard for particulate matter (PM).
 

The gases discharged into the atmosphere from each affected unit shall not exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity. [40 CFR 60.43c(c)]

- iii. These limits apply at all times, including periods of startup, shutdown, and malfunction. [40 CFR 60.42c(i) and 40 CFR 60.43c(d)]
- iv. At all times, the Permittee shall maintain and operate each affected unit, including associated pollution control equipment, in accordance with good air pollution control practices for minimizing emissions, as required by the NSPS. [40 CFR 60.11(d)]

c. i. State PM Standards.

A. The affected units are subject 35 IAC 212.123, which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit.

B. The affected units are subject to 35 IAC 212.204, 212.206 and 212.207, which provide that no person shall cause or allow the emission of particulate matter (PM) into the atmosphere in any one hour period from a fuel combustion unit to exceed 0.10 lb/mmBtu of actual heat input from burning of liquid and solid fuel.

ii. State SO<sub>2</sub> Standards. The affected units are subject to 35 IAC 214.122 and 214.162, which provide that:

A. No person shall cause or allow the emission of SO<sub>2</sub> into the atmosphere in any one hour period from burning of solid fuel to exceed 2.79 kg of SO<sub>2</sub> per MW-hr of actual heat input (1.8 lbs/mmBtu). For purposes of this rule, pitches and scrap fat are considered solid fuels because they are solids at ambient temperatures.

B. No person shall cause or allow the emission of SO<sub>2</sub> into the atmosphere in any one hour period from burning of distillate fuel oil to exceed 0.46 kg of SO<sub>2</sub> per MW-hr of actual heat input (0.3 lbs/mmBtu).

iii. State carbon monoxide (CO) Standards. The affected units are subject to 35 IAC 216.121, which provides that no person shall cause or allow the emission of CO into the atmosphere from any fuel combustion emission source to exceed 200 ppm, corrected to 50 percent excess air.

iv. State nitrogen oxides (NO<sub>x</sub>) Standards.

A. The Permittee shall operate the affected units in a manner consistent with good air pollution control

practice to minimize NO<sub>x</sub> emissions, pursuant to 35 IAC 217.151(e).

- B. Pursuant to 35 IAC 217.164, 217.166, 217.184 and 217.186, the Permittee shall have combustion tuning performed on the affected units at least annually. The combustion tuning shall be performed by an employee of the Permittee or a contractor who has successfully completed a training course on the combustion tuning of boilers/heaters firing the fuels that are fired in the affected units. The Permittee shall maintain the following records that shall be made available to the Illinois EPA upon request:
1. The date the combustion tuning was performed.
  2. The name, title, and affiliation of the person who performed the combustion tuning.
  3. Documentation demonstrating the provider of the combustion tuning training course, the dates the training course was taken, and proof of successful completion of the training course.
  4. Tune-up procedure followed and checklist of items (such as burners, flame conditions, air supply, scaling on heating surface, etc.) inspected prior to the actual tune-up.
  5. Operating parameters recorded at the start and at conclusion of combustion tuning.
- C. Pursuant to 35 IAC 217.152(a), compliance with these requirements is required beginning January 1, 2012.

Note: In the event these rules are revised to delay their applicability, the revised provisions of the regulations shall supersede these conditions of this permit.

#### 1.4 Non-applicable Provisions

This permit is issued based on this project not being a major modification for purposes of 40 CFR 52.21: Prevention of Significant Deterioration (PSD) and 35 IAC Part 203: Major Stationary Sources Construction and Modification (MSSCAM). This is because the project will not be accompanied by significant increases in emissions of NSR pollutants. (See Attachments 1 and 2.)

1.5 Operational and Emission Limits

- a. The affected units shall be equipped with low-NO<sub>x</sub> burners designed to emit no more than 0.05 lb NO<sub>x</sub> per million Btu heat input with natural gas.
- b. The rated heat input capacities of the affected units shall not exceed the following limits:

Affected Unit	Heat Input Capacity
	mmBtu/hour
Nebraska Boiler	55.8
Volcano Boiler	66.9
Dowtherm Heater	34.5

- c. Usage of fuels for the affected units combined shall not exceed 1,360 million scf of natural gas and 45.6 million pounds of alternative fuels, as fuel oil.
  - i. 1 pound of nitrile pitch shall be treated as equivalent to 13.39 pound of fuel oil.
  - ii. 1 pound of fatty acid pitch shall be treated as equivalent to 1.23 pounds of fuel oil.
  - iii. 1 pound of scrap fat shall be treated as equivalent to 7.55 pounds of fuel oil.
- d. i. Emissions from the affected units shall not exceed the following limits:

Fuel	NO <sub>x</sub> Emissions
Natural Gas	50 lbs/mmscf
Nitrile Pitch	77.3 lbs/ton
Fatty Acid Pitch	7.1 lbs/ton
#2 Fuel Oil	5.8 lbs/ton
Scrap Fat	43.6 lbs/ton

- ii. Combined emissions from the affected units shall not exceed the following limits:

Pollutant	Emissions	
	Tons/Month	Tons/Year
NO <sub>x</sub>	10.0	99.9
CO	5.5	55.4
PM	0.9	8.2
PM <sub>10</sub> /PM <sub>2.5</sub>	0.6	5.7
VOM	0.4	3.7
SO <sub>2</sub>	2.0	19.2

- e. Compliance with the annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

1.6 Testing Requirements

- a. For the affected units, the Permittee shall conduct performance tests for opacity, as follows:
  - i. Method 9 of 40 CFR Part 60, Appendix A-4 shall be used for determining the opacity of stack emissions. [40 CFR 60.45c(a)(8)]
  - ii. Except as provided in 40 CFR 60.47c(a)(2) and (a)(3), the Permittee shall conduct subsequent Method 9 performance tests using the procedures in 40 CFR 60.47c(a) according to the applicable schedule in 40 CFR 60.47c(a)(1)(i) through (a)(1)(iv), as determined by the most recent Method 9 performance test results. [40 CFR 60.47c(a)(1)]
- b. The Permittee shall conduct initial emissions tests for NO<sub>x</sub>, CO and PM for the Volcano Boiler no later than 180 days after commencing operation of this boiler. These tests shall be performed for Mode A (natural gas firing only) and for Mode B (nitrile pitch and natural gas firing).
  - i. The following methods and procedures shall be used for testing of emissions, unless another method is approved by the Illinois EPA: Refer to 40 CFR 60, Appendix A, for USEPA test methods.

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3, 3A, or 3B
Moisture	USEPA Method 4
Particulate Matter	USEPA Method 5
Nitrogen Oxides	USEPA Method 7 or 7E
Carbon Monoxide	USEPA Method 10
Condensable PM	USEPA Method 202

- ii. At least 60 days prior to the actual date of testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing, including as a minimum:
  - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
  - B. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum

emissions and the means by which the operating parameters for the emission unit will be determined.

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
  - D. The test method(s), which will be used, with the specific analysis method, if the method can be used with different analysis methods.
  - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- iv. Copies of the Final Report(s) shall be submitted to the Illinois EPA within 90 days after the completion of the test(s). The Final Report shall include as a minimum:
- A. A summary of results.
  - B. General information.
  - C. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.
  - D. Detailed description of test conditions, including process information, i.e., mode(s) of operation, fuel consumption, and composition of the alternative fuels.
  - E. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.
- c. The Permittee shall analyze the scrap fat and each type of pitch fired in the affected units for sulfur and nitrogen content and heating value.

- i. The initial analysis shall be conducted within one year of initial startup of an affected unit.
- ii. Subsequent analyses shall be conducted with 90 days of making a significant change to raw materials or manufacturing operation that would increase ash, sulfur or nitrogen content or lower heating value, provided however if the analysis shows sulfur content, in lbs/mmBtu, equal to or less than that of very low sulfur fuel oil, the routine analysis of the scrap fat and pitch for sulfur and heating value is not required.

1.7 Recordkeeping Requirements

- a. NSPS Records
  - i. As related to the fuel oil sulfur limits under 40 CFR 60.42c, the Permittee shall keep records and submit reports as required under 40 CFR 60.48(d), including the information in 40 CFR 60.48c(e)(11) and (f), as applicable. [40 CFR 60.48c(e)]
  - ii. The Permittee shall record and maintain records of the amount of each fuel combusted during each calendar month. [40 CFR 60.48c(g)(2)]
- b. The Permittee shall maintain the following records related to emissions from the affected units:
  - i. Natural gas usage (million scf/month and million scf/year).
  - ii. Fuel oil usage and alternative fuels usage, by type, with supporting documentation and calculations (million pounds/month and million pounds/year).
  - iii. NO<sub>x</sub>, CO, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM, and SO<sub>2</sub> emissions from the affected units (tons/month and tons/year), with supporting documentation and calculations.
- c. The Permittee shall maintain a file containing the following supporting information for the affected units:
  - i. Analyses of the pitches and scrap fat used in the affected units as determined in accordance with Condition 1.6(c), for ash, sulfur, nitrogen and heating value.
  - ii. Sulfur content (weight percent) and gross heating value (mmBtu/lb) of fuel oil used in the affected units.

1.8 Reporting Requirements

- a. NSPS Reports. For the affected units, the Permittee shall submit the following to the Illinois EPA:
  - i. Notification of the date of construction or reconstruction and actual startup, as provided by 40 CFR 60.7. This notification shall include the information specified in 40 CFR 60.48c(a)(1) through (a)(4). [40 CFR 60.48c(a)]
  - ii. Performance test data from the initial and any subsequent performance tests. [40 CFR 60.48c(b)]
- b. The Permittee shall promptly notify the Illinois EPA of deviations of an affected unit with the permit requirements. Reports shall describe the deviations, the probable cause of such deviations, the corrective actions taken, and any preventive measures taken.
  - i. Emissions or operation of the affected units in excess of a limit specified in Conditions 1.3 or 1.4 shall be reported within 30 days of such occurrence.
  - ii. Other deviations shall be submitted with the periodic compliance reports for the source.

1.9 Addresses

One copy of required reports and notifications shall be sent to:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Compliance Section (#40)  
P.O. Box 19276  
Springfield, Illinois 62794-9276

And one copy of required reports and notifications shall be sent to:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
9511 West Harrison  
Des Plaines, Illinois 60016

One copy of required reports and notifications concerning emission testing, test plans and test reports shall be sent to:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Source Monitoring Unit, Third Floor  
9511 Harrison Street  
Des Plaines, Illinois 60016

1.10 Authorization to Operate

The affected units may be operated under this construction permit until renewal or reissuance of the source's CAAPP permit to address this project. This condition supersedes Standard Condition 6.

Please note that this permit does not address USEPA's proposed rules for National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

If you have any questions on this permit, please call Jason Schnepf at 217/782-2113.

Edwin C. Bakowski, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

Date Signed: \_\_\_\_\_

ECB:JMS:psj

cc: Region 1  
CES  
Lotus Notes

Attachment 1: Annual Emission Limits and Increases<sup>a</sup> In Emissions For the Project (Tons/Year)

Affected Units	NO <sub>x</sub>		CO		SO <sub>2</sub>		VOM		PM		PM <sub>10</sub> /PM <sub>2.5</sub>	
	Limit	Increase	Limit	Increase	Limit	Increase	Limit	Increase	Limit	Increase	Limit	Increase
Nebraska Boiler	99.9	63.4	55.4	42.3	19.2	18.8	3.7	2.8	8.2	6.4	5.7	4.4
Volcano Boiler												
Dowtherm Heater												
Significance Threshold:		40		100		40		40		25		15/10
Greater Than Significant?		Yes		No		No		No		No		No/No

Notes:

- a. Increases in emissions are calculated by comparing the permitted emissions (or "limit") with the baseline or actual emissions. Baseline emissions and actual emissions are from the period 2008 through 2009.
- b. Filterable PM<sub>10</sub>/PM<sub>2.5</sub> quantified only, in accordance with the final rule for Implementation of the NSR Program for PM<sub>2.5</sub>, 73 FR 28321.

Attachment 2: Netting Analysis For Emissions of NO<sub>x</sub> (Tons/Year)<sup>a</sup>

	Date	Permit	NO <sub>x</sub>
<b>Project</b>			
Emissions Increases			63.4
. Emissions Decreases			50.5
Subtotal:			12.9
<b>Contemporaneous<sup>b</sup> Increases/Decreases</b>			
Natural Gas Assist H2 Vent Flare	4/2008	08010012	0.9
Arquad/DEQ Modifications	5/2006	06010046	21.8
Subtotal <sup>d</sup> :			22.7
<b>NET EMISSIONS CHANGE<sup>d</sup>:</b>			<b>35.6</b>
Significance Threshold:			40
Greater Than Significant?			No

Notes:

- a. Netting is not performed for pollutants other than NO<sub>x</sub> because the project increase for these pollutants (as well as future permitted emissions) is less than significant (See Attachment 1).
- b. The contemporaneous time period for MSSCAM begins August 20, 2005 and ends at project startup. The contemporaneous time period for PSD begins at commencement of startup of the project, which will be after August 2005. Since there are no contemporaneous decreases other than project decreases, using the NANSR contemporaneous time frame is the more stringent approach.

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