

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Air Permit Review

Permit Issue Date:

Region: Mooresville Regional Office
County: Rowan
NC Facility ID: 8000182
Inspector's Name: Carlotta Adams
Date of Last Inspection: 04/19/2011
Compliance Code: 3 / Compliance - inspection

Facility Data			Permit Applicability (this application only)	
Applicant (Facility's Name): AkzoNobel Surface Chemistry LLC. Facility Address: AkzoNobel Surface Chemistry LLC. 485 Cedar Springs Road ., Unit A Salisbury, NC 28147 SIC: 2869 / Industrial Organic Chemicals,nec NAICS: 325199 / All Other Basic Organic Chemical Manufacturing Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			SIP: NSPS: NESHAP: GACT JJJJJ PSD: PSD Avoidance: NC Toxics: 112(r): Other:	
Contact Data			Application Data	
Facility Contact	Authorized Contact	Technical Contact	Application Number: 8000182.11A Date Received: 02/24/2011 Application Type: Modification Application Schedule: TV-Significant Existing Permit Data Existing Permit Number: 09900/T09 Existing Permit Issue Date: 06/15/2011 Existing Permit Expiration Date: 10/31/2014	
David Simons Health, Safety and Environmental Manager (704) 642-6233 485 Cedar Springs Road Salisbury, NC 28147	Mr. Ralph Owen Site Director (704) 633-1731 485 Cedar Springs Road Salisbury, NC 28147	David Simons Health, Safety and Environmental Manager (704) 642-6233 485 Cedar Springs Road Salisbury, NC 28147		
Review Engineer: Jenny Kelvington Review Engineer's Signature: _____ Date: _____		Comments / Recommendations: Issue 09900/T10 Permit Issue Date: Permit Expiration Date:		

I. Introduction and Purpose of Application:

AkzoNobel, located in Salisbury, Rowan County, North Carolina is requesting the second step of a "significant" modification. The application was considered complete for processing on February 24, 2011 and satisfies the following permit requirement:

This emission source (ID No. B8) is listed as a 15A NCAC 2Q .0501(c)(2) modification. The Permittee shall file a Title V Air Quality Permit Application on or before 12 months after commencing operation in accordance with General Condition NN.1.

The draft permit will go through a 30 day public notice and a 45 day EPA review prior to permit issuance. After issuance, the permit shield described in General Condition R will apply and compliance certification as described in General Condition P will be required.

Additionally, the permit has been modified to include the new National Emission Standards for Hazardous Air Pollutants (NESHAP) for Area Sources: Industrial, Commercial, and Institutional Boilers promulgated on March 21, 2011.

II. Facility Description

AkzoNobel Surface Chemistry LLC (AkzoNobel) manufactures several specialty polymer products including glue used in hair mousse and other compounds (Area I), sulfonated polystyrenes (Area II), ultraviolet absorbing resin used in hair spray (Area III Old Pilot Plant), and monomers (Area IV Cosmetics Plant).

III. Facility Compliance Status

The DAQ has reviewed the compliance status of this facility. Ms. Carlotta Adams of the Mooresville Regional Office (MRO) inspected the facility on April 19, 2011 during which time the facility appeared to be operating in compliance with all air permitting requirements.

IV. Permit Changes

The following table lists all modifications associated with this permit action:

Page No(s).	Condition No(s).	Changes
--	Cover Letter	Updated permit revision numbers, issue and effective dates.
3 - 8	Equipment list	Added GACT JJJJJ designations to the seven fuel oil-fired boilers; Removed footnote requiring the Permittee to file a Title V Air Quality Permit Application on or before 12 months after commencing operation of boiler B8; and Removed the footnote listing emission source (ID No. CP-0 including CP-0C-1) and associated control device (ID No. CP-0C-2) as a minor modification per 15A NCAC 2Q .0515.
21 - 22	2.1.E.5	Added 15A NCAC 2D .1111, 40 CFR Part 63, Subpart JJJJJ “National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources” requirements for seven existing natural gas/fuel oil-fired boilers.
31-39	3	Updated General Conditions to Version 3.5

V. Affected Sources, Changes in Emissions, and Regulatory Review:

One natural gas/No. 2 fuel oil-fired boiler (14.938 million Btu per hour maximum heat input; ID No. B8)

The new boiler is manufactured by Superior Boiler Works, Model No. 7-X-S150-1750-PF-GO, and is equipped with a low NO_x burner system, Model No. LNICM10-GO-30. The low NO_x burner results in less NO_x formation and higher boiler efficiency. The new boiler is located near the Area I boilers and provides the primary steam needs for Area I processes including the new Firebird process. The existing Area 1 boilers will provide peak or supplemental supply.

From the low NO_x burner manufacturer’s website:

http://www.powerflame.com/index.php?option=com_content&view=article&id=110&Itemid=57

NOVA Low NO_x Burners

“The Power Flame NOVA concept provides U.L. listed, factory tested packages capable of using a wide range of

60% on gas and 40% on oil. The NOVA concept gives you the power of choice. The NOVA concept employs a modular approach for each NOx reduction technique.”



LNICM Burner

Criteria Pollutant Emissions

NO_x, CO, PM, SO₂, and VOC emissions from natural gas and No. 2 fuel oil combustion are determined using DAQ spreadsheet “NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION F 10/31/2008” and “FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION D 6/12/2008” both of which are based on AP-42 emission factors. These spreadsheets account for 35% NO_x emissions reduction for fuel oil and 50% NO_x emissions reduction for natural gas. As shown in the table below, potential emissions from the proposed boiler are less than the PSD significance levels for all criteria pollutants.

Pollutant	Natural Gas Potential Emissions (lbs/hr)	No. 2 Fuel Oil Potential Emissions (lbs/hr)	Potential Emissions (tons/year)	PSD Significance Level (tons/year)
NO _x	0.73	1.39	6.08	40
PM/PM ₁₀	0.11/0.08	0.35/0.14	1.54/0.50	25/15
SO ₂	0.01	7.58	33.2	40
CO	1.23	0.53	5.39	100
VOC	0.08	0.04	0.35	40
Lead	<0.01	<0.01	< 0.01	0.6

Regulatory Review –Specific Emission Source Limitations

The new boiler will be subject to the following air quality regulations:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	0.33 pounds per million Btu heat input	15A NCAC 2D .0503
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
sulfur dioxide	0.5 percent by weight sulfur limit in the fuel oil	15A NCAC 2D .0524
Hazardous Air Pollutants	No. 2 fuel oil firing is limited to periods of gas curtailment, gas supply shortages, and liquid fuel testing.	15A NCAC 2Q .0317, Avoidance of 2D .1111 40 CFR Part 63, Subpart JJJJJ

- A. 15A NCAC 2D .0503 – “PARTICULATES FROM FUEL BURNING INDIRECT HEAT EXCHANGERS”
This regulation applies to particulate matter emissions from the combustion of a fuel from indirect heat exchangers that are discharged from any stack. This regulation sets an emission standard based on the maximum rated heat input as follows:

$$E = 1.090 * Q^{-0.2594} \quad \text{where, } E = \text{allowable emissions (lb/million Btu)} \\ Q = \text{maximum heat input (million Btu/hr)}$$

The total heat input of indirect heat exchangers (Q) is 99.9 million Btu/hr and the allowable emission rate (E) is **0.33 lbs/million Btu**. Based on AP-42 factors, the total particulate matter emission rates from natural gas and No. 2 fuel oil combustion in the boiler are **0.007 lbs/mmBtu** and **0.024 lbs/mmBtu**, respectively. Therefore, compliance is clearly indicated. No monitoring or recordkeeping is required to demonstrate compliance with this regulation since particulate emissions from firing natural gas and No. 2 fuel oil are inherently low.

- B. 15A NCAC 2D .0516 – “SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES”
This regulation applies to sulfur dioxide emissions from any source of combustion that is discharged from any stack. The allowable sulfur dioxide emission rate is **2.3 lb/million Btu**. Based on AP-42 factors, the SO₂ emission rates from natural gas and No. 2 fuel oil combustion in the boiler are **0.001 lbs/mm Btu** and **0.51 lbs/mm Btu**, respectively. Therefore, compliance is clearly indicated. No monitoring or recordkeeping is required to demonstrate compliance with this regulation since SO₂ emissions from firing natural gas and No. 2 fuel oil are inherently low.

- C. 15A NCAC 2D .0521 – “CONTROL OF VISIBLE EMISSIONS”
This regulation applies to all fuel burning sources. The new boiler will be subject to the **20% opacity** limit. Visible emissions from the combustion of natural gas and No. 2 fuel oil are inherently low. Therefore, compliance is indicated and no monitoring or recordkeeping is required to demonstrate compliance with this regulation.

- D. 15A NCAC 2D .0524 – “NEW SOURCE PERFORMANCE STANDARDS – Subpart Dc, NSPS for Small Industrial-Commercial-Institutional Steam Generating Units”
40 CFR Part 60, Subpart Dc applies to boilers that are constructed, modified, or reconstructed after June 9, 1989 and have a maximum design heat input capacity ≥ 10 MMBtu/hr and < 100 MMBtu/hr. The new boiler was constructed after the NSPS date, has a maximum design heat input capacity of 14.938 MMBtu/hr, and is subject to the following NSPS standards and requirements:

Sulfur Dioxide. The maximum sulfur content of any fuel oil received and fired in the Subpart Dc-affected boiler shall not exceed **0.5 percent by weight**. To demonstrate compliance with this standard, the Permittee is required to retain copies of each fuel supplier certification, including the sulfur content of the oil (in percent by weight) and maintain records of the amounts of each fuel combusted during each month. All required records shall be maintained for a period of two years following the date of such record and shall be made available to an authorized representative of DAQ upon request.

Reporting. The Permittee shall submit semiannual reports summarizing the monitoring activities on or before January 30th and July 30th of each year.

- E. 15A NCAC 2D .1111 National Emission Standards for Hazardous Air Pollutants (NESHAP) for Area Sources: Industrial, Commercial, and Institutional Boilers

The existing permit limits facility wide emissions to less than 10 tpy for each individual HAP and 25 tpy for total HAPs to enable the site to remain a Title III minor source. As a minor HAP source, AkzoNobel will not be subject to the maximum achievable control technology (MACT) requirements proposed for 40 CFR 63, Subpart DDDDD “National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers” but will instead be subject to the generally available control technology and management practice (GACT) contained in 40 CFR 63, Subpart JJJJJ “National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers at Area Sources. The boiler GACT was promulgated on **March 21, 2011** and requires existing (commenced construction on or before June 4, 2010) oil-fired boilers to comply with work practices by March 21, 2012 and an energy assessment by March 21, 2014. Construction on the Firebird boiler began around March 15, 2010. During the 5/20/2010 DAQ annual inspection, the boiler was observed but was not yet operational. Therefore, boiler B8 is considered an existing boiler as defined by the subpart. The Subpart JJJJJ requirements applicable to this boiler and all other fuel oil-fired boilers at the facility have been added to the permit. The GACT compliance dates may be delayed if AkzoNobel continues to burn only natural gas in their boilers. The GACT allows boilers to fire fuel oil during times of gas curtailment and gas supply emergencies without triggering work practices or the energy assessment. After the compliance dates, the work practices and energy assessment apply immediately upon firing fuel oil in the boiler in times other than those exempted in the GACT. Compliance is expected.

F. 15A NCAC 2D .1400 NITROGEN OXIDES

Facilities located in Rowan County with potential NOx emissions equal to or greater than 100 tpy are required to comply with the annual tune-up requirements of 15A NCAC 2D .1414 for each boiler or indirect-fired process heater with a maximum heat input rate less than 50 million Btu/hour as specified in 15A NCAC 2D .1407. Potential NOx emissions from all affected facility sources are listed below:

Emission Source(s)	Potential Emissions (tpy)
Boilers B2-B6 and ES-A3-B7	49.31
Boiler B8 with low NOx burners	6.08
Ammonia Flare MV2F	40.00
Hot Oil Heaters IB7 and IB8	4.24
CERCLA Catalytic Oxidizer	0.21
TOTAL	99.84

The RACT tune-up requirements for their boilers and process heaters do not apply as potential facility wide NOx emissions are less than the 100 tpy threshold.

VI. NSPS, NESHAPS/MACT, PSD, 112(r), Facility Wide Toxics, and CAM

NSPS – The facility is currently subject to New Source Performance Standards (NSPS). Subpart Dc applies to boilers (ID Nos. ES-A3-2-B7 and B8). No other subpart applies. Compliance is indicated.

NESHAPS/MACT/GACT - The facility requested permit restrictions prior to each applicable MACT and GACT taking affect to avoid the MACT for Miscellaneous Organic Chemical Manufacturing (40 CFR 63, Subpart FFFF) and Boilers (40 CFR 63, Subpart DDDDD). Facility-wide HAP emissions are limited to less than 10 tons for each individual HAP and 25 tons total HAP emissions per any consecutive

12-month period and the boilers are designated as gas-fired units. The work practices and energy assessment in GACT JJJJJ will apply, on or after March 21, 2012, to the fuel oil-fired boilers.

PSD – The facility is a major source located in Rowan County, which is in non-attainment for ozone. Chemical manufacturing facilities, like AkzoNobel, are major if they have the potential to emit any criteria pollutant above 100 tons per year. Potential VOC and SO₂ emissions from AkzoNobel each exceed 100 tons per year.

RACT – AkzoNobel is located in Rowan County, which is part of the “Charlotte-Gastonia-Rock Hill, NC-SC 8-hour ozone non-attainment area (also called the “Metrolina” non-attainment area). In accordance with 15A NCAC 2D .0902(f) (VOC) and 15A NCAC 2D .01402(e) (NO_x), sources located in the Metrolina non-attainment area with potential VOC and/or NO_x emissions greater than 100 tpy or 560 pounds per day (between May 1 and September 30) are required to determine and implement RACT. AkzoNobel has the potential to emit greater than 100 tpy VOC, and is therefore subject to the VOC RACT rules. NO_x RACT rules do not apply as potential NO_x emissions are less than 100 tpy.

112(r) – The facility is subject to Section 112(r) of the Clean Air Act requirements because it stores regulated substances in quantities above the thresholds in the Rule. Compliance was demonstrated on August 25, 2009 during the most recent 112(r) facility inspection.

Facility Wide Air Toxics – The facility is subject to facility-wide air toxics limitations under 2D .1100 and 2Q .0711.

CAM – Compliance Assurance Monitoring (CAM) (40 CFR Part 64) applies to all controlled emissions sources that are subject to an emission limit or standard, other than those exempted under 2D .0614(b)(1), with pre-controlled emissions of at least one regulated pollutant equal to or greater than 100 tons per year. Each emission source/area has been evaluated to assess CAM applicability. As shown in the table below, CAM does **not** apply to any emission source at the facility.

Source/Area	SIP Emission Limit?	Control Device	Pre-Control PTE \geq 100 TPY?	Subject to CAM	Comments
Littleford dryers	2D .0515 2D .0521	Fabric Filters/ Condensers	No.	No	All pre-controlled PTE < 100 TPY
Starch synthetic chemical	None	Condensers	No	No	All pre-controlled PTE < 100 TPY
Celquat mfg.	None	Condensers	No	No	All pre-controlled PTE < 100 TPY
Sulfonated Polystyrene Mfg	None	Condensers/VRU	No	No	All pre-controlled PTE < 100 TPY
Sulfonation vessels	None	Condensers/VRU	No	No	All pre-controlled PTE < 100 TPY
Area II Specialty Chemicals	2D .0516 2D .0521 Avoidance of 2D 530	Condensers/VRU	No	No	All pre-controlled PTE < 100 TPY
Octyl Acrylamide Mfg	None	Flare or Condensers/ Scrubber	Yes, NH ₃ Only	No	No NH ₃ SIP limit
Cosmetic Production	2D .0515 2D .0521	Scrubbers/Fabric Filter	No	No	All pre-controlled PTE < 100 TPY

Source/Area	SIP Emission Limit?	Control Device	Pre-Control PTE \geq 100 TPY?	Subject to CAM	Comments
Group of Liquid Storage tanks	None	Condensers	No	No	All pre-controlled PTE < 100 TPY
Miscellaneous storage tanks	None	No	No	No	No control device
Boilers	2D .0503 2D .0516 2D .0521 2D .0524	No	No	No	No control device

VII. Facility Emissions Review

The following is an emission summary for the facility. Actual emissions are for year 2010 as reported by the former company (National Starch) to DAQ through submittal of annual emission inventories.

Pollutant	2010 Actual Emissions Tons/Yr	Potential Emissions Tons/Yr
PM	4.1	17.7
CO	10.6	33.5
NO _x	12.6	99.84
SO ₂	0.1	208
VOC	135.2	177
Single HAP	4.2	< 10
Total HAPs	8.7	< 25

VIII. Public Notice/EPA and Affected State(s) Review

Public notice will be performed consistent with the requirements of 15A NCAC 2Q .0521. The notice will provide for a 30-day comment period with an opportunity for a public hearing. Copies of the public notice will be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of the permit application and the draft permit will be provided to EPA.

IX. Conclusions, Comments, and Recommendations

Ms. Carlotta Adams, NC DAQ MRO, and Mr. David Simons, AkzoNobel, Health, Safety & Environmental Manager, were provided a draft permit to review on August 2, 2011. Mr. Simons requested that all facility boilers continue be classified as gas/No. 2 fuel oil-fired units under the boiler GACT and that the authorized representative be changed to Mr. Ralph Owen, Site Director. The proposed permit includes these requested changes.

Recommend Issuance of Permit No. 09900T10