



Louisville Metro Air Pollution Control District
701 West Ormsby Avenue, Suite 303
Louisville, Kentucky 40203-3137



08 July 2016

FEDOOP Statement of Basis

Company: BYK Additives Inc.

Plant Location: 1335 South 13th Street, Louisville, Kentucky 40210

Date Application Received: 05-18-2006

Date Admin Complete: 07-18-2006

Date of Draft Permit: 07-08-2016

Date of Public Notice: 07-08-2016

District Engineer: Jenny Rhodes

Permit No: O-1584-16-F

Plant ID: 1584

SIC Code: 2011

NAICS: 325199

ICIS: 01584

Introduction:

This permit will be issued pursuant to District Regulation 2.17, *Federally Enforceable District Origin Operating Permits*. Its purpose is to limit the plant wide potential emission rates from this source to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO₂), carbon monoxide (CO), 1 hr and 8 hr ozone (O₃), and particulate matter less than 10 microns (PM₁₀); and is a non-attainment area for the 1997 standard for particulate matter less than 2.5 microns (PM_{2.5}), unclassifiable for the 2012 standard for particulate matter less than 2.5 micron (PM_{2.5}) and partial non-attainment area for sulfur dioxide (SO₂).

Application Type/Permit Activity:

Initial Issuance

Permit Revision

Administrative

Minor

Significant

Permit Renewal

Compliance Summary:

Compliance certification signed

Compliance schedule included

Source is out of compliance

Source is operating in compliance

I. Source Information

- 1. Source Description:** BYK Additives Inc. manufactures specialty additives.¹
- 2. Emission Unit Summary:** BYK Additives Inc. operates the following emission units.

| Emission Unit | Equipment Description |
|--|--|
| Tixogel Manufacturing Operations (TIX) | <ul style="list-style-type: none"> Raw bentonite clay is transferred from railcar to silos and made into an aqueous solution that is mechanically purified, then reacted with a quaternary ammonium salt, filtered, dried (2-5 MMBtu/hr natural-gas-fired driers) and packaged |
| Large Associative Thickener (AT) Plant | <ul style="list-style-type: none"> Dry Polymer System: Feed material is pumped from premix tanks into a reactor with a catalyst, then cooled, cut and packaged as a solid or dissolved in water or water/butyl carbitol mixture for packaging Polymer Solution System (Optiflo): Product from the Dry Polymer System is dissolved in water or water/butyl carbitol mixture for packaging |
| Mastergel (MGL) | <ul style="list-style-type: none"> Mixing of Organoclay and solvent in a holding tank, milled and packaged in drums/pails |

- 3. Fugitive Sources:** NA
- 4. FEDOOP Permit O-1584-16-F Revisions:**

| Revision | Issue Date | Public Notice Date | Type | Description |
|-----------------|-------------------|---------------------------|---------------|--------------------|
| Initial | xx/xx/2016 | 07/08/2016 | Entire Permit | Entire Permit |

5. Applicable Requirements:

PSD 40 CFR 60 SIP 40 CFR 63
 NSR 40 CFR 61 District-Origin Other

- 6. Future MACT Requirements:** NA
- 7. Referenced Federal Regulations in Permit:** None
- 8. Construction History**

| Permit No. | Issue Date | Description |
|-------------------|-------------------|---|
| C-1584-1004-16-F | 07/05/16 | Disconnecting scrubber WS3B associated with North and south spray dryers (V-16 and V-16A) to be replaced with additional filter cake washing (F-1 and F-1A), North System Premix Tank (V-9), and Clay storage silos V1 and V2 |
| C-1584-1003-15-F | 06/01/15 | One (1) 10,000 gallon Quaternary Amine Storage Tank (V-3NA), part of the Tixogel Plant emission unit. |
| C-1584-1002-14-F | 10/17/14 | Two (2) hoppers designated as H-60 and H-61 |

¹ This source was previously known as Southern Clay Products, Inc. and was previously part of the Sud Chemie South 13th Street facility prior to 2005.

| Permit No. | Issue Date | Description |
|------------|------------|---|
| | | controlled by existing dust collector DC-210 |
| 50-09-C | 2/28/09 | Two (2) Filter Receivers, two (2) bagging machines, and one (1) storage bin with two surge hoppers. |
| 74-07-C | 9/30/08 | One (1) eight stage wet scrubber |

9. Emission Summary:

| Pollutant | Actual Emissions (tpy) 2014 Data | Pollutant that triggered major source status |
|--|-------------------------------------|---|
| CO | 2.32 | No |
| NO _x | 2.76 | No |
| SO ₂ | 0.02 | No |
| PM/PM ₁₀ /PM _{2.5} | 5.02/5.02/4.87 | Yes |
| VOC | 7.10 | No |
| Highest Single HAP (Hexane) | 0.050 | No |
| Total HAPs | 0.05 | No |

II. Regulatory Analysis

- Acid Rain Requirements:** The source is not subject to the Acid Rain Program.
- Stratospheric Ozone Protection Requirements:** This source does not manufacture, sell, or distribute any of the chemicals listed in Title VI of the CAAA. Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.
- Prevention of Accidental Releases 112(r):** This source does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68 Subpart F and District Regulation 5.15, *Chemical Accident Prevention Provisions*, in a quantity in excess of the corresponding specified threshold amount.
- Basis of Regulation Applicability**

| Regulation | Basis for Applicability |
|------------|---|
| 5.00 | Regulation 5.00 defines the terms used in the Strategic Toxic Air Reduction (STAR) Program. |
| 5.21 | Regulation 5.21 establishes the requirements for Environmental Acceptability for Toxic Air Contaminants (TACs). |
| 5.23 | Regulation 5.23 identifies the categories of TACs to be addressed in the STAR Program. |
| 7.08 | Regulation 7.08 establishes emission standards for processes that emit PM which were constructed after September 1, 1976. |
| 7.12 | Regulation 7.12 establishes VOC standards for VOC storage vessels |

| Regulation | Basis for Applicability |
|-------------------|--|
| | constructed after April 19, 1972 with a storage capacity greater than 250 gallons |
| 7.25 | Regulation 7.25 establishes VOC standards for affected facilities constructed after June 13, 1979. |

a. Plant-wide major source limits

BYK Additives Inc. is a major source for PM/PM₁₀/PM_{2.5}. To preclude the requirements of Regulation 2.16, *Title V Operating Permits*, Regulation 2.04, *Construction or Modification of Major Sources In or Impacting Upon Non-Attainment Areas*, and Regulation 2.05, *Prevention of Significant Deterioration of Air Quality*, the source is subject to a plant-wide limit of less than 100 tons during any consecutive 12-month period for PM/PM₁₀/PM_{2.5}. Pursuant to Regulation 2.17, section 5.1, the permit includes specific conditions to limit the plant-wide emissions to below major-source thresholds.

Regulation 2.17, section 5.2, requires sufficient monitoring, record keeping and reporting to assure ongoing compliance with the terms and conditions of the permit. The source is required to monitor and maintain records of the throughput of each raw material for each emission point during each calendar month and consecutive 12-month period. The source is required to report the total *plant-wide* calendar month and consecutive 12-month emissions of PM/PM₁₀/PM_{2.5} for each month in the reporting period.

b. STAR Program

Regulations 5.01, 5.21, and 5.23 (STAR Program) establish requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards. Southern Clay submitted their Category 1 TAC Environmental Acceptability (EA) Demonstration to the District on September 30, 2008 and their Category 2 TAC Environmental Acceptability (EA) Demonstration to the District on September 26, 2012. Natural gas combustion sources at this facility are de minimis in accordance with Regulation 5.21, section 2.7. Southern Clay emits the TACs listed in the following table.

| TAC | TAC Category |
|--------------------------------------|---------------------|
| Benzyl Chloride | 4 |
| Diethylene Glycol Monobutyl Ether | 2 |
| Dicyclohexylmethane-4,4-diisocyanate | 2 |
| Isophorone Diisocyanate | 2 |
| Methanol | 4 |
| Methyl Chloride | 4 |
| Sulfuric Acid | 2 |
| Tetramethylxylene Diisocyanate | 2 |

c. Equipment:

| EU | EP | ID/Description | Applicable Regulations | Control Device |
|------------|-------------|---|--|----------------|
| TIX | 1 | South Spray Dryer, V-16, 5 MMBtu/hr natural gas fired unit with VOC reduction achieved through additional filter cake washing in Filter Press F1. | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 7.08, 7.25 | DC-3 |
| | 2 | North Spray Dryer, V-16A, 5 MMBtu/hr natural gas fired unit with VOC reduction achieved through additional filter cake washing in Filter Press F1A. | | DC-3A |
| | 3 | Two (2) Premix Tanks (North System), V-9 & V-10 | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 7.25 | NA |
| | 4 | South System Premix Tank, V-9A | | NA |
| | 5 | South System Premix Tank, V-10A | | NA |
| | 6 | South Storage Hopper, Bag Adjust, Rework Addition | 7.08 | DC-4 |
| | 7 | North Storage Hopper, Bagging Machine, Bag Adjust, Rework Addition | 7.08 | DC-4A |
| TIX | 8 | Storage Bin and Clay Suspension Tank, V-4 | 7.08 | DC-2 |
| | 9 | Two (2) Clay Storage Silos, V1 & V2, w/ conveyor system | 7.08 | DC-1 |
| | 11 | Four (4) Coagulator Tanks (South System) V-11, 12, 13, 14 | 7.25 | NA |
| | 12 | Four (4) Coagulator Tanks (North System), V-11A, 12A, 13A, 14A | 7.25 | NA |
| | 13 | South Bag-Dump Station, Blender, Bagging Machine | 7.08 | DC-6 |
| | 14 | Two (2) Quat Storage Tanks, V-3N, V-3S | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 7.12 | NA |
| | | One (1) Quat Storage Tank, V-3NA | | |
| | 19 | South Filter Receiver for product convey system, DC-7 | 7.08 | NA |
| | 20 | North Filter Receiver for product convey system, DC-7A | 7.08 | NA |
| | 21a | Transition Hopper South Compartment | 7.08 | DC-7 |
| | 21b | Transition Hopper North Compartment | 7.08 | DC-7A |
| | 22 | South Bagging Machine (air packer) | 7.08 | DC-7 |
| | 23 | North Bagging Machine (air packer) | 7.08 | DC-7A |
| | 24 | Hopper H-60 | 7.08 | DC-210 |
| 25 | Hopper H-61 | 7.08 | DC-210 | |
| AT (Large) | 4 | Shredder | 7.08 | DC-309 |
| MGL | 2 | Two (2) Mix Tanks, T-210 and T-211 | 7.08, 7.25 | DC-JV |

The Prater Mill System (EP TIX-15, TIX-16 and TIX-17) was decommissioned, reported in a July 27, 2011 letter from the company.

EP AT-7, the DD-302 Drum Dumper, has been disassembled and is no longer in use.

In the Large AT Plant, the large reactor, large cooling roll, large knife mill and large product drumming handle large pieces of solid polymer and generate no PM emissions. There are no air emissions associated with the reactor, PEG Storage Tanks T-300 and T-301, surfactant storage tanks T-302A, T-302B and T-303;

premix tanks T-304 and T-305 (1500 gallons each); T-310 and T-311 Mix Tanks (3200 gallons each), T-316 Storage Tank, the T-320, T-321, T-330 and T-331 Blend Tanks (6800 gallons, each) and the T-340, T-341, T-342, T-343, T-344 and T-345 Storage Tanks (14,000 gallons each).

In the Small AT Plant, the T-100 and T-101 Polymer Feed Pre-Mix Tanks (250 gallons each) contain polyethylene glycol and do not generate VOC emissions. The small reactor, small cooling roll, small shredder, small knife mill and small product drumming handle large pieces of solid polymer and generate no VOC or PM emissions.

In the Mastergel Plant, the M-220 HP Micro Fluidizer was removed from service. The Mastergel Bagdump and Storage Bin, SB-210, is no longer in service. EPMGL-4 (Shearing Mill, P-211) and EPMGL-5 (Gaulin Mill) are closed pumps with closed piping and do not generate air emissions.

d. Standards/Operating Limits

i. PM/PM₁₀/PM_{2.5}

- 1) For emission points subject to Regulation 7.08 for PM, the PM emission standards are calculated per section 3.1.2. of the regulation. The equation to calculate the hourly PM emission limit is $E = 3.59 * P^{0.62}$, where E is the allowable PM emission limit, in pounds per hour, and P is the process weight rate expressed in tons per hour.
- 2) Neither PM, PM₁₀, or PM_{2.5} emissions shall exceed 100 tons, plant-wide, during any consecutive 12-month period, per Regulation 2.17.

ii. Opacity

Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

iii. VOC

- 1) For VOC storage tanks with a capacity greater than 250 gallons, the source is subject to a vapor pressure limit of less than or equal to 1.5 psia to preclude the installation of a permanent submerged fill pipe, pursuant to Regulation 7.12, section 3.3.
- 2) Regulation 7.25 does not apply to affected facilities with potential VOC emissions less than or equal to 5 tons per year. Therefore, the source is subject to a plantwide VOC limit of 5 tons during any consecutive 12-month period for the following equipment: V-9, V-10, V-9A, V-10A, V-11, V-12, V-13, V-14, V-11A, V-12A, V-13A, V-14A, V-15, V-15A, T-110, T-120, T-121, T-210, and T-211.

- 3) Regulation 7.25 applies to the Spray Dryers V-16 and V-16A. Therefore, to utilize the best available control technology (BACT), the source is subject to a VOC limit of 15.21 tons during any consecutive 12-month period and shall utilize additional filter cake washing through filter presses F1 and F1A, maintaining a water feed rate of 40 GPM while the filter presses are filling with water.

- iv. **TAC**

Regulations 5.00, 5.01, 5.21 and 5.23 (STAR Program) establish requirements for environmental acceptability of TACs and the requirement to comply with all applicable emission standards.

- e. **Monitoring and Record Keeping**

- i. **PM/PM₁₀/PM_{2.5}**

Regulation 7.08 does not require any specific monitoring or record keeping requirements for PM. However, Regulation 2.17 establishes requirements for sufficient monitoring and record keeping to assure ongoing compliance with the terms and conditions of the permit.

- ii. **Opacity**

Regulation 7.08 does not require any specific monitoring or record keeping requirements for opacity. However, Regulation 2.17 establishes requirements for sufficient monitoring and record keeping to assure ongoing compliance with the terms and conditions of the permit. The source is required to conduct a monthly visible emission survey and maintain records of the results to assure ongoing compliance with the opacity standard.

- iii. **VOC**

Regulation 2.17, section 5.2 requires sufficient monitoring and record keeping assuring ongoing compliance with the terms and conditions of the permit.

- iv. **TAC**

Regulation 5.21, section 4.10 establishes monitoring and record keeping requirements to assure ongoing compliance with the applicable EA goals.

- f. **Reporting**

- i. **PM/PM₁₀/PM_{2.5}**

Regulation 7.08 does not require any specific reporting requirements for PM. However, Regulation 2.17 establishes

requirements to assure ongoing compliance with the terms and conditions of the permit.

ii. **Opacity**

Regulation 7.08 does not require any specific reporting requirements for opacity. However, Regulation 2.17 establishes requirements to assure ongoing compliance with the terms and conditions of the permit. The source is required to report any deviation from the requirement to perform monthly VE surveys or Method 9 tests and the occurrences of VE surveys where visible emissions were observed and the results of the Method 9 tests.

iii. **VOC**

Regulation 2.17, section 5.2 requires sufficient reporting assuring ongoing compliance with the terms and conditions of the permit.

iv. **TAC**

Regulation 5.21, sections 4.22, 4.23, and 4.24 require the source to submit a re-evaluated EA demonstration with each construction application, permit renewal, or within 6 months of making a change. Regulation 2.17, section 5.2 requires sufficient reporting assuring ongoing compliance with the terms and conditions of the permit. The source is required to report any conditions that were inconsistent with those conditions analyzed in the most recent Environmental Acceptability Demonstration.

III. Other Requirements

1. **Temporary Sources:** The source did not request to operate any temporary facilities.
2. **Short Term Activities:** The source did not report any short term activities.
3. **Emissions Trading:** NA
4. **Alternative Operating Scenarios:** The source did not request to operate under any alternative operating scenarios.
5. **Compliance Status:** Southern Clay is currently in compliance.
6. **Emissions Calculation Methodology:** The calculated emissions are based on the processing rate, the estimated emission factors and the quantities of pollutants in the raw materials.
7. **Compliance History:**

| Incident Date | Issuance Date | Penalty |
|---------------|---------------|------------|
| 3/17/11 | 8/30/11 | No penalty |

8. Insignificant Activities

| Description | Quantity | Basis |
|---|----------|--|
| Small Associative Thickener Plant tanks (T-110 Mix Tank, 1000 gal, T-120 & T-121 Blend Tanks, 1000 gal each, N. & S. Nauta Mixer Tanks, 735 gal each) | 5 | Regulation 1.02, section 1.38.1.2.1 |
| DC-31 – VacuMax 105201, central vacuum system | 1 | Regulation 1.02, section 1.38.1.2.1 |
| Brazing, soldering, or welding equipment | 6 | Regulation 1.02 Appendix A section 3.4. |
| Storage tanks 250 gal or less: <ul style="list-style-type: none"> • Small AT Plant T-102 Sulfonic Acid Tank 2 gal • Small AT Plant T-103 TEA Tank, 2 gal • Large AT Plant T-308 (Sulfonic Acid Tank), 12 gal • Large AT Plant T-309 (TEA) Tank, 12 gal • Mastergel Activator tank | 5 | Regulation 1.02 Appendix A section 3.24. |
| Combustion sources < 1.0 MMBtu/hr | 7 | Regulation 1.02 Appendix A section 1.1. |