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USEPA Region V:
EGLE Kalamazoo District Office:

September 13, 2019

USEPA Region V
Director Air Protection Division
77 West Jackson Street
Chicago, IL 60604

REC
SEP 17 2019
AQD-KAL

Mr. Rex Lane
Michigan Department of Environment, Great Lakes and Energy
Air Quality Division
7953 Adobe Road
Kalamazoo, MI 49009-5025

**Re: 40 CFR 63, Subpart VVVVV Chemical Manufacturing Area Source Rule
Notice of Compliance Status Report – Performance Test Report and Metal HAP
Process Vent Emission Limit Compliance Demonstration
BASF Toda America LLC (BTA), Battle Creek, MI**

To Those Listed:

This correspondence provides the required Notice of Compliance Status Report pursuant to both 40 CFR 63.11501(b)(1)(ii) and 40 CFR 63.7(g) for the BTA facility located in Battle Creek, Michigan. BTA completed performance testing on some of its emission sources and is submitting the Stack Test Report as part of this notice. BTA has also used these test results to make the initial compliance demonstration with the metal HAP emissions requirement of 95% or greater removal efficiency for New Sources of Metal HAP.

Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Ivor Bull, Chief Operating Officer BTA LLC

9/11/2019

Date

Should you have any concerns or questions regarding the information contained in this submittal please contact me at 734-324-6836.

Sincerely,

A handwritten signature in blue ink, appearing to read 'David W. Sheaves', followed by a long horizontal flourish.

David W. Sheaves
EHS Specialist

EXECUTIVE SUMMARY

Environmental Resources Management, Inc. (ERM) prepared this source test report on behalf of BASF Toda America, Inc. (hereinafter, BTA) for submittal to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the United States Environmental Protection Agency Region V (EPA R-5). This source test report describes the procedures, methodologies, and results that will be used to demonstrate compliance with 40 CFR 63, Subpart VVVVVV (6V) regulations.

This report presents the test results for the two (2) Chemical Manufacturing Production Units (CMPU's) (lithium-ion cathode powder manufacturing lines 1 and 2) regulated by 6V at the BTA Battle Creek, MI facility. Each of the baghouses controlling emissions for the CMPUs were sampled for filterable particulate matter at the inlet and outlet.

Testing was performed by ERM personnel during the periods from June 20-27 and July 9-16, 2019 under representative operating conditions. Sampling was performed in triplicate as described in this report. Tables ES-1 and ES-2 present summaries of results for the compliance test program.

Table ES-1 BTA – Summary of Line 1 Results, Compliance Testing June 2019

Source	Location	Parameter	Result1	Units
A1-BF-010	Inlet	Total Filterable PM	0.0144	gr/dscf
		Total Filterable PM	0.0798	lb/hr
	Outlet	Total Filterable PM	0.0016	gr/dscf
		Total Filterable PM	0.0089	lb/hr
A1-BF-020	Inlet	Total Filterable PM	0.1795	gr/dscf
		Total Filterable PM	1.612	lb/hr
	Outlet	Total Filterable PM	0.0053	gr/dscf
		Total Filterable PM	0.0456	lb/hr
A1-BF-030	Inlet	Total Filterable PM	0.0147	gr/dscf
		Total Filterable PM	0.0316	lb/hr
	Outlet	Total Filterable PM	<0.0004	gr/dscf
		Total Filterable PM	<0.0008	lb/hr
A1-BF-210	Inlet	Total Filterable PM	0.1799	gr/dscf
		Total Filterable PM	1.631	lb/hr
	Outlet	Total Filterable PM	0.0012	gr/dscf
		Total Filterable PM	0.0103	lb/hr
A1-BF-720	Inlet	Total Filterable PM	0.0391	gr/dscf
		Total Filterable PM	0.0565	lb/hr
	Outlet	Total Filterable PM	<0.0005	gr/dscf
		Total Filterable PM	<0.0008	lb/hr
Line 1 All Inlets		Total Filterable PM	3.4108	lb/hr
Line 1 All Outlets		Total Filterable PM	<0.0663	lb/hr
Line 1 Overall		Removal Efficiency	~98.1	%

Notes:

- All results reported above are the average of triplicate sample runs. A "<" operator indicates that one or more analytical results were below the method detection limit (MDL). In such cases, the result value was rounded up to the (MDL) for the emissions calculation.

Table ES-2 BTA – Summary of Line 2 Results, Compliance Testing July 2019

Source	Location	Parameter	Result1	Units
A2-BF-010	Inlet	Total Filterable PM	0.1691	gr/dscf
		Total Filterable PM	1.130	lb/hr
	Outlet	Total Filterable PM	0.0022	gr/dscf
		Total Filterable PM	0.0157	lb/hr
A2-BF-015	Inlet	Total Filterable PM	0.0071	gr/dscf
		Total Filterable PM	0.9928	lb/hr
	Outlet	Total Filterable PM	<0.0027	gr/dscf
		Total Filterable PM	<0.0226	lb/hr
A2-BF-020	Inlet	Total Filterable PM	0.7335	gr/dscf
		Total Filterable PM	4.076	lb/hr
	Outlet	Total Filterable PM	<0.0006	gr/dscf
		Total Filterable PM	<0.0029	lb/hr
A2-BF-030	Inlet	Total Filterable PM	0.0233	gr/dscf
		Total Filterable PM	0.0526	lb/hr
	Outlet	Total Filterable PM	<0.0008	gr/dscf
		Total Filterable PM	<0.0019	lb/hr
A2-BF-720	Inlet	Total Filterable PM	0.0015	gr/dscf
		Total Filterable PM	0.0019	lb/hr
	Outlet	Total Filterable PM	<0.0003	gr/dscf
		Total Filterable PM	<0.0004	lb/hr
Line 2 All Inlets		Total Filterable PM	6.253	lb/hr
Line 2 All Outlets		Total Filterable PM	<0.0434	lb/hr
Line 2 Overall		Removal Efficiency	>99.2	%

Notes:

1. All results reported above are the average of triplicate sample runs. A "<" operator indicates that one or more analytical results were below the method detection limit (MDL). In such cases, the result value was rounded up to the (MDL) for the emissions calculation.

1. INTRODUCTION

Environmental Resources Management, Inc. (ERM) has prepared this source test report on behalf of BASF Toda America, Inc. (*hereinafter, BTA*) for submittal to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the United States Environmental Protection Agency Region V (EPA R-5). This source test report describes the procedures, methodologies, and results that will be used to demonstrate compliance with 40 CFR 63, Subpart VVVVVV (6V) regulations for sources subject to the Chemical Manufacturing Area Source (CMAS) rule.

BTA was issued Permit to Install No. 70-10A on September 29, 2014. The permit divides the facility into two lines and identifies emission units and control equipment used for the manufacture of lithium-ion battery cathode material. Both lines are continuous processes with the following process steps:

1. Raw material handling and mixing
2. Calcination
3. Pulverization
4. Blending and Packaging

Each line is considered a Chemical Manufacturing Process Unit (CMPU) under Subpart 6V and each CMPU is required to reduce the collective uncontrolled emissions of total metal HAP emissions by equal to or greater than 95 percent by weight.

This test program was designed to measure pre- and post-controlled emissions that can be used to demonstrate compliance with the 95% reduction requirement set forth in the CMAS rule. USEPA Methods 1-4 were utilized to determine exhaust gas volumetric flow, and USEPA Method 5 was used to quantify total filterable PM and determine emission rates at all inlet and outlet sample locations, which will be used to calculate the overall reduction of total PM.

Services provided by ERM included project management, field sampling, collection of field data, and preparation of the final report. BTA personnel provided access to the facility, orientation and site specific safety training, and process information during the test periods. Table 1-1 presents a sampling matrix for the compliance testing.

The test protocol proposed conducting two-hour (120 minutes) runs for each sample location as the inlet loadings from the sources were unknown. However, after gathering some preliminary data while on-site for the testing, there were four sources that we were able to conduct one-hour runs on as noted in Table 1-1.

Additionally, ERM was planning on testing the outlets to A1BF650 and A2BF650. However, we discovered that these sources operate in a closed loop with only a small (one inch pipe) being used to exhaust some air to maintain the system pressure. Therefore, no testing was able to be completed on these sources.

Table 1-1 BTA. – Compliance Sampling Matrix for June-July, 2019

Sample Location	No. of Runs	Sample/Type Pollutant	Sampling Method	Run Time (min)	Analytical Method
A1-BF-030, A1-BF-210, A2-BF-015, A2-BF-030	3	Velocity/temp Moisture Filterable PM	USEPA RM 1-2 USEPA RM 4 USEPA RM 5	as req'd 60 60	Pitot/Type K Thermocouple Gravimetric Gravimetric
A1-BF-010, A1-BF-020, A1-BF-720, A2-BF-010 A2-BF-020, A2-BF-720	3	Velocity/temp Moisture Filterable PM	USEPA RM 1-2 USEPA RM 4 USEPA RM 5	as req'd 120 120	Pitot/Type K Thermocouple Gravimetric Gravimetric

Mr. David Sheaves, Expert, Environmental Protection, for BASF Corporation coordinated the project and served as the point-of-contact at the plant in Battle Creek. For ERM, Mr. Jeffrey Twaddle was the Partner-in-Charge, Mr. Mark DiPrinzio and Mr. Matthew Kwiatkowski were the Project Managers and Mr. Dustin Warrington was the field test team leader. Additional ERM staff was utilized to complete the testing as needed. Table 1-2 lists the primary project personnel and their telephone numbers.

Table 1-2 Project Personnel and Contact Information

Firm	Contact	Title	Phone No.
BTA	David Sheaves	Expert, Environmental Protection	(734) 324-6836
ERM	Jeffrey Twaddle	Partner-in-Charge	(615) 656-4636
ERM	Mark DiPrinzio	Project Manager	(484) 913-0353
ERM	Mathew Kwiatkowski	Project Engineer/Manager	(616) 738-7396
ERM	Dustin Warrington	Field Test Team Lead	(615) 567-7947

2. FACILITY AND SOURCE INFORMATION

2.1 Facility Description

The BTA facility is located in Battle Creek, MI and produces lithium-ion cathode materials. BTA produces LiNiCoAlO₂, LiNiCoMnO₂, and LiNiO₂, which are key chemical components of lithium-ion Batteries. BTA manufactures the Li-ion cathode powder on two separate manufacturing lines to provide the capacity required to fulfill market demand.

2.2 Description of Sample Locations and Process Operations during Field Testing

Ten baghouses, 5 each on Lines 1 and 2, are equipped with fabric filters to control emissions. Each baghouse was simultaneously sampled at the inlet and outlet to quantify uncontrolled and controlled emissions so that removal efficiencies could be calculated. Table 2-1 summarizes the baghouse locations and measurements used for determining traverse points per USEPA Method 1A.

Table 2-1 Sample Locations

Line	Equipment ID	Process	Loc.	Stack Diameter (in.)	Distance to Upstream Disturbance (in.)	Distance to Downstream Disturbance (in.)	Number of Traverse Points
1	A1-BF-010	Raw material handling and mixing	In.	7.875	42	40	20
			Out.	10.25	28	35	24
	A1-BF-020	Calcination feed and discharge	In.	7.875	44	24	20
			Out.	10	36	30	24
	A1-BF-030	Final Product Pack out	In.	5.75	57	19	8
			Out.	5.75	26	44	24
	A1-BF-210	Raw material addition	In.	7.5	42.5	25.5	20
			Out.	9.75	28	36	24
	A1-BF-720	Final Product handling and blending	In.	5.625	28	37	24
			Out.	6	42	70	12
2	A2-BF-010	Raw material addition	In.	8	77	46	8
			Out.	10	66	46	16
	A2-BF-015	Raw material addition, handling and mixing	In.	8	38	51	24
			Out.	10	51	69	20
	A2-BF-020	Calcination feed and discharge	In.	8	56	53	12
			Out.	10	88	67	8
	A2-BF-030	Final Product Pack out	In.	6	76	21	8
			Out.	6	44	58	12
	A2-BF-720	Final Product handling and blending	In.	6	29	31	24
			Out.	6	94	22	8

2.3 Process Data

Testing was conducted under representative operating conditions. Table 2-2 summarizes process data collected during testing.

Table 2-2 Process Data

Equipment ID	Material Feed Rate ⁽¹⁾ (kg/hr)	Baghouse Pressure Drop (in. H ₂ O)	Bag Leak Detection System
A1-BF-010	Approx. 200 - 220	0.40 – 0.75	No leaks detected
A1-BF-020	Approx. 200 - 220	0.32 – 0.87	No leaks detected
A1-BF-030	Approx. 400 -1,200	0.20 – 1.14	No leaks detected
A1-BF-210	Approx. 200 - 220	0.37 – 0.75	No leaks detected
A1-BF-720	Approx. 400 - 500	0.07 – 2.27	No leaks detected
A2-BF-010	Approx. 230 - 260	(2)	No leaks detected
A2-BF-015	Approx. 240 - 280	0.48 – 0.76	No leaks detected
A2-BF-020	Approx. 250 - 260	0.39 – 0.66	No leaks detected
A2-BF-030	Approx. 600 -1,200	0.38 – 0.82	No leaks detected
A2-BF-720	Approx. 400 - 500	0.07 – 1.06	No leaks detected

(1) *The material feed rates for the BF-030s and BF-720s do not coincide with the rest of the operation. The Pack Out operations, associated with BF-030s, on each line are conducted once or twice per day so the material feed rate during pack out is much higher than the rest of the operation. The rate is highly variable due to having to manage the dew point of the pack out room between bags being filled. The equipment associated with BF-720s needs to operate at a higher rate than the upstream processes; therefore, the material is held upstream until a sufficient quantity is available for processing. As a result, testing of these sources was conducted as directed by facility production staff in order to line up the testing with the processing of material.*

(2) *ERM did not record any pressure drop data during the testing because BTA has a continuous monitoring system in place that records the baghouse pressure drop data. During the sampling run for A2-BF-010, the monitoring system experienced an error and failed to record the pressure drop data. The Bag Leak Detection System data along with the emissions data collected for A2-BF-010 demonstrates that it was operating properly during the sampling period. Based on visual checks of the pressure drops on the baghouses during the sampling and the data recorded since the system error was corrected, it appears that it was operating in the range of 0.4 to 1.0 inches of water.*