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SOURCE TEST REPORT 2020 COMPLIANCE TESTING

**SHRADER TIRE & OIL, INC.
MELVINDALE, MICHIGAN**

EUTIREBUFFING



Prepared For:

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For Submittal To:

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REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature:  Date: 3-20-2020
Name: Todd Wessel Title: Client Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.


Signature:  Date: 3-20-2020
Name: Matthew Young Title: District Manager

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1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

Trinity Consultants, Inc. contracted Montrose Air Quality Services, LLC (Montrose) to perform a compliance emissions test program on the EUTIREBUFFING at the Shrader Tire & Oil, Inc. facility located in Melvindale, Michigan. The tests were conducted to satisfy the emissions testing requirements pursuant to Michigan Department of Environment, Great Lakes, and Energy (EGLE) Permit-to-Install No. 126-06A.

The specific objectives were to:

- Verify the filterable particulate matter (PM) emissions from a exhaust stack serving EUTIREBUFFING.
- Verify the visible emissions (VE) from a exhaust stack serving EUTIREBUFFING.
- Conduct the test program with a focus on safety.

Montrose performed the tests to measure the emission parameters listed in Table 1-1.

TABLE 1-1
SUMMARY OF TEST PROGRAM

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
2/13/2020	EUTIREBUFFING	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
2/13/2020	EUTIREBUFFING	O ₂ , CO ₂	EPA 3	3	60
2/13/2020	EUTIREBUFFING	Moisture	EPA 4	3	60
2/13/2020	EUTIREBUFFING	PM	EPA 5	3	60
2/13/2020	EUTIREBUFFING	VEs	EPA 9	3	60

To simplify this report, a list of Units and Abbreviations is included in Appendix D.1. Throughout this report, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

This report presents the test results and supporting data, descriptions of the testing procedures, descriptions of the facility and sampling locations, and a summary of the quality assurance procedures used by Montrose. The average emission test results are summarized and compared to their respective permit limits in Table 1-2. Detailed results for individual test runs can be found in Section 4.0. All supporting data can be found in the appendices.

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The testing was conducted by the Montrose personnel listed in Table 1-3. The tests were conducted according to the test plan (protocol) dated January 16, 2020 that was submitted to and approved by EGLE.

TABLE 1-2
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EUTIREBUFFING
FEBRUARY 13, 2020

Parameter/Units	Average Results	Emission Limits
Filterable Particulate Matter (PM)		
lb/1,000 lbs of dry exhaust gases	0.038	0.10
lb/hr	0.56	1.8
Visible Emissions (VE)		
% opacity	0.0	six-minute average of 20% opacity

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1.2 KEY PERSONNEL

A list of project participants is included below:

Facility Information

Source Location: Shrader Tire & Oil, Inc.
25445 Outer Drive
Melvindale, MI 48122
Project Contact: Steve Zervas
Role: Managing Consultant
Company: Trinity Consultants
Telephone: 734-474-7709
Email: szervas@trinityconsultants.com

Agency Information

Regulatory Agency: EGLE
Agency Contact: Mark
Telephone: 586-753-3745
Email: dziadoszm@michigan.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Matthew Young	David Trahan
Title:	District Manager	Senior Field Technician
Telephone:	248-548-8070	248-548-8070
Email:	myoung@montrose-env.com	dtrahan@montrose-env.com

Laboratory Information

Laboratory: Montrose
City, State: Royal Oak, Michigan
Method: EPA Method 5

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Test personnel and observers are summarized in Table 1-3.

**TABLE 1-3
TEST PERSONNEL AND OBSERVERS**

Name	Affiliation	Role/Responsibility
David Trahan	Montrose	Senior Field Technician, QI
Todd Wessel	Montrose	Client Project Manager
Shane Rabideau	Montrose	Field Technician

2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS DESCRIPTION, OPERATION, AND CONTROL EQUIPMENT

Tire Buffing (Tread Removal) consists of two SIO Tire Single Head Tire Buffers and a material handling system.

After the initial inspection of each used tire is completed, the remaining worn tread rubber is removed and the casing surface is prepared to accept the new tread. The rasp moves against the surface of the carcass in a precise programmed pattern. This process is known as a buffing or grinding operation. The rubber removed during the buffing process is collected by a vacuum hood system that encloses the rasp head. The vacuum system is connected to a material handling system that separates the rubber particles and deposits the rubber crumb into a sealed container. The rubber crumb is sold to a rubber recycle center for reprocessing.

This process produces PM (rubber) emissions. The emissions are from the rubber off-gassing from the heat generated by the actual buffing. The material handling system is vented via exhaust stack.

2.2 FLUE GAS SAMPLING LOCATION

Information regarding the sampling location is presented in Table 2-1.

**TABLE 2-1
SAMPLING LOCATION**

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance		Number of Traverse Points
		Downstream EPA "B" (in./dia.)	Upstream EPA "A" (in./dia.)	
EUTIREBUFFER EXHAUST STACK	14.0	112.0 / 8.0	130.0 / 9.3	Isokinetic: 12 (6/port);

Sample location(s) were verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions were confirmed prior to testing using EPA Method 1, Section 11.4. See Appendix A.1 for more information.

2.3 OPERATING CONDITIONS AND PROCESS DATA

Emission tests were performed while the source/units and air pollution control devices were operating at the conditions required by the permit.

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Plant personnel were responsible for establishing the test conditions and collecting all applicable unit-operating data. The process data that was provided is presented in Appendix B. Data collected includes the following parameter:

- The number of tires processed during the test run.



3.0 SAMPLING AND ANALYTICAL PROCEDURES

3.1 TEST METHODS

The test methods for this test program were presented previously in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 1, Sample and Velocity Traverses for Stationary

EPA Method 1 is used to assure that representative measurements of volumetric flow rate are obtained by dividing the cross-section of the stack or duct into equal areas, and then locating a traverse point within each of the equal areas. Acceptable sample locations must be located at least two stack or duct equivalent diameters downstream from a flow disturbance and one-half equivalent diameter upstream from a flow disturbance.

The sample port and traverse point locations are detailed in Appendix A.1.

3.1.2 EPA Method 2, Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

EPA Method 2 is used to measure the gas velocity using an S-type pitot tube connected to a pressure measurement device, and to measure the gas temperature using a calibrated thermocouple connected to a thermocouple indicator. Typically, Type S (Stausscheibe) pitot tubes conforming to the geometric specifications in the test method are used, along with an inclined manometer. The measurements are made at traverse points specified by EPA Method 1.

3.1.3 EPA Method 3, Gas Analysis for the Determination of Dry Molecular Weight

EPA Method 3 is used to calculate the dry molecular weight of the stack gas using one of three methods. The first choice is to measure the percent O₂ and CO₂ in the gas stream. A gas sample is extracted from a stack by one of the following methods: (1) single-point, grab sampling; (2) single-point, integrated sampling; or (3) multi-point, integrated sampling. The gas sample is analyzed for percent CO₂ and percent O₂ using either an Orsat or a Fyrite analyzer. The second choice is to use stoichiometric calculations to calculate dry molecular weight. The third choice is to use an assigned value of 30.0, in lieu of actual measurements, for processes burning natural gas, coal, or oil.

3.1.4 EPA Method 4, Determination of Moisture Content in Stack Gas

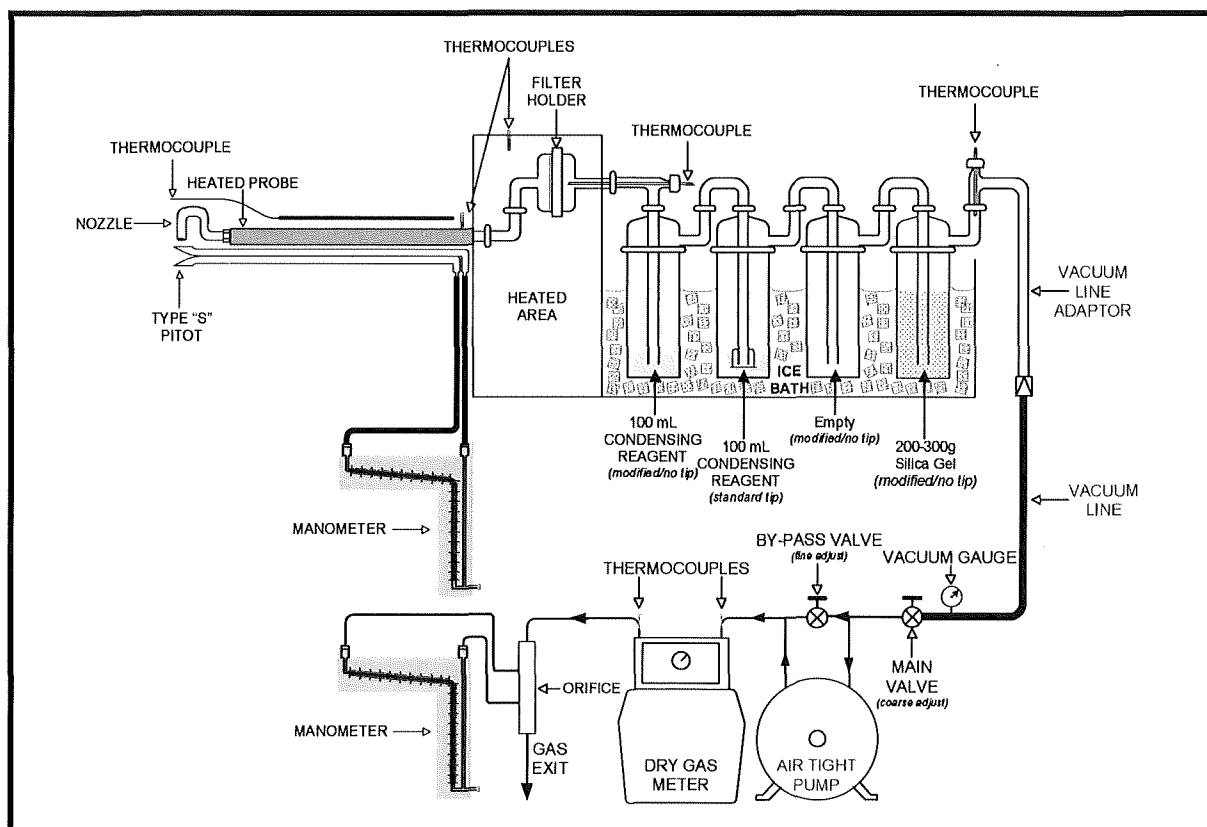
EPA Method 4 is a manual, non-isokinetic method used to measure the moisture content of gas streams. Gas is sampled at a constant sampling rate through a probe and impinger train. Moisture is removed using a series of pre-weighed impingers containing methodology-specific liquids and silica gel immersed in an ice water bath. The impingers are weighed after each run to determine the percent moisture.

3.1.5 EPA Method 5, Determination of Particulate Matter from Stationary Sources

EPA Method 5 is a manual, isokinetic method used to measure FPM emissions. The samples are analyzed gravimetrically. This method is performed in conjunction with EPA Methods 1 through 4. The stack gas is sampled through a nozzle, probe, filter, and impinger train. FPM results are reported in emission concentration and emission rate units.

The typical sampling system is detailed in Figure 3-1.

**FIGURE 3-1
US EPA METHOD 5 SAMPLING TRAIN**



3.1.6 EPA Method 9, Visual Determination of the Opacity of Emissions

EPA Method 9 is used to observe the visual opacity of emissions (opacity). The observer stands at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140° sector to their back. The line of vision is perpendicular to the plume direction and does not include more than one plume diameter. Observations are recorded at 15-second intervals and are made to the nearest 5% opacity. The qualified observer is certified according to the requirements of EPA Method 9, section 3.1.

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3.2 PROCESS TEST METHODS

The test plan did not require that process samples be collected during this test program; therefore, no process sample data are presented in this test report.

4.0 TEST DISCUSSION AND RESULTS

4.1 FIELD TEST DEVIATIONS AND EXCEPTIONS

US EPA Method 5 was utilized in lieu of US EPA Method 5/202, as the flue gas temperature remained under 85 °F during testing.

4.2 PRESENTATION OF RESULTS

The average results are compared to the permit limits in Table 1-2. The results of individual compliance test runs performed are presented in Table 4-1. Emissions are reported in units consistent with those in the applicable regulations or requirements. Additional information is included in the appendices as presented in the Table of Contents.

**TABLE 4-1
PM EMISSIONS RESULTS -
EUTIREBUFFING**

Run Number	1	2	3	Average
Date	2/13/2020	2/13/2020	2/13/2020	--
Time	8:14-9:18	9:48-10:51	11:14-12:17	--
Process Data				
Number of tires	29	28	31	29
Maximum Six-Minute Average of Visible Emissions				
% opacity	0.0	0.0	0.0	0.0
Filterable Particulate Matter (PM)				
gr/dscf	0.022	0.021	0.016	0.019
lb/hr	0.651	0.571	0.468	0.563
lb/1,000 lb-dry exhaust gas	0.044	0.039	0.031	0.038
Flue Gas Parameters				
O ₂ , % volume dry	21.0	21.0	21.0	21.0
CO ₂ , % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	60.5	64.3	63.9	62.9
moisture content, % volume	1.38	1.54	1.48	1.47
volumetric flow rate, dscfm	3,313	3,242	3,316	3,290

5.0 INTERNAL QA/QC ACTIVITIES

5.1 QA/QC AUDITS

The meter box and sampling train used during sampling performed within the requirements of their respective methods. All post-test leak checks, minimum metered volumes, minimum sample durations, and percent isokinetics met the applicable QA/QC criteria.

Fyrite analyzer audits were performed during this test in accordance with EPA Method 3, Section 10.1 requirements. The results were within $\pm 0.5\%$ of the respective audit gas concentrations.

EPA Method 9 was performed by a certified Visible Emissions Evaluator. For quality assurance, the observer obtained a view of the emissions with the best available contrasting background and with the sun oriented in the 140° sector to their back. Readings were taken every 15 seconds and made to the nearest 5% opacity.

5.2 QA/QC DISCUSSION

All QA/QC criteria were met during this test program.

5.3 QUALITY STATEMENT

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is included in the report appendices. The content of this report is modeled after the EPA Emission Measurement Center Guideline Document (GD-043).