

State Registration Number  
A3900

**RENEWABLE OPERATING PERMIT  
STAFF REPORT**

ROP Number  
MI-ROP-A3900-  
2021a

**Martin Marietta Magnesia Specialties, LLC**

State Registration Number (SRN): A3900

Located at

1800 Eastlake Road, Manistee, Manistee County, Michigan 49660

Permit Number: MI-ROP-A3900-2021a

Staff Report Date: June 21, 2021

Amended Date: June 5, 2023

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) of the administrative rules promulgated under Act 451, requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

## TABLE OF CONTENTS

<b>JUNE 21, 2021 - STAFF REPORT</b>	<b>3</b>
<b>JULY 26, 2021 - STAFF REPORT ADDENDUM</b>	<b>9</b>
<b>JUNE 5, 2023 - STAFF REPORT FOR RULE 216(2) MINOR MODIFICATION</b>	<b>10</b>

State Registration Number

A3900

**RENEWABLE OPERATING PERMIT**

**JUNE 21, 2021 - STAFF REPORT**

ROP Number

MI-ROP-A3900-2021

**Purpose**

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act; and Michigan’s Administrative Rules for Air Pollution Control promulgated under Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source’s applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

**General Information**

Stationary Source Mailing Address:	Martin Marietta Magnesia Specialties, LLC 1800 Eastlake Road Manistee, Michigan 49660
Source Registration Number (SRN):	A3900
North American Industry Classification System (NAICS) Code:	327992
Number of Stationary Source Sections:	One
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	201900098
Responsible Official:	James Reithel, Vice President of Operations 231-723-1205
AQD Contact:	Kurt Childs, Senior Environmental Quality Analyst 231-878-2045
Date Application Received:	May 28, 2019
Date Application Was Administratively Complete:	May 28, 2019
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	June 21, 2021
Deadline for Public Comment:	July 21, 2021

## Source Description

The Manistee plant manufactures magnesium oxide and magnesium hydroxide products for use in various industrial applications; plastics and rubber manufacturing, power generation, agriculture, and a variety of chemical and specialty process industries. Magnesium oxide and magnesium hydroxide are also used in various environmental applications including wastewater treatment, stack scrubbing, and acid neutralization.

Magnesium hydroxide is manufactured by exothermic reaction of natural brine and dolomitic lime in three separate reactor systems. Raw brine is pumped from the Filer Sandstone approximately 2,600 feet below ground via supply wells located in Manistee and northern Mason Counties. The brine is transferred to plant storage by a network of pipelines. Dolomitic lime is received from Woodville, Ohio, primarily by rail. In two of the reactor systems, brine and dolomitic lime are reacted in initial or primary reactor vessels which then overflow by gravity to secondary vessels for additional reaction. The third reactor system uses filtrate to hydrate the dolomitic lime prior to reacting it with brine in a single reactor vessel. Overflow of the slurries from each of the reactor systems flows through a series of two settling basins, first a thickener, then a clarifier, where the magnesium hydroxide settles. The slurry from the thickener's underflow is pumped to vacuum drum filters, where it is washed, dewatered, and repulped. Slurry is pumped to storage tanks prior to being transferred to rotary kilns and Herreshoff furnaces, depending upon the type of product desired.

Rotary kilns and multi-hearth furnaces are used to remove free and molecularly bound water from the magnesium hydroxide slurry to form different grades of magnesium oxide. Some of the magnesium oxide is also processed further in vertical kilns to generate periclase for use in refractory brick.

The materials are transferred from the furnaces to storage, and then to bulk loading or on to the packhouse. The packhouse packages the various products made to meet customer needs. Both packhouses also bulk load products to rail and trucks.

In addition to the magnesium oxide products, stabilized magnesium hydroxide slurry is produced using a proprietary, patented process. The FloMag slurry is shipped to customers via rail and truck. Dry magnesium hydroxide powders are also produced utilizing a dryer to remove free moisture.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2019**.

### **TOTAL STATIONARY SOURCE EMISSIONS**

<b>Pollutant</b>	<b>Tons per Year</b>
Carbon Monoxide (CO)	1
Lead (Pb)	0
Nitrogen Oxides (NO <sub>x</sub> )	81
Particulate Matter (PM)	25
Sulfur Dioxide (SO <sub>2</sub> )	0
Volatile Organic Compounds (VOCs)	2

This source is a true minor source of HAPs, thus no HAP emissions data is listed.

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

## **Regulatory Analysis**

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is in Manistee County, which is currently designated by the United States Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit of nitrogen oxides exceeds 100 tons per year.

The stationary source is a minor source of HAP emissions because the potential to emit of any single HAP regulated by Section 112 of the federal Clean Air Act, is less than 10 tons per year and the potential to emit of all HAPs combined are less than 25 tons per year.

EURK3 at the stationary source was subject to review under the Prevention of Significant Deterioration regulations of 40 CFR 52.21, because at the time of New Source Review permitting the potential to emit of sulfur dioxide was greater than 250 tons per year.

Two new Permits to Install (PTIs) have been issued and rolled into ROP MI-ROP-A3900-2015b. PTI No. 128-15 was for the replacement of an old HCL storage tank and acid fume scrubber (EUHCLTANK) with a new tank and scrubber of the same capacity. PTI No. 190-16 was for the installation of a dust collector for new and existing magnesium oxide lightburn material handling equipment in EU2HERRLB-BIN.

EULU-SYSTEM has been removed since it is part of FGLIMESYSTEM. Some additions to FGLIMESYSTEM were necessary but the control equipment and emission limits were already in place. The emission unit summary table was updated to reflect these changes.

EU-FIREPUMP-6CYL, EU-FIREPUMP-8CYL, EU-INGROUND-DIES, EU-3PMPH-GEN, EU-3RK-GAS-PONY, EU-P-ONAN-GEN, EU-HERR-CS-DIESL, EU-UPOFFICE-GEN and EU-LABEMER-GEN at the stationary source are subject to the National Emissions Standards for Hazardous Air Pollutants for reciprocating internal combustion engines (RICE) promulgated in 40 CFR Part 63, Subparts A and ZZZZ (RICE Area Source MACT). The ROP contains special conditions provided by Martin Marietta Magnesia Specialties, LLC in their application for applicable requirements from 40 CFR Part 63, Subparts A and ZZZZ. The AQD is not delegated the regulatory authority for this area source MACT.

The AQD's Rules 287 and 290 were revised on December 20, 2016. FGRULE287(2)(c) and FGRULE290 are flexible group tables created for emission units subject to these rules. Emission units installed before December 20, 2016, can comply with the requirements of Rule 287 and Rule 290 in effect at the time of installation or modification as identified in the tables. However, emission units installed or modified on or after December 20, 2016, must comply with the requirements of the current rules as outlined in the tables.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

EURK3 at the stationary source is subject to the federal Compliance Assurance Monitoring (CAM) rule under 40 CFR Part 64. This emission unit has a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. The monitoring for the control device is the voltage and the sparking rate as indicators of a properly functioning electrostatic precipitator

EUHERRFUR1 at the stationary source is subject to the federal CAM rule under 40 CFR Part 64. This emission unit has a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. The monitoring for the control device is COMS recorded opacity as an indicator of a properly functioning electrostatic precipitator.

EUHERRFUR2 at the stationary source is subject to the federal CAM rule under 40 CFR Part 64. This emission unit has a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. The monitoring for the control device is COMS recorded opacity as an indicator of a properly functioning electrostatic precipitator.

EUHERRFUR3 at the stationary source is subject to the federal CAM rule under 40 CFR Part 64. This emission unit has a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. The monitoring for the control device is the voltage and the sparking rate as indicators of a properly functioning electrostatic precipitator.

EUSHAFTKILN2 at the stationary source is subject to the federal CAM rule under 40 CFR Part 64. This emission unit has a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. The monitoring for the control device is COMS recorded opacity as an indicator of a properly functioning electrostatic precipitator or voltage and sparking rate as indicators of a properly functioning electrostatic precipitator depending upon which precipitator the shaft kiln exhaust is being treated with.

EUSHAFTKILN3 at the stationary source is subject to the federal CAM rule under 40 CFR Part 64. This emission unit has a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. The monitoring for the control device is COMS recorded opacity as an indicator of a properly functioning electrostatic precipitator or voltage and sparking rate as indicators of a properly functioning electrostatic precipitator depending upon which precipitator the shaft kiln exhaust is being treated with.

EUHCLTANK, EUANIMAG, EUN2SMILL, EUDRYMAGDRYER, EUDRYMAGMILL, EUC-LIME, EURK3-S-FUEL, EUROLLER-MILL, EU2-BAGGER, EU3PH-ADD-DC, EU98-PUL-DC, EUPER-PRIM-DC, EUMIDLAND-SYS, EU2HERRLB-BIN, EUADDITIVE-DC, EUHB-BINS, EULB-BINS, EUNSMILLS, EU6TRAKLOADOUT, EUCHANGE-LS, EU3RKPRIMSCREEN, EU1+2LB-DC, EUP-ADD-BINS, EUP-STOR-SILO, EUSK-BINS-TRANS, EUSK-TRAN-DC, EUGYRADISC, EUP-LOADOUT, EU88-SCRNR, EUN2SMILLTRANS, EU88-PRIMARY, EUDAY-BIN-DC, EUNO3BAGGER, EU88SECONDARY, EU2DUSTEX, EU3DUSTEX, EUSK-FINES-BIN, EUUPPERLIME, EUMIDDLELIME, EUBOTTOMLIME, EUB-REACTOR, do not have emission limitations or standards that are subject to the federal Compliance Assurance Monitoring rule pursuant to 40 CFR Part 64, because the units do not have potential pre-control emissions over the major source thresholds (based on calculations provided by Martin Marietta). Each of these emission units is equipped with a baghouse for particulate control or, in the case of EUHCLTANK a scrubber for acid fume control.

The CAM Plan utilizes existing process operating parameters that are also required by special conditions in the ROP and detailed in the MAP to ensure proper operation of the process and control equipment. Types of control equipment employed at the source include an acid fume scrubber, numerous baghouses, electrostatic precipitators and cyclone dust collectors. Operating parameters such as flow rate, differential pressure, spark rate and voltage and COMS are monitored and recorded to ensure operation within established operating ranges (identified in Appendix A of the MAP and in the CAM plan). Visible Emissions readings (certified and non-certified) are also used. Each of these industry standard process operating parameter monitoring methods has been established as appropriate for the process across many years of usage for this purpose.

Please refer to Parts B, C and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

**Source-Wide Permit to Install (PTI)**

Rule 214a requires the issuance of a Source-Wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI document.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-A3900-2015 are identified in Appendix 6 of the ROP.

PTI Number			
8-67	120-74	405-75	957-78
957-78A	247-79	248-79	759-79
820-79	820-79B	821-79	887-79
888-79A	292-82	520-82A	209-83A
644-83	888-84	91-85A	412-86
541-86	813-86	814-86	815-86
816-86	817-86	22-87	109-87
258-88	311-88B	766-88	31-89
193-89	554-89	1239-90	1041-91
122-98	97-07	173-11	127-13

**Streamlined/Subsumed Requirements**

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

**Non-applicable Requirements**

Part E of the ROP lists requirements that are not applicable to this source as determined by the AQD, if any were proposed in the ROP Application. These determinations are incorporated into the permit shield provision set forth in Part A (General Conditions 26 through 29) of the ROP pursuant to Rule 213(6)(a)(ii).

**Processes in Application Not Identified in Draft ROP**

The following table lists processes that were included in the ROP Application as exempt devices under Rule 212(4). These processes are not subject to any process-specific emission limits or standards in any applicable requirement.

PTI Exempt Emission Unit ID	Description of PTI Exempt Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
EUNGBRINE-HEATERS	Process Brine Heaters. #1 - 19,370,000 BTU/hr #2 - 15,000,000 BTU/hr #3 - 15,000,000 BTU/hr	R 336.1212(4)(c)	R 336.1282(2)(b)(i)
EUNG-BOILERS	Natural Gas Fired Boilers used for heating.  Main office 325,000 BTU/hr  Office lobby 220,000 BTU/hr	R 336.1212(4)(c)	R 336.1282(2)(b)(i)

PTI Exempt Emission Unit ID	Description of PTI Exempt Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
	Maintenance office 322,000 BTU/hr Water heater 19,370,000 BTU/hr		
RGDRYMAG	North dry Mag Dryer, natural gas fired indirect heating < 50, 000,000 BTU/hr. South Dry Mag Dryer, natural gas fired indirect heating < 50, 000,000 BTU/hr.	R 336.1212(4)(c)	R 336.1282(2)(b)(i)
RGSPECIALTIES	A Calciner, natural gas fired indirect heating < 50, 000,000 BTU/hr. B Calciner, natural gas fired indirect heating < 50, 000,000 BTU/hr. C Calciner, natural gas fired indirect heating < 50, 000,000 BTU/hr.	R 336.1212(4)(c)	R 336.1282(2)(b)(i)

**Draft ROP Terms/Conditions Not Agreed to by Applicant**

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

**Compliance Status**

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

**Action taken by EGLE, AQD**

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD's proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Shane Nixon, Cadillac District Supervisor. The final determination for ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.

State Registration Number

A3900

**RENEWABLE OPERATING PERMIT**

**JULY 26, 2021 - STAFF REPORT ADDENDUM**

ROP Number

MI-ROP-A3900-2021

**Purpose**

A Staff Report dated June 21, 2021, was developed to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1) of the administrative rules promulgated under Act 451. The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

**General Information**

Responsible Official:	James Reithel, Vice President of Operations 231-723-1205
AQD Contact:	Kurt Childs, Senior Environmental Quality Analyst 231-878-2045

**Summary of Pertinent Comments**

No pertinent comments were received during the 30-day public comment period.

**Changes to the June 21, 2021 Draft ROP**

No changes were made to the draft ROP.

State Registration Number  
A3900

**RENEWABLE OPERATING PERMIT**  
**JUNE 5, 2023 - STAFF REPORT FOR RULE 216(2)**  
**MINOR MODIFICATION**

ROP Number  
MI-ROP-A3900-2021a

**Purpose**

On September 13, 2021, the Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), approved and issued Renewable Operating Permit (ROP) No. MI-ROP-A3900-2021 to Martin Marietta Magnesia Specialties, LLC pursuant to Rule 214 of the administrative rules promulgated under Act 451. Once issued, a company is required to submit an application for changes to the ROP as described in Rule 216. The purpose of this Staff Report is to describe the changes that were made to the ROP pursuant to Rule 216(2).

**General Information**

Responsible Official:	James Reithel, Vice President of Operations 231-723-1205
AQD Contact:	Caryn Owens, Senior Environmental Engineer 231-878-6688
Application Number:	202300083
Date Application for Minor Modification was Submitted:	May 1, 2023

**Regulatory Analysis**

The AQD has determined that the change requested by the stationary source meets the qualifications for a Minor Modification pursuant to Rule 216(2).

**Description of Changes to the ROP**

Minor Modification Number 202300083 was to incorporate PTI No. 61-22 into the ROP, which was to add a dust collector and dedicate it to the hammermill in EUC-LIME. In addition, the existing collector in EUC-LIME was re-routed from the in-plant environment to a separate, dedicated stack.

**Compliance Status**

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements associated with the emission unit(s) involved with the change as of the date of approval of the Minor Modification to the ROP.

**Action Taken by EGLE**

The AQD proposes to approve a Minor Modification to ROP No. MI-ROP-A3900-2021, as requested by the stationary source. A final decision on the Minor Modification to the ROP will not be made until any affected states and the United States Environmental Protection Agency (USEPA) has been allowed 45 days to review the proposed changes to the ROP. The delegated decision maker for the AQD is the District Supervisor. The final determination for approval of the Minor Modification will be based on the contents of the permit application, a judgment that the stationary source will be able to comply with applicable emission limits and other requirements, and resolution of any objections by any affected states or the USEPA.