



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE  
GOVERNOR

PATRICIA W. AHO  
COMMISSIONER

**Dragon Products Company, LLC  
Knox County  
Thomaston, Maine  
A-326-77-6-M**

**Departmental  
Findings of Fact and Order  
New Source Review  
NSR #2**

**FINDINGS OF FACT**

After review of the air emissions license minor revision application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Maine Department of Environmental Protection (Department) finds the following facts:

**I. REGISTRATION**

A. Introduction

FACILITY	Dragon Products Company, LLC (Dragon)
LICENSE TYPE	06-096 CMR 115, Minor Revision
NAICS CODES	32731
NATURE OF BUSINESS	Cement Manufacturing
FACILITY LOCATION	U.S. Route 1, Thomaston, Maine

Dragon manufactures cement using a dry process consisting of a cement kiln and additional equipment used for kiln feed preparation, clinker production, and finish cement operations. The raw feedstock includes limestone rock (various classifications), sand, and iron ore which are ground and mixed in the proper proportions, then introduced into the cement kiln where the mix is calcined and cooled to make clinker. The clinker then goes through the milling system where it is mixed with natural gypsum and ground into a fine cement powder.

B. Amendment Description

Dragon has submitted a minor revision to document the addition of polypropylene/polyester fiber material as an alternative fuel in the cement kiln.

C. Emission Equipment

The existing, licensed cement kiln is addressed in this air emission license. The kiln has a nominal capacity of 440.0 MMBtu/hr and is currently licensed to fire

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coal, petroleum coke, #2 and #4 fuel oil, specification and non-specification waste oil, and whole tires or tire chips.

D. Application Classification

The application submitted by Dragon does not violate any applicable federal or state requirements, does not reduce monitoring, reporting, testing or record keeping, and does not seek to modify a Best Available Control Technology (BACT) analysis.

The use of polypropylene/polyester fiber material as an allowed fuel will not change the facility's license requirements. Therefore, the amendment is determined to be a minor revision under *Minor and Major Source Air Emission License Regulations* 06-096 CMR 115 (as amended). The procedures found in 06-096 CMR 115 (as amended) can be utilized to process this application since the addition of an alternative fuel is not prohibited by the Part 70 air emission license. This minor revision shall be incorporated into the Part 70 air emission license renewal currently in process.

**II. MINOR REVISION DESCRIPTION**

Dragon has requested the use of polypropylene/polyester fiber material as an alternative fuel in the cement kiln. The cement kiln is licensed specifically for coal, petroleum coke, #2 and #4 oil, specification and non-specification waste oil, and chipped and whole tires, in addition to a condition in the current Part 70 air emission license A-326-70-A-I (issued December 31, 2003) which includes an allowance for alternative fuels. Condition 14(C) of air emission license A-326-70-A-I states:

(14)C. Use of Alternative Fuels and Raw Materials [MEDEP Chapter 140]

1. Dragon is licensed to utilize alternate fuels and raw materials in the new and existing cement kilns to the extent the material or fuels comply with all of the provisions of this subsection.
  - a. Proposed alternate fuels or raw materials shall not be RCRA hazardous waste according to 40 CFR Part 261 and applicable state law. This determination may be made by lab analyses or generator knowledge.
  - b. Proposed alternate fuels or raw materials shall not be medical wastes according to 40 CFR Part 259 and/or applicable state law.
  - c. Proposed alternate fuels or raw materials must be determined to be acceptable by Dragon's Alternate Fuels Management Program.
  - d. The storage and handling of alternate fuels or raw materials shall be conducted such that fugitive emissions are minimized and are managed in accordance with applicable requirements.
  - e. The use of alternative fuels or raw materials would not be expected to cause an exceedance of the applicable emission limits in this license.

2. After conducting trials using the alternative fuel and/or raw material in the kiln, if Dragon proposes an ongoing use of the alternative fuel and/or raw material, Dragon shall notify the Department in writing of its intention to use an alternate fuel or raw material that meets the criteria outlined above. The notification to the Department shall include:
  - a. A characterization of the fuel or raw material (including results of testing that may have been performed in conjunction with trials);
  - b. The intended use rate of the fuel or raw material; and
  - c. A description of the method of introduction into the kiln system.
3. In the event that the Department has not adversely responded to the notification within seven (7) calendar days of receipt of the notification provided by Dragon, then Dragon shall be allowed to implement the use of the fuels or raw materials for which notification was provided.
4. Dragon will maintain daily records of the amount of alternate fuel(s) and raw material(s) used in the process.
5. This protocol does not eliminate Dragon's obligation to comply with applicable rules nor does this protocol eliminate the need to seek the appropriate pre-construction permits when applicable. Use of alternative fuels or raw materials shall not constitute a "modification" of the existing or new kiln provided the alternative fuel or raw materials can be accommodated by the existing kiln or new kiln under its original design.
6. Within 30 days following notification of the Department by Dragon of using an alternative fuel or raw material, the Department will notify Dragon whether the use of said material would constitute a significant change of feed or fuel for purposes of performance testing requirement in 40 CFR Part 60, Subpart LLL, Section 63.1349(e).

Dragon performed trials to test the firing of the polypropylene/polyester fiber material in the cement kiln in July and November of 2008 and submitted a beneficial use application to the Department's Bureau of Remediation and Waste Management in January 2013. The polypropylene/polyester fiber material used in the test trials were produced by a plant in Lewiston, Maine which manufactures the polypropylene/polyester formed fiber material primarily used in the auto industry. Approximately 30,000 tons of the nonhazardous material is 'landfilled' at a site in Warren, Maine. The polypropylene/polyester fiber material has a high heat value content which is comparable to petroleum coke on a per pound basis (approximately 15,500 Btu/lb). Dragon anticipates a maximum substitution rate of 50% of the petroleum coke currently fired in the kiln system. Dragon estimates that approximately 10,000 tons of the polypropylene/polyester fiber material may be consumed over each of the next three years or so. Dragon is also actively working to obtain consistent streams of similar polypropylene/polyester fiber material from other suppliers and manufacturers in New England.

A two part trial was conducted in July and November 2008 on the material: (1) to examine the handling and introduction of the material into the kiln system, and (2) to

confirm air emission compliance and quality of the clinker chemistry. The first part of the trial took place on July 15, 2008 and involved firing approximately one ton of pre-shredded 2 inch sized polypropylene/polyester fiber material and one ton of pre-shredded 1 inch material. The material was successfully introduced in the calciner section of the kiln system at the desired feed rate. The second part of the trial took place over three days in November of 2008 and involved firing approximately 5 tons of material per day. The facility's existing continuous emissions monitoring systems (CEMS) monitored sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and carbon monoxide (CO) emissions over this trial burn involving a larger amount of material over a number of days. The CEMS data confirmed that emissions were within Dragon's air emission license limits when firing the polypropylene/polyester fiber material. It was noted that there were fluctuations in oxygen (O<sub>2</sub>) and CO levels most likely due to the manner in which the material was introduced into the kiln system. Eight inch ports were opened for manual material insertion, allowing for increased ambient air to enter the kiln system, causing O<sub>2</sub> and CO fluctuations. Dragon is investigating the installation of an automated feed system for the polypropylene/polyester fiber material to better control the oxygen levels and prevent spikes in CO emissions. In addition to the successful emissions results, the laboratory results of the clinker produced during the test trials were within normal production specifications.

The use of the polypropylene/polyester fiber material as an alternative fuel is not expected to result in long term material storage. An alternative fuel system is being designed with the capacity to store approximately 1100 cubic yards onsite, allowing for approximately 3 days or more of material storage.

Dragon is subject to 40 CFR Part 63, Subpart LLL, National Emissions Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry. §63.1349 (e) states: "(e) *Conditions of performance tests.* Conduct performance tests under such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Upon request, you must make available to the Administrator such records as may be necessary to determine the conditions of performance tests." Based on the results of the test trials, the use of the polypropylene/polyester fiber material as fuel does not add any new performance test requirements. Dragon shall fire representative fuel at the time of the scheduled performance tests as required by 40 CFR Part 63, Subpart LLL and the Department's stack test protocol. The stack test protocol, submitted to the Department for review and approval prior to occurrence of the performance tests, requires Dragon to propose the expected operational parameters for the performance test, including the fuel mix to be fired.

This minor revision documents that polypropylene/polyester fiber material may be utilized by Dragon as fuel in the cement kiln. Dragon shall continue to meet all licensed emission limits and license requirements when firing this alternative fuel.

**ORDER**

The Department hereby grants Air Emission License Minor Revision A-326-77-6-M pursuant to the preconstruction licensing requirements of 06-096 CMR 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

**SPECIFIC CONDITIONS**

- (1) Dragon is licensed to fire polypropylene/polyester fiber material alone or in combination with other licensed fuels in the cement kiln. Dragon shall maintain daily records of the amount of polypropylene/polyester fiber material fired. [06-096 CMR 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 30 DAY OF May, 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for  
PATRICIA W. AHO, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: March 14, 2013

Date of application acceptance: March 19, 2013

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.

