Title V Air Operation Permit Renewal
Permit No. 1050239-019-AV

APPLICANT

The applicant for this project is Carlisle Construction Materials, Inc., dba Insulfoam. The applicant's responsible official and mailing address are: Doug Cassidy, Vice President, Operations, Carlisle Construction Materials, Inc., dba Insulfoam, 6004 N. Westgate Blvd., Suite 120, Tacoma, WA 98406.

FACILITY DESCRIPTION

The applicant operates Insulfoam, which is located at 4500 S. Frontage Road, Lakeland, Florida.

The raw materials for the process at this facility are Expanded Polystyrene (EPS) resins, called beads, which have a sand like appearance. EPS resin is impregnated with the blowing agent pentane, typically 3.5 to 5.0% by weight, although sometimes ranging up to 7.0 % by weight. The resins are shipped to the facility in lined 2,200 pound bags. The beads are augured into pre-expanders (Idro, Model PJX4000 pre-expander and/or Hirsh 12000 pre-expander) where steam from the 200 and 300 hp boilers and mechanical agitation is used to expand the beads to approximately 1/8" diameter. The steam softens the polymer and causes the pentane to expand inside the bead and blow outward. A portion of the initial pentane content of the bead is lost during this process and is either captured by the Pentane Collection System or escapes into the building. It is assumed that 50% of the pentane emissions will be captured by the Pentane Collection System and 50% will be fugitive.

The facility operates under one of two operating procedures. While operating under Operating Procedure 1 (OP 1) emissions captured by the Pentane Collection System are routed to the Regenerative Thermal Oxidizer (RTO) VOC emission control device. While operating under Operating Procedure 2 (OP 2) emissions captured by the Pentane Collection System are routed to the RTO bypass stack.

The expanded polystyrene, now called pre-puff, is then sent through a fluidized bed dryer prior to being blown to the aging bags for stabilization**.** The pre-puff is vacuum fed to a bag farm for pre-puff aging and stabilization from 4 to 24 hours. The pre-puff is stored in 5,500 cubic foot aging bags. The facility currently has a bead storage capacity of 49,500 cubic feet. The aging step allows the temperature to equalize and the pre-puff to achieve the proper conditions for molding. During the aging process, a portion of the pentane remaining is exchanged for air. The bag farm will be maintained as a Permanent Total Enclosure with a capture efficiency of 100%. When operating under Operating Procedure 1 (OP 1) all of the pentane emissions from this process will be directly vented to the Regenerative Thermal Oxidizer VOC emission control device through the Pentane Collection System. While operating under Operating Procedure 2 (OP 2) emissions from this process will go through the Pentane Collection System and be exhausted through the RTO bypass stack.

The prepuff is then transferred to the "virgin bag" associated with a mixing station. Regrind material, which is waste polystyrene pieces already expanded and cured, is stored in 5 regrind bags. The regrind material is then transferred to the "regrind bag" associated with the mixing station and may be blended with the prepuff. The prepuff /regrind material is then transferred to the molder's fill bag prior to entering the Hirsch Italia Block Molder, Type Oyster MS1 or 16' Idro block mold where steam from the boilers is used to further expand the prepuff/regrind material and fuse them together into block forms. During the <u>molding</u> cycle a portion of the initial pentane content of the beads is driven from the beads. It is assumed that 50% of the pentane emissions are captured by the Pentane Collection System and 50% are fugitive. While operating under OP 1 the emissions captured by the Pentane Collection System will be routed to the RTO. While operating under OP 2 the emissions captured by the Pentane Collection System will be routed to the RTO bypass stack.

After molding the blocks go to a <u>product storage/curing and cutting</u> area. A portion of the expanded polystyrene blocks are shipped in the original molded form. Others are set aside to stabilize from 24-96 hours and are then cut

into various product sizes and shapes with an electric hot wire. In either case, the blocks or cut products may be directly packaged and shipped to the customer, or placed in inventory storage pending shipment. A further portion (assumed to be 28%) of the initial pentane content will be emitted as fugitives. The remaining portion of the initial pentane content (assumed to be 15%) stays within the finished and shipped product as a residual concentration. The products are used in construction and insulation.

The following Emission Unit was added to this permit:

EU No.	Brief Description
003	"New" Stationary Spark Ignition (SI) RICE Engine *(see Appendix ICE)*

EU Note – This EU addition is related to incorporating the stationary RICE engine subject to NSPS 40 CFR 60 Subpart JJJJ, into the facility Title V operation permit.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

PROJECT DESCRIPTION

The purpose of this permitting project is to renew the existing Title V permit for the above referenced facility.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Renewed Title V Air Operation Permit issued October 25, 2006
Title V Air Operation Permit Revision issued July 6, 2010
Application for a Title V Air Operation Permit Renewal received March 9, 2011
Notice of Intent to Issue Air Permit issued **[Month day, year]**
Public Notice Published **[Month day, year]**

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is not identified as a major source of hazardous air pollutants (HAP).

Title V: The facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.).

PSD: The facility is not a Prevention of Significant Deterioration (PSD)-major source of air pollution in accordance with Rule 62-212.400, F.A.C.

NSPS: The facility does operate units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60.

NESHAP: The facility does not operate units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

CAIR: The facility is not subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C.

CAM: Compliance Assurance Monitoring (CAM) applies to Emission Unit 001 for regulated VOC emissions when it is operating under OP 1. In this case, the VOC emissions are controlled by a regenerative thermal oxidizer (RTO).

PROJECT REVIEW

The following changes were made as part of this renewal:

Wrote the permit using the new Tallahassee Title V template.

Changed the name of EU 001 to make it more representative of the actual process.

Created a new emission unit (EU 003) for an engine. It is subject to 40 CFR 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

Added activities to Appendix I, List of Insignificant Emissions Units and/or Activities.

Expanded Facility-wide Specific Condition FW5., Unconfined Particulate Matter.

CAM Plan - added a comment about the set point temperature in the source tests, added a justification section, changed table numbers, corrected a reference to a condition number (8.a. to 8.b.), changed the limit for the surge/condensate tank and collection tank from pressure < 0.0" H_2O to > 0.0" w.c. negative pressure per applicant request, changed bag farm indication of system malfunction from operation above 0.007" w.c. to operation below 0.007" w.c. negative pressure.

CONCLUSION

This project renews Title V air operation permit No. 1050239-018-AV, which was issued on July 6, 2010. This Title V air operation permit renewal is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-210 and 62-213, F.A.C.