

AIR QUALITY PERMIT NO. 65453

I. INTRODUCTION

This Class II air quality control permit is issued for the continued operation of an Expandable PolyStyrene (EPS) block molding facility owned and operated by StarRfoam Manufacturing, Inc. (StarRfoam).

A. Company Information

Facility Name: StarRfoam Manufacturing, Inc. – EPS Block Molding Facility

Facility/ Mailing Address: 4555 Olympic Way, Kingman, AZ 86401

B. Attainment Classification

This facility is in an attainment area with respect to all the criteria pollutants.

II. FACILITY DESCRIPTION

A. Process Description

Starfoam operates an EPS block molding facility at the Kingman Airport Industrial Park in Kingman, Arizona. The foam blocks are used for a variety of purposes such as insulation, architectural shapes and panel cores. StarRfoam uses a maximum of 5,000 pounds of expendable polystyrene (EPS) beads on an hourly basis and 22.4 million pounds of EPS beads on an annual basis. Actual foam block production values vary depending on the density of the type of foam block that is being produced.

Production of EPS foam blocks consists of five steps: pre-expansion, pre-puff aging, block molding, block storage, and block storage/fabrication.

Pre-Expansion: Raw material consisting of EPS beads impregnated with blowing agent (pentane), is transferred into a bead hopper which is then loaded into the pre-expander. The beads are processed in a batch expander with low pressure steam from the boiler to soften and expand the beads. Pentane released during the process is captured and vented to the Silo Room. At this point, the beads are 20 to 60 times larger and are very fragile.

Pre-Puff Aging: The excess moisture on the pre-expanded beads resulting from the steam expansion process is then dried with hot air as the beads pass through the fluidized bed dryer. From the dryer, the beads are pneumatically fed into large mesh holding bags or “silos”, located in the Silo Room, where they cool and age for a period of time. The pentane and VOCs accumulated in this room, which is considered a Permanent Total Enclosure (PTE) is then vented to a RTO. The PTE is kept and monitored at a negative pressure, therefore 100% capture efficiency. After the stabilization of beads, these are pneumatically fed into the block molds.

Block Molding: After the mold is filled with beads and locked, steam is injected. This causes the beads to soften and expand further by vaporizing more of the pentane and fusing the beads together to form a solid block. The block mold is an enclosed proves and emissions are forced via an air vacuum system to Silo Room, PTE 2.

Block Storage: The blocks are stored in the heated block storage room for the first 48 hours. Any emissions during this curing time are captured by PTE system and then vented to PTE 2 and then to RTO for destruction. The block storage room and PTE 1 is kept and monitored at a negative pressure ascertaining 100% capture efficiency.

Block Fabrication: In the fabrication area, blocks are cut or sliced into the desired sizes and shapes. There is no emission of pentane in this area since the blocks have been cured in the block storage area. After curing of blocks, 15% of pentane remains unreacted and retained in the blocks.

B. Air Pollution Control Equipment:

Total pentane emissions released during the first four process steps (pre-expansion, pre-puff aging, block molding, and block storage) are routed to the thermal oxidizer where pentane emissions are oxidized. The oxidizer has an efficiency of greater than 98%. Because pentane is heavier than air, it settles to the floor allowing it to be more easily routed from the floor to the oxidizer. Any un-captured pentane emissions are released as fugitive emissions.

III. EMISSIONS

The facility has voluntarily accepted a limit on usage of EPS beads to 5,000 pounds per hour and 22,400,000 pounds per year. The emissions were calculated using emission factors derived from the Environmental Protection Agency's (EPA) Compilation of Air Pollution Emission Factors (5th Edition). The facility wide emissions are listed in Table 1 below:

Table 1: Facility-wide Non-Fugitive Emissions

Pollutant	Emission (tons/year)
PM ₁₀	0.54
CO	5.95
NO _x	6.23
SO _x	0.04
VOC	25.14

IV. MINOR NEW SOURCE REVIEW

This is a renewal of the operating permit #54735. No new emission source is being added. Therefore Minor NSR is not applicable.

V. APPLICABLE REGULATIONS

The following are the applicable regulations that the facility is subject to:

Table 2: Verification of Applicable Regulations

Unit	Date of Construction/Modification	Control Device	Rule	Verification
Waste Heat Boiler	2001	None	A.A.C. R-18-2-724	The boilers are subject to Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment, A.A.C. R18-2-724.
Boiler	1972			NESHAP Subpart JJJJJ is not applicable since boilers combusting natural gas are exempt.
EPS Block Manufacturing	N/A	Thermal oxidizer	A.A.C. R18-2-730	These standards are applicable to unclassified sources.
Fugitive dust sources	N/A	Water and other reasonable precautions.	Article 6 of the A.A.C	These standards are applicable to all fugitive dust sources.
Mobile sources	N/A	Water Sprays/Water truck for dust control	Article 8 of the A.A.C	Opacity requirements for smoke and dust for mobile sources (construction equipment, etc.).
Other Periodic Activities – Spray Painting	N/A	Filters	A.A.C. R18-2-726	The requirements of spray painting are applicable.
Demolition-Renovation Operations	N/A	Wetting, enclosures	A.A.C. R18-2, Article 11	This standard is applicable to any asbestos related demolition or renovation operations.

VI. PREVIOUS PERMIT CONDITIONS

A. Previous Permits

Table 6: Previous Permits

Permit No.	Issue Date	Application Basis
54735	July 30, 2012	Class II Operating Permit
63545	May 26, 2016	Class II Significant Permit Revision

B. Previous Permit Conditions

This Renewal Permit No. 65453 is for the continued operation of this facility. No conditions of the operating permit and significant permit revision have been deleted or revised.

VII. MONITORING AND RECORDKEEPING REQUIREMENTS

A. Facility wide

1. The Permittee will record the hourly usage of EPS beads. At the end of every month, the Permittee shall calculate and record the rolling twelve-month total usage of EPS beads to demonstrate compliance with the voluntarily accepted limits.
2. The Permittee shall maintain records of all purchase orders and invoices associated with the purchasing and procurement of EPS beads and all other Volatile Organic Compounds (VOC) containing materials used in this EPS foam manufacturing operation.
3. The Permittee shall maintain records of the Material Safety Data Sheets (MSDS) for EPS beads, as well as all other VOC containing materials consumed in the EPS foam manufacturing operation.

B. Boiler

1. Reporting Requirements

The permit requires reporting all 6-minute periods during which the visible emissions exceed 15 percent opacity as excess emissions.

2. Recordkeeping Requirements

The Permittee is required to keep records of fuel supplier certifications. The certification must contain information regarding the name of fuel supplier and lower heating value of the fuel.

B. EPS Block Manufacturing Process

The permit requires continuous monitoring and recording of combustion chamber temperature, pressure differential between PTE and block storage room and weekly inspection of capture system and duct work.

C. Fugitive Dust

1. Monitoring Requirements

The permit requires quarterly EPA Reference Method 9 of fugitive emissions by a certified Method 9 observer.

2. Recordkeeping Requirements

The Permittee is required to record the emission point being observed, location of the observer, date, time and the results of all observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee must keep a record of the corrective action taken to bring the opacity below the standard.

D. Mobile Sources

The Permittee is required to keep records of all emission related maintenance performed on the mobile sources.

E. Other Periodic Activities

- 1. The Permittee is required to record the date, duration, and quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.
- 2. The Permittee is required to maintain records of all asbestos related demolition or renovation projects. The required records include the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents.

VIII. TESTING REQUIREMENTS

A. Permanent Total Enclosure (PTE)

The Permittee is required to demonstrate that the Permanent Total Enclosure meets the 4-point criteria specified in Condition III.B.3 of Attachment “B” of the permit. The 4 point criteria are used to determine if an existing building or enclosure meets the requirements of permanent total enclosure. If the 5 point criteria are met and if the exhaust gases from the enclosure are ducted to the control device then it is assumed that the VOC capture efficiency is 100%. This design verification shall be performed annually and the results must be reported to ADEQ.

B. Thermal Oxidizer

The Permittee is being required to conduct performance tests twice during the permit term, during the first and fourth years, for VOC emissions from the stack of the oxidizer, in accordance with EPA Reference Method 25A. During the test, the production rate, outlet temperature and the gas volumetric flow rate will be monitored and recorded. The test will serve to determine if the thermal oxidizer satisfies the required 97.4% VOC destruction efficiency.

IX. LIST OF ABBREVIATIONS

AAAQG	Arizona Ambient Air Quality Guideline
A.A.C	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
CO	Carbon Monoxide
EPA	Environmental Protection Agency
EPS.....	Expandable Polystyrene Beads

Hr Hour
NO_x Nitrogen Oxides
PTE Pentane Accumulation Permanent Total Enclosure
PM Particulate Matter
PM₁₀ Particulate Matter Less than 10 microns
SO₂ Sulfur Dioxide
VOC Volatile Organic Compounds
Yr Year