COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Valley Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Kingspan Insulation LLC
Winchester, Frederick County, Virginia
Permit No. VRO81095

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Kingspan Insulation LLC has applied for renewal of its Title V Operating Permit for its extruded polystyrene foam production facility in Winchester, Virginia. The Department has reviewed the application and has prepared a Title V Operating Permit.

Engineer/Permit Contact: *Kevin Covington* Date: 5/19/15
Kevin B. Covington
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Air Permit Manager: *Janardan R Pandey* Date: 5/19/15
Janardan R. Pandey, P.E.

FACILITY INFORMATION

Permittee
Kingspan Insulation LLC
172 Pactiv Way
Winchester, Virginia 22603

Facility
Kingspan Insulation – Winchester Site
172 Pactiv Way
Winchester, Virginia 22603

Plant ID No.: 51-069-0096

SOURCE DESCRIPTION

SIC Code: 3086 - Plastics Foam Products
NAICS Code: 326140 - Polystyrene Foam Product Manufacturing

Kingspan Insulation LLC (Kingspan or the Company) operates an extruded polystyrene foam production facility in Winchester, Virginia. Kingspan, which is based in Ireland, purchased the facility from Pactiv LLC on or about November 1, 2014. The facility produces industrial foam products for building underlayment and insulation. The facility has four building product extrusion lines, two thermoforming lines, two housewrap converting lines, and one housewrap printing line. In addition, there are four reclaim lines that reprocess off spec product and trim scrap. The basic operations at the facility include raw material receiving and handling, extrusion, printing, roll storage, thermoforming, converting, finished goods storage, and reclaim.

The facility is a Title V major source of volatile organic compounds (VOCs). The facility is also a major source of the hazardous air pollutant (HAP) methanol, which is an impurity in one of the blowing agents used at the facility. The facility is located in an attainment area for all criteria pollutants and is a prevention of significant deterioration (PSD) major source for VOCs. The facility was previously permitted under a PSD Permit issued on December 16, 1991, and a minor new source review (NSR) permit for control equipment issued on September 21, 1994. These permits were superseded by a minor NSR permit issued on February 9, 1996, after EPA agreed the facility was not subject to PSD. EPA required the permit to include a VOC emission limit less than 250 tons per year of non-fugitive emissions. The basis for this limit was to ensure that the facility is minor with respect to PSD. Previous determinations declared that the emissions from the finished goods warehouses were fugitive in nature. However, through review of more recent EPA applicability determinations, DEQ determined in December 2003 that the emissions from the finished goods warehouses are non-fugitive in nature and are required to be included for purposes of PSD applicability. A copy of the DEQ and EPA applicability determinations are enclosed as Attachment A.

The facility has one active minor NSR permit, which is dated December 20, 2013.

CHANGES SINCE RENEWAL OF THE TITLE V PERMIT IN 2010

Kingspan's existing Title V permit became effective on June 7, 2010, and three significant modifications have been issued since then:

- Increase the maximum production rate of the E-6 Line, and use of new VOC retention testing data (modification effective January 5, 2011).
- Elimination of tableware production from the facility (impacting the E-2 and E-3 lines), and conversion of the E-3 Line from tableware/attic vent/rollstock to underlayment (and renaming it as the E-4 line) (mod. effective July 25, 2012).
- Physical modification to increase the capacity of the E-6 Line extruder; changes to the E-6 Line blowing agent mix that decreased VOC emissions and increased HAP emissions; replacement of the R-4 reclaim extruder; and reassignment of the R-1 reclaim extruder to serve E-1/E-2/E-4 instead of E-6 (mod. effective April 3, 2014).

These changes are summarized in Table 1 below. At the time of the Title V permit renewal in 2010, permit conditions for the E-1 and E-6 lines were grouped together, and permit conditions for the E-1 and E-6 lines were grouped together (including emission limits that applied to the paired lines collectively). Currently, the facility's minor NSR and Title V permits provide conditions that apply to each production line independently.

Table 1: Comparison of Production Lines Since Last Title V Renewal

Line	2010 Renewal	2015 Renewal
E-1	Underlayment (paired with E-6)	Underlayment (independent)
E-2	Tableware/Attic Vent/Rollstock (paired with E-3)	Attic Vent/Rollstock (independent)
E-3 / E-4	Tableware/Attic Vent/Rollstock (paired with E-2)	Underlayment (independent)
E-6	Insulation Board (paired with E-1)	Increased capacity for Insulation Board (independent)

CHANGES TO THE EXISTING TITLE V PERMIT

Since a significant modification was issued just one year ago (on April 3, 2014), the only changes

being made to the existing Title V permit during the current permit renewal action are to replace the former owner (Pactiv LLC) with the new owner (Kingspan Insulation LLC) throughout the permit. Despite the change in ownership, the primary air contact (Jason Malone, Technical Manager) remains the same.

PERMIT APPLICATION FEE

DEQ's financial office logged payment of the appropriate Title V renewal fee on November 13, 2014.

Financial Details

Date	Description	Line Item Amount
13-NOV-2014	Receipt DC #54401338	-$10,323.00
12-NOV-2014	Title V Permit Renewal- App. Fee	$10,323.00
	Balance:	$.00

PENDING APPLICATION

Kingspan submitted a Form 7 application that was received by DEQ on January 6, 2015, which requests authorization to construct a new process line at this facility. The proposed new E-7 line would manufacture insulation board, similar to the existing E-6 line. The proposed E-7 line would use the same blowing agents that are currently authorized for the E-6 line, including the blowing agent that contains methanol. Since the proposed new E-7 line would itself be a major source of HAP (i.e., its methanol emissions would exceed 10 tpy), it is subject to DEQ's Article 7 permitting for major sources of HAP. More specifically, it is subject to a 112(g) case-by-case MACT determination because EPA has not promulgated a MACT standard for the extruded polystyrene foam product manufacturing source category. DEQ is currently processing this application, so it is not reflected in this Title V permit. A significant modification will be required in the future to incorporate the Article 7 permit into this Title V permit.

COMPLIANCE STATUS

The facility is inspected at least once every two years. The most recent Full Compliance Evaluation (FCE) with site visit was conducted on July 15, 2014. Based on that site inspection and associated review of records and reports, DEQ determined that the facility appeared to be in compliance with all applicable requirements at that time.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Table 2: Significant Emission Units

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
E-1 Line (Underlayment)							
ES-20	-	Foam Extruder E-1	1700 lbs foam/hr	-	-	-	12/20/2013
ES-25, ES-25a, ES-26, ES-26a	S25	Extrusion Line E-1 Laminators and Co-extruders	-	Electrostatic Precipitator (ESP) (Smog Hog) United Air Specialists Model # SH20PEH	C25 – C26	PM/PM-10	12/20/2013
ES-33	S75	Roll and Scrap Grinders including Storage Area (also serve E-2 & E-4)	1000 lbs of product/hr annual average	16.7 R95NG1 Regenerative Therm-al Oxidizer (RTO)	C75	VOC	12/20/2013
ES-33	V42 – V45 and V64 – V66	Roll and Scrap Grinders including Storage Area (also serve E-2 & E-4)	1000 lbs of product/hr annual average	American Air Filter Co. Baghouse Model # 8-36-396	C42 – C45	PM/PM-10	12/20/2013
				Ultra Industries Baghouse Model # BBVC-64M36-84	C64 – C66		
	V46 V48 V49			DCE-Vokes, Inc. Baghouse Model # DLMV30/1SH	C46, C48 C49		

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
ES-42 – ES-45	V42 – V45	Fluff (Ground Scrap) Storage Silos (also serve E-2 & E-4)	2513 ft^3 each	American Air Filter Co. Baghouse Model # 8-36-396	C42 – C45	PM/PM-10	12/20/2013
ES-46, ES-48, ES-49	V46 V48 V49	Fluff (Ground Scrap) Storage Silos (also serve E-2 & E-4)	2513 ft^3 each	Ultra Industries Baghouse Model # BBVC-64M36-84	C46 C48 C49	PM/PM-10	12/20/2013
ES-64 – ES-66	V64 – V66	Fluff (Ground Scrap) Storage Silos	2513 ft^3 each	DCE-Vokes, Inc. Baghouse Model # DLMV30/1SH	C64 – C66	PM/PM-10	12/20/2013
ES-42 to -46, -48, -49, -64 to -66	S75	Fluff (Ground Scrap) Storage Silos (also serve E-2 & E-4)	2513 ft^3 each	16.7 R95NG1 RTO	C75	VOC	12/20/2013
ES-54, ES-55	S54	Reclaim Extruders R-1 & R-2 (also serve E-2 & E-4)	-	ESP (Smog Hog) United Air Specialists Model # SH20PEH	C54	PM/PM-10	12/20/2013
ES-54, ES-55	S75	Reclaim Extruders R-1 & R-2 (also serve E-2 & E-4)	-	16.7 R95NG1 RTO	C75	VOC	12/20/2013
ES-56, ES-57	V56, V57	Scrap Storage Bin and Feed Hopper for R-1 & R-2 (also serves E-2 & E-4)	-	DCE-Vokes, Inc. Baghouse Model # DLMV30/1SH	C56, C57	PM/PM-10	12/20/2013
ES-34, ES-58	-	Inside Finished Goods Storage Warehouses (also serve E-2 & E-4)	-	-	-	-	12/20/2013
ES-114	-	VOC Blowing Agent Tank (also serves E-2 & E-4)	30,000 gallons	Pressure tank with inherent controls	-	VOC	12/20/2013
ES-115	-	Flexographic Printer	1700 lbs of foam/hr	-	-	-	12/20/2013

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
E-2 Line (Attic Vent/Roll Stock)							
ES-21	-	Foam Extruder E-2	1250 lbs foam/hr	-	-	-	12/20/2013
ES-27, ES-28, ES-28a	S27	Extrusion Line E-2 Laminators and Co-Extruder	-	ESP (Smog Hog) United Air Specialists Model # SH20PEH	C27	PM/PM10	12/20/2013
ES-32	-	Roll Storage Area	-	-	-	-	12/20/2013
ES-33	S75	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	16.7 R95NG1 RTO	C75	VOC	12/20/2013
ES-33	V42 – V45 and V64 – V66	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	American Air Filter Co. Baghouse Model # 8-36-396	C42 – C45	PM/PM-10	12/20/2013
				Ultra Industries Baghouse Model # BBVC-64M36-84	C64 – C66		
	V46 V48 V49			DCE-Vokes, Inc. Baghouse Model # DLMV30/1SH	C46, C48 C49		
ES-41 and ES-214	-	Thermoformers	-	-	-	-	12/20/2013
ES-67	-	Flexographic Printer	1250 lbs of foam/hr	-	-	-	12/20/2013
ES-110	-	Blowing Agent Tank (up to 3 percent methanol) (also serves E-4 & E-6)	18,000 gallons	-	-	-	12/20/2013

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
E-4 Line (Underlayment)							
ES-22	-	Foam Extruder E-4	1700 lbs foam/hr	-	-	-	12/20/2013
ES-29, ES-29a, ES-30, ES-30a	S29	Extrusion Line E-4 Laminators and Co-Extruders	-	ESP (Smog Hog) United Air Specialists Model # SH20PEH	C29	PM/PM-10	12/20/2013
ES-117	-	Flexographic Printer	1700 lbs of foam/hr	-	-	-	12/20/2013
E-6 Line (Insulation Board)							
ES-17, ES-18	-	Vacuum Transfer Blower Systems	5500 lb/hr, 1200 lb/hr	Inherent control	-	PM/PM-10	12/20/2013
ES-24	-	Foam Extruder E-6	5500 lb/hr	-	-	-	12/20/2013
ES-33a	V50 – V51	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	American Air Filter Co. Baghouse Model # 8-36-396	C50 – C51	PM/PM-10	12/20/2013
ES-50 – ES-51	V50 – V51	Fluff (Ground Scrap) Storage Silos	2513 ft^3 each	American Air Filter Co. Baghouse Model # 8-36-396	C50 – C51	PM/PM-10	12/20/2013
ES-52, ES-53	S52	Reclaim Extruders R-4 and R-6	-	ESP (Smog Hog) United Air Specialists Model # SHN20H	C52	PM/PM-10	12/20/2013
ES-58	-	Inside Finished Goods Storage Warehouse	-	-	-	-	12/20/2013
ES-60	V51	Reclaimed Resin Pellet Storage Silo	2513 ft^3	American Air Filter Co. Baghouse Model # 8-36-396	C51	PM/PM-10	12/20/2013

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
ES-116	-	Flexographic Printer	5500 lbs of foam/hr	-	-	-	12/20/2013
ES-121	-	VOC Blowing Agent Storage Tank	6000 gallons	Pressure tank with inherent controls	-	VOC	12/20/2013
ES-122	-	VOC Blowing Agent Storage Tank	6000 gallons	Pressure tank with inherent controls	-	VOC	12/20/2013
ES-123	-	Insulation Board Staging/Warming Area	-	-	-	-	12/20/2013
Other Regulated Units							
ES-75	S75	Regenerative Thermal Oxidizer	5.9 MMBtu/hr; 300 lbs/hr HC input	-	-	-	12/20/2013
ES-76	-	Flexographic Printer (Housewrap)	7000 yards of housewrap/hr	-	-	-	12/20/2013
ES-119	-	Sprinkler System Diesel Engine	345 hp	-	-	-	RICE MACT
ES-120	-	Sprinkler System Diesel Engine	345 hp	-	-	-	RICE MACT

*The Size/Rated capacity is provided for informational purposes only and is not an applicable requirement.

A table summarizing the VOC limits applicable to various emission units has been created for easy reference, and is included as Attachment F.

EMISSIONS INVENTORY

Emissions from the facility in 2014, as reported in DEQ's CEDS database, are provided in Attachment B. Emissions of criteria pollutants and hazardous air pollutants (HAP) are summarized in Table 2 below.

Table 2: 2014 Actual Emissions (tpy)

Emission unit	Criteria Pollutants						HAP
	VOC	CO	SO_2	PM-2.5	PM-10	NO_x	Methanol
Facility-wide	184.0	1.0	0.0	0.2	0.6	0.5	17.5

Note that the 2014 significant modification authorized an increase in methanol emissions, which are only partially reflected in the 2014 data.

EMISSION UNIT APPLICABLE REQUIREMENTS

E-1 Line, Underlayment

Limitations

The following limitations are state BACT and/or other applicable requirements from the minor NSR permit dated December 20, 2013. A copy of the permit is enclosed as Attachment C.

Condition 2*: Volatile organic compound (VOC) emissions from fluff storage silos associated with Lines E-1, E-2, and E-4 (ES-43, ES-44, ES-45, ES-46, ES-48, and ES-49) and from reclaim extruders R-1 and R-2 (ES-54 and ES-55) shall be controlled by a regenerative thermal oxidizer (RTO) having a destruction efficiency of not less than 95.0 percent. The RTO shall be provided with adequate access for inspection. All scrap generated from the E-1, E-2, and E-4 lines shall be processed by the R-1 or R-2 reclaim extruders (ES-54 and ES-55).

Condition 6*: Particulate emissions from each fluff storage silo (ES-64 - ES-66) shall be controlled by a fabric filter.

Condition 7*: The RTO (ES-75) operating temperature in the center of the gravel bed (designated as TE-3) shall not be less than the minimum temperature determined during the latest performance testing to

correspond to a destruction efficiency of 95.0 percent or greater.

Condition 24: The throughput of blowing agent VOC to the E-1 line shall not exceed 113.9 lbs/hr and 308.2 tpy.

Condition 25: VOC emissions shall not exceed the following limits:
- E-1 Process Emissions: 57.0 tpy
- E-1 Reclaim Emissions: 1.8 tpy
- E-1 Inside Warehouse Storage Emissions: 208.2 tpy

Condition 26: Process and Reclaim VOC emissions from the E-1 line shall be calculated by mass balance as specified by the formula provided.

Condition 27: Inside Warehouse Storage VOC emissions from the E-1 line shall be calculated by mass balance as specified by the formula provided.

Condition 28: The finished product sent to the inside warehouse storage area shall not exceed more than 4,600 tpy of foam finished product (excluding laminate/laminate weight) from the E-1 line.

Condition 29: The production of laminated products shall not exceed more than 4,380 tons per year from extrusion laminator systems (ES-25, ES-25a, ES-26 and ES-26a).

Condition 30: VOC emissions from the extrusion laminator systems (ES-25, ES-25a, ES-26 and ES-26a) shall not exceed 0.11 lbs/hr and 0.46 tpy.

Condition 49*: The approved fuel for the RTO (ES-75) is natural gas.

Condition 50*: Visible emissions from the RTO (ES-75) shall not exceed five percent opacity except during periods of scheduled maintenance (such as bake-out periods) for the RTO, when visible emissions shall not exceed 20 percent opacity. This condition applies at all times except during startup, shutdown, and malfunction. Opacity shall be determined by EPA Method 9 (reference 40 CFR 60, Appendix A).

Condition 51*: Visible emissions from each fluff storage silo (ES-64 - ES-66) shall not exceed five percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).

* Conditions 2, 6, 7, and 49-51 apply to the E-1, E-2, and E-4 lines, but they are

discussed only in this section of the statement of basis to avoid repetition.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80, New Source Standard for Visible Emissions
9 VAC 5-40-260, Existing Source Standard for Particulate Matter (ACQR 1-6)

The following conditions in the Title V permit were established pursuant to these Codes:

Condition 8:	Visible emissions from the E-1 foam extruder (ES-20) shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This condition applies at all times except during startup, shutdown and malfunction.
Condition 9:	Particulate emissions from the E-1 foam extruder (ES-20), extrusion laminator stack (S25), and reclaim extruder stack (S54) shall not exceed the process weight limit as determined by the specified equation.

The hopper emissions (HE) variable included in the formula set forth in Condition 3 is simply the hopper vent emissions rate times the hours of operation of the hopper. The hopper vent emissions rate is based on testing conducted in 2004 and approved by DEQ.

Periodic Monitoring

The requirements to measure continuously and to record daily the blowing agent input rate to the E-1 line as specified in Condition 11 of the minor NSR permit dated December 20, 2013 have been included in the permit and have not been changed because they already meet Part 70 requirements.

The fabric filter monitoring requirements in Conditions 9 and 10 of the minor NSR permit dated December 20, 2013 have been modified as described below to meet Part 70 requirements (but are substantively unchanged from the existing Title V permit).

The permit requires operation of a fabric filter for each fluff storage silo (ES-42 - ES-46, ES-48 and ES-49) and scrap storage bin (ES-56 and ES-57) to demonstrate compliance with the particulate matter and visible emission requirements. A properly operating fabric filter can achieve compliance with the process weight rate emissions limit. Also, if the fabric filters are operating properly, compliance with the 20 percent opacity limit for each fluff storage silo (ES-42 - ES-46, ES-48 and ES-49) and scrap storage bin (ES-56 and ES-57) can be achieved since there should be no visible emissions from these units. This is the case because the fabric filters

eliminate the particulates which are the source of the visible emissions. Therefore, if visible emissions are seen from a fluff storage silo vent (V42 - V46, V48 and V49) or scrap storage bin vent (V56 and V57) it can be reasonably assumed that there is a problem with the fabric filter. The permit contains a requirement for the permittee to conduct weekly inspections of each fluff storage silo vent (V42 - V46, V48 and V49) and scrap storage bin vent (V56 and V57). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across each fabric filter (C42 - C46, C48, C49, C56 and C57). If during the inspection visible emissions are observed, a visible emission evaluation (VEE) of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed 20 percent, the VEE shall be conducted for a total of 60 minutes.

The permit requires operation of a fabric filter for the fluff storage silos (ES-64 - ES-66) to demonstrate compliance with the particulate matter and visible emission requirements. A properly operating fabric filter can achieve compliance with the process weight rate emissions limit. Also, if the fabric filters are operating properly, compliance with the five percent opacity limit for the fluff storage silos (ES-64 - ES-66) can be achieved since there should be no visible emissions from these units. This is the case because the fabric filters eliminate the particulates which are the source of the visible emissions. Therefore, if visible emissions are seen from a fluff storage silo vent (V64 - V66) it can be reasonably assumed that there is a problem with the fabric filter. The permit contains a requirement for the permittee to conduct weekly inspections of each fluff storage silo vent (V64 - V66). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across each fabric filter (C64 - C66). If during the inspection visible emissions are observed, a visible emission evaluation (VEE) of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed five percent, the VEE shall be conducted for a total of 60 minutes.

The weekly inspections will satisfy the periodic monitoring requirement for the visible emission limitations. Frequent checks for visible emissions will limit malfunctions of the fabric filters. As long as the fabric filters are operating properly, there is little likelihood of violating the visible emission limitation. The fabric filters will limit the amount of particulates that are emitted thereby limiting visible emissions.

The permit also requires each fabric filter (C42 - C46, C48, C49, C56, C57, C64 - C66) to be equipped with a device to continuously measure the differential pressure drop across the fabric filter. The device shall be installed in an accessible location and shall, to the extent practicable, be maintained by the permittee such that it is in proper working order at all times. Fabric filters are designed to operate at a relatively constant pressure drop. Monitoring pressure drop provides a means of detecting a change in operation that could lead to an increase in emissions. An increase in pressure drop can indicate that the cleaning cycle is not frequent enough, cleaning

equipment is damaged, the bags are becoming inefficient, or the airflow has increased. A decrease in pressure drop may indicate broken or loose bags, but this is also indicated by the presence of visible emissions, as discussed above. A pressure drop across the fabric filter also serves to indicate that there is airflow through the control device. The permit requires the control monitoring device used to continuously measure the differential pressure drop across the fabric filters (C42 - C46, C48, C49, C56, C57, C64 - C66) to be observed by the permittee with a frequency of not less than once per week.

The permittee will maintain material throughput records for the E-1 line to demonstrate compliance with the particulate matter limitation. The particulate matter limitation for each emission unit listed in the table below was determined by the equation $E = 4.10P^{0.67}$, where E is the emission limit in lbs/hr and P is the process weight rate in tons/hr. The maximum estimated emission rates were calculated based on stack testing and engineering calculations conducted by the permittee to develop standardized emission factors applicable to their specialized industry. As shown in the table below, there is reasonable assurance that violations of the emission limitations will not occur because these limits can be met with no controls. Process weight limit calculations are provided in Attachment G.

Emission Unit	Pollutant	Limitation (lb/hr)	Maximum Estimated Emission Rate (lb/hr)
Extrusion Line E-1	PM/PM-10	3.67	0.14
Reclaim Extruders (ES-54 and ES-55)	PM/PM-10	5.38	0.14

Finally, at least once during the term of the permit, the permittee shall conduct performance tests to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in to calculate warehouse VOC emissions from the E-1 line. The facility currently uses data collected in 2011, and under the permit it must update this data once during the upcoming permit cycle.

Compliance Assurance Monitoring

Scrap material generated on the E-1, E-2, and E-4 lines is recovered by reclaim extruders R-1 and R-2 (ES-54 and ES-55). The pollutant specific emissions unit (PSEU) includes the fluff storage silos (ES-42 - ES-46, ES-48, ES-49 and ES-64 - ES-66), reclaim extruder die (ES-54) and reclaim extruder vent (ES-54 and ES-55) in the recycling process of scrap material. The PSEU has the potential to emit more than 100 tons per year of uncontrolled VOC emissions. The regenerative thermal oxidizer (RTO) is used to reduce VOC emissions. Therefore, since the PSEU has uncontrolled emissions greater than or equal to 100 tons per year; is subject to emission limitations (reclaim only for E-1; process and reclaim combined for E-2 and E-4); and

has a control device to meet that limit (the RTO), the RTO is subject to 40 CFR Part 64, Compliance Assurance Monitoring.

The Compliance Assurance Monitoring (CAM) Plan for the Regenerative Thermal Oxidizer (RTO) (ES-75) (Attachment E) includes the following requirements, which are substantively unchanged from the existing permit:

The RTO chamber temperature has been selected as the first indicator because it is indicative of the RTO operation (combustion occurring within the chamber). If the chamber temperature decreases significantly, complete combustion may not occur and the level of destruction efficiency may not be achieved. Literature has shown that the control efficiency achieved by a thermal incinerator such as a RTO is a function of its operating temperature. Therefore, by maintaining the operating temperature at or above a minimum, a level of control efficiency can be expected to be achieved.

The second indicator selected was a work practice comprised of a daily visual inspection of the supplemental fuel indicator valves during each operating day and an annual inspection of the two poppet valves within the RTO. A daily visual inspection verifies that the valves are in the "ON" position, which indicates that natural gas is being fed to the RTO and the RTO is functioning. Additionally, an annual inspection of the two poppet valves within the RTO was selected because the poppet valves are critical to the operation of the RTO. The poppet valves control and alternate the direct flow of the VOC laden air to the RTO combustion chamber. The annual inspection will require the RTO to be shutdown.

Third, the facility shall conduct a Method 25 or 25A performance test on the RTO to verify compliance with the destruction efficiency of not less than 95 percent in the permit. The Method 25 performance test shall be completed within 18 months of each renewal of the permit.

There is also a requirement in the permit that the permittee will continuously monitor and record the temperature of the RTO at the designated location, TE-3. The monitoring device will be installed in an accessible location and calibrated, maintained, and operated according to the manufacturer's specifications. The calibration of the monitoring device will be verified every six months.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the following recordkeeping requirements drawn from Condition 61 of the minor NSR permit dated December 20, 2013:

- Results of performance testing of the percentage of VOC retained in finished product (v) and Warehouse VOC Loss rate (V_{WRE}) for each product family type.

- Monthly and annual throughput of blowing agent VOC (in tons) for the E-1 line.
- Average hourly throughput of blowing agent VOC (in tons) for the E-1 line. Average hourly throughput shall be calculated once each 24-hour period.
- Monthly and annual Process and Reclaim VOC emissions (in tons) from the E-1 line.
- Monthly and annual Inside Warehouse Storage VOC emissions (in tons) from the E-1 line.
- Monthly and annual uncontrolled VOC emissions (in tons) from the E-1 line.
- Monthly and annual VOC emissions from the RTO controlling the E-1 line.
- Monthly and annual VOC input to the RTO controlling the E-1 Line. VOC input to RTO shall be calculated using methods approved by DEQ. The VOC input to the RTO is based on the formulas provided in the application for the NSR permit. These formulas are based on the average VOC content and the amount of various scrap materials processed, and they are included in the emissions calculations spreadsheet that has been approved by DEQ pursuant to the NSR permit.
- Monthly and annual finished product (tons) from the E-1 lines.
- Monthly and annual finished product sent to the inside warehouse storage area (in tons) from the E-1 line.
- Monthly and annual finished product sent to the outside storage pad (in tons) from the E-1 line.
- Inside warehouse storage time for the finished product (in days) for each product family type from the E-1 line. Storage time shall be calculated using methods approved by DEQ.
- Monthly and annual scrap production (tons) from the E-1 line (extrusion and thermoforming).
- Monthly and annual throughput of reclaim polystyrene pellets (RPP) from reclaim extruders R-1 (ES-54) and R-2 (ES-55).
- Monthly and annual VOC emissions (in tons) from reclaim extruders R-1 (ES-54) and R-2 (ES-55).

- Monthly and annual throughput of laminate products from extrusion laminator systems (ES-25, ES-25a, ES-26 and ES-26a).

- Monthly and annual VOC emissions (in tons) from extrusion laminator systems (ES-25, ES-25a, ES-26 and ES-26a).

- Calibration of the monitoring device for the flow meter as required in Condition 18.

- Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

- RTO (ES-75) natural gas consumption, calculated as the sum of each consecutive 12-month period.

- Monthly log of RTO operations indicating the number of operating hours in which the RTO did not operate along with the reason for not operating.

- Continuous measurement of temperature at TE-3 as required in Condition 19.

- Calibration of the monitoring device for temperature as required in Condition 19.

- Operation and control device monitoring records for each fabric filter for the fluff storage silos as required by Condition 15.

- Records of DEQ-approved test results for Hopper emissions (HE) from hoppers over R-1 (ES-56) and R-2 (ES-57).

The permittee is also required to maintain records of all additional monitoring and testing required by the CAM plan for the RTO. These records include:

- Records of daily inspections of the supplemental fuel indicator valves and the annual inspection of the poppet valves.

- Method 25/25A stack test results.

- Records of all excursions, including date, time, and corrective actions taken.

The recordkeeping requirements in Condition 61 of the minor NSR permit dated December 20, 2013 have been supplemented as follows to meet Part 70 requirements:

- Monthly material throughput, in pounds, for the E-1 line.

- Inspection records as required by Conditions 16 and 17, including the date and time of the inspections and corrective action(s) taken.

- Operation and control device monitoring records for the fabric filters (C42 - C46, C48, C49, C56, C57, and C64 – C66) as required by Condition 17.

Testing

Condition 31 of the permit includes the performance tests required by Condition 60 of the minor NSR permit dated December 20, 2013 to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in Conditions 3 and 4 to calculate VOC emissions from the E-1 line. This testing must be conducted at least once during the permit term (between June 2015 and June 2020).

The permit includes a requirement in the CAM Plan for the RTO that the permittee conduct a Method 25 or 25A performance test on the RTO to verify compliance with the required destruction efficiency within 18 months of each renewal of the permit (i.e., approximately every five years).

DEQ and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard, pursuant to Condition 32.

Reporting

The only reporting requirement contained in the minor NSR permit dated December 20, 2013 is the notification for facility or control equipment malfunction set forth in Condition 68. The permit includes the same requirements in Condition 129 (the General Conditions). The permit also requires all semi-annual and annual reporting that are standard in Title V permits.

The permit requires the permittee to submit a written report containing the following information pertaining to the CAM Plan for the RTO (ES-75) no later than March 1 and September 1 of each calendar year:

- Summary information on the number, duration, and cause (including unknown cause, if applicable) of excursions and the corrective actions taken;

- A description of actions taken to implement a QIP during the reporting period as specified in 40 CFR 64.8. Upon completion of a QIP, the permittee shall include in the next summary report documentation that the plan has been completed and reduced the likelihood of similar levels of excursions.

Streamlined Requirements

The five percent opacity limit for the RTO is more stringent than the Virginia Administrative Code Standard for visible emissions, 9 VAC 5-50-80. Therefore, only the more stringent opacity was included in the permit.

E-2 Line, Attic Vent/Roll Stock

Limitations

The following limitations are state BACT and/or other applicable requirements from the minor NSR permit dated December 20, 2013. A copy of the permit is included as Attachment C.

Condition 31:	The throughput of VOC to the E-2 line shall not exceed 66.25 lbs/hr and 69.1 tpy.
Condition 32:	VOC emissions shall not exceed the following limits: - E-2 Process and Reclaim Emissions: 28.0 tpy - E-2 Inside Warehouse Storage Emissions: 15.2 tpy
Condition 33:	Annual Process and Reclaim VOC emissions from the E-2 line shall be calculated by mass balance as specified in the formulas provided.
Condition 34:	Inside Warehouse Storage VOC emissions from the E-2 line shall be calculated by mass balance as specified by the formula provided.
Condition 35:	The finished product sent to the inside warehouse storage area shall not exceed more than 2,105 tpy of foam finished product (excluding laminate/laminate weight) from the E-2 line.
Condition 36:	The production of laminated product shall not exceed more than 4,600 tpy from extrusion laminator system (ES-27, ES-28, and ES-28a) for the E-2 line.
Condition 37:	VOC emissions from the extrusion laminator system (ES-27, ES-28, and ES-28a), shall not exceed 0.24 lbs/hr and 0.25 tpy.
Condition 38:	The production of reclaim polystyrene pellets (RPP) from scrap produced on the E-2 line shall not exceed more than 6,570 tpy from reclaim extruders (R-1 and R-2) (ES-54 and ES-55).

Condition 39: VOC emissions (excluding blowing agent VOC) from reclaim extruders (R-1 and R-2) (ES-54 and ES-55) processing scrap produced on the E-2 line shall not exceed 0.16 lbs/hr and 0.69 tpy.

* Conditions 2, 6, 7, and 49-51 apply to the processing of scrap generated from the E-1, E-2, and E-4 lines, but they are discussed only in the E-1 section of the statement of basis.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80, New Source Standard for Visible Emissions
9 VAC 5-40-260, Existing Source Standard for Particulate Matter (ACQR 1-6)

The following conditions in the Title V permit were established pursuant to these Codes:

Condition 44: Visible emissions from the E-2 foam extruder (ES-21), extrusion laminator stack (S27), reclaim extruder stack (S54), scrap storage bin vent (V56 and V57), and fluff storage silo vent (V42 - V46, V48, V49, and V64 – V66) shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This condition applies at all times except during startup, shutdown and malfunction.

Condition 45: Particulate emissions from the E-2 foam extruder (ES-21), extrusion laminator stack (S27), reclaim extruder stack (S54), scrap storage bin vents (V56 and V57) and fluff storage silo vent (V42 - V46, V48, V49, and V64 – V66) shall not exceed the process weight limit as determined by the specified equation.

The hopper emissions (HE) variable included in the formula set forth in Condition 36 is simply the hopper vent emissions rate times the hours of operation of the hopper. The hopper vent emissions rate is based on testing conducted in 2004 and approved by DEQ.

Periodic Monitoring

The requirements to measure continuously and to record daily the blowing agent input rate to the E-2 line as specified in Condition 11 of the minor NSR permit dated December 20, 2013 have been included in the permit and have not been changed because they meet Part 70 requirements.

The fabric filter monitoring requirements in Conditions 9 and 10 of the minor NSR permit dated

December 20, 2013 have been modified as described below to meet Part 70 requirements (but are unchanged from the existing Title V permit).

The permit requires operation of a fabric filter for each fluff storage silo (ES-42 - ES-46, ES-48 and ES-49) and scrap storage bin (ES-56 and ES-57) to demonstrate compliance with the particulate matter and visible emission requirements. A properly operating fabric filter can achieve compliance with the process weight rate emissions limit. Also, if the fabric filters are operating properly, compliance with the 20 percent opacity limit for each fluff storage silo (ES-42 - ES-46, ES-48 and ES-49) and scrap storage bin (ES-56 and ES-57) can be achieved since there should be no visible emissions from these units. This is the case because the fabric filters eliminate the particulates which are the source of the visible emissions. Therefore, if visible emissions are seen from a fluff storage silo vent (V42 - V46, V48 and V49) or scrap storage bin vent (V56 and V57) it can be reasonably assumed that there is a problem with the fabric filter. The permit contains a requirement for the permittee to conduct weekly inspections of each fluff storage silo vent (V42 - V46, V48 and V49) and scrap storage bin vent (V56 and V57). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across each fabric filter (C42 - C46, C48, C49, C56 and C57). If during the inspection visible emissions are observed, a visible emission evaluation (VEE) of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed 20 percent, the VEE shall be conducted for a total of 60 minutes.

The permit requires operation of a fabric filter for the fluff storage silos (ES-64 - ES-66) to demonstrate compliance with the particulate matter and visible emission requirements. A properly operating fabric filter can achieve compliance with the process weight rate emissions limit. Also, if the fabric filters are operating properly, compliance with the five percent opacity limit for the fluff storage silos (ES-64 - ES-66) can be achieved since there should be no visible emissions from these units. This is the case because the fabric filters eliminate the particulates which are the source of the visible emissions. Therefore, if visible emissions are seen from a fluff storage silo vent (V64 - V66) it can be reasonably assumed that there is a problem with the fabric filter. The permit contains a requirement for the permittee to conduct weekly inspections of each fluff storage silo vent (V64 - V66). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across each fabric filter (C64 - C66). If during the inspection visible emissions are observed, a visible emission evaluation (VEE) of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed five percent, the VEE shall be conducted for a total of 60 minutes.

The weekly inspections will satisfy the periodic monitoring requirement for the visible emission limitations. Frequent checks for visible emissions will limit malfunctions of the fabric filters. As long as the fabric filters are operating properly, there is little likelihood of violating the visible

emission limitation. The fabric filters will limit the amount of particulates that are emitted thereby limiting visible emissions.

The permit also requires each fabric filter (C42 - C46, C48, C49, C56, C57, C64 - C66) to be equipped with a device to continuously measure the differential pressure drop across the fabric filter. The device shall be installed in an accessible location and shall, to the extent practicable, be maintained by the permittee such that it is in proper working order at all times. Fabric filters are designed to operate at a relatively constant pressure drop. Monitoring pressure drop provides a means of detecting a change in operation that could lead to an increase in emissions. An increase in pressure drop can indicate that the cleaning cycle is not frequent enough, cleaning equipment is damaged, the bags are becoming inefficient, or the airflow has increased. A decrease in pressure drop may indicate broken or loose bags, but this is also indicated by the presence of visible emissions, as discussed above. A pressure drop across the fabric filter also serves to indicate that there is airflow through the control device. The permit requires the control monitoring device used to continuously measure the differential pressure drop across the fabric filters (C42 - C46, C48, C49, C56, C57, C64 - C66) to be observed by the permittee with a frequency of not less than once per week.

The permittee will maintain material throughput records for the E-2 line to demonstrate compliance with the particulate matter limitation. The particulate matter limitation for each emission unit listed in the table below was determined by the equation $E = 4.10P^{0.67}$, where E is the emission limit in lbs/hr and P is the process weight rate in tons/hr. The maximum estimated emission rates were calculated based on stack testing and engineering calculations conducted by the permittee to develop standardized emission factors applicable to its specialized industry. As shown in the table below, there is reasonable assurance that violations of the emission limitations will not occur because these limits can be met with no controls. Process weight limit calculations are provided in Attachment G.

Emission Unit	Pollutant	Limitation (lb/hr)	Max. Est. Emission Rate (lb/hr)
Extrusion Line E-2	PM/PM-10	2.99	0.1
Reclaim Extruders (ES-54 and ES-55)	PM/PM-10	5.38	0.14

Finally, at least once during the term of the permit, the permittee shall conduct performance tests to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in to calculate warehouse VOC emissions from the E-2 line. The facility currently uses data collected in 2011, and under the permit it must update this data once during the upcoming permit cycle.

Compliance Assurance Monitoring (CAM)

Scrap material generated on the E-1, E-2, and E-4 lines is recovered by reclaim extruders R-1 and R-2 (ES-54 and ES-55). The pollutant specific emissions unit (PSEU) includes the fluff storage silos (ES-42 - ES-46, ES-48, ES-49 and ES-64 - ES-66), reclaim extruder die (ES-54) and reclaim extruder vent (ES-54 and ES-55) in the recycling process of scrap material. The PSEU has the potential to emit more than 100 tons per year of uncontrolled VOC emissions. The regenerative thermal oxidizer (RTO) is used to reduce VOC emissions. Therefore, since the PSEU has uncontrolled emissions greater than or equal to 100 tons per year; is subject to emission limitations (reclaim only for E-1; process and reclaim combined for E-2 and E-4); and has a control device to meet that limit (the RTO), the RTO is subject to 40 CFR Part 64, Compliance Assurance Monitoring. Please see the CAM discussion above for the E-1 line for a complete discussion of this topic.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the following recordkeeping requirements drawn from Condition 61 of the minor NSR permit dated December 20, 2013:

- Results of performance testing of the percentage of VOC retained in finished product (v) and Warehouse VOC Loss rate (V_{WRE}) for each product family type.
- Monthly and annual throughput of blowing agent VOC (in tons) for the E-2 line.
- Average hourly throughput of blowing agent VOC (in tons) for the E-2 line. Average hourly throughput shall be calculated once each 24-hour period.
- Monthly and annual Process and Reclaim VOC emissions (in tons) from the E-2 line.
- Monthly and annual Inside Warehouse Storage VOC emissions (in tons) from the E-2 line.
- Monthly and annual uncontrolled VOC emissions (in tons) from the E-2 line.
- Monthly and annual VOC emissions from the RTO (ES-75) controlling the E-2 line.
- Monthly and annual VOC input to the RTO (ES-75) from the E-2 line. VOC input to the RTO shall be calculated using methods approved by DEQ**.** The VOC input to the RTO is based on the formulas provided in the application for the NSR permit. These formulas are based on the average VOC content and the amount of

various scrap materials processed, and they are included in the emissions calculations spreadsheet that has been approved by DEQ pursuant to the NSR permit.

- Monthly and annual finished product (tons) from the E-2 line.
- Monthly and annual finished product sent to the inside warehouse storage area (in tons) from the E-2 line.
- Monthly and annual finished product sent to the outside storage pad (in tons) from the E-2 line.
- Inside warehouse storage time for the finished product (in days) for each product family type from the E-2 line. Storage time shall be calculated using methods approved by DEQ.
- Monthly and annual scrap production (tons) from the E-2 line (extrusion and thermoforming).
- Monthly and annual throughput of reclaim polystyrene pellets (RPP) from the reclaim extruders R-1 (ES-54) and R-2 (ES-55).
- Monthly and annual VOC emissions (in tons) from the reclaim extruders R-1 (ES-54) and R-2 (ES-55).
- Monthly and annual throughput of laminate products from the extrusion laminator systems (ES-27, ES-28, and ES-28a).
- Monthly and annual VOC emissions (in tons) from the extrusion laminator systems (ES-27, ES-28, and ES-28a).
- Calibration of the monitoring device for the flow meter as required in Condition 51.
- Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

The recordkeeping requirements in Condition 61 of the minor NSR permit dated December 20, 2013 have been supplemented as follows to meet Part 70 requirements:

- Monthly material throughput, in pounds, for the E-2 line.

- Inspection records as required by Conditions 49 and 50, including the date and time of the inspections and corrective action(s) taken.

- Operation and control device monitoring records for the fabric filters (C42 - C46, C48, C49, C56, C57, and C64 – C66) as required by Condition 50.

Testing

Condition 53 of the permit includes the performance tests required by Condition 60 of the minor NSR permit dated December 20, 2013 to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in Conditions 36 and 37 to calculate VOC emissions from the E-2 line. This testing must be conducted at least once during the permit term (between June 2015 and June 2020).

DEQ and EPA have the authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard, pursuant to Condition 54.

Reporting

The only reporting requirement contained in the minor NSR permit dated December 20, 2013 is the notification for facility or control equipment malfunction set forth in Condition 68. The permit includes the same requirements in Condition 129 (the General Conditions). The permit also requires all semi-annual and annual reporting that are standard in Title V permits.

Streamlined Requirements

There are no streamlined requirements in this section of the permit.

E-4 Line, Underlayment

Limitations

The following limitations are state BACT and/or other applicable requirements from the minor NSR permit dated December 20, 2013. A copy of the permit is enclosed as Attachment C.

Condition 40:	The throughput of blowing agent VOC to the E-4 line shall not exceed 119.0 lbs/hr and 195.9 tpy.
Condition 41:	VOC emissions shall not exceed the following limits: - E-4 Process & Reclaim Emissions: 50.4 tpy - E-4 Inside Warehouse Storage Emissions: 118.4 tpy
Condition 42:	Process and Reclaim VOC emissions from the E-4 line shall be

calculated by mass balance as specified by the formula provided.

Condition 43: Inside Warehouse Storage VOC emissions from the E-4 line shall be calculated by mass balance as specified by the formula provided.

Condition 44: The finished product sent to the inside warehouse storage area shall not exceed more than 4,600 tpy of foam finished product (excluding laminate/laminate weight) from the E-4 line.

Condition 45: The production of laminated products shall not exceed more than 4,600 tons per year from extrusion laminator systems (ES-29, ES-29a, ES-30, and ES-30a).

Condition 46: VOC emissions from the extrusion laminator systems (ES-29, ES-29a, ES-30, and ES-30a) shall not exceed 0.26 lbs/hr and 0.48 tpy.

Condition 47: The production of reclaim polystyrene pellets (RPP) from scrap produced on the E-4 line shall not exceed more than 6,570 tpy from reclaim extruders (R-1 and R-2) (ES-54 and ES-55).

Condition 48: VOC emissions (excluding blowing agent VOC) from reclaim extruders (R-1 and R-2) (ES-54 and ES-55) processing scrap produced on the E-4 line shall not exceed 0.16 lbs/hr and 0.69 tpy.

* Conditions 2, 6, 7, and 49-51 apply to the processing of scrap generated from the E-1, E-2, and E-4 lines, but they are discussed only in the E-1 section of the statement of basis.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80, New Source Standard for Visible Emissions
9 VAC 5-40-260, Existing Source Standard for Particulate Matter (ACQR 1-6)

The following conditions in the Title V permit were established pursuant to these Codes:

Condition 65: Visible emissions from the E-4 foam extruder (ES-22), extrusion laminator stack (S29), reclaim extruder stack (S54), scrap storage bin vents (V56 and V57) and fluff storage silo vents (V42 - V46, V48, V49, and V64 – V66) shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This condition applies

	at all times except during startup, shutdown and malfunction.
Condition 66:	Particulate emissions from the E-4 foam extruder (ES-22), extrusion laminator stack (S29), reclaim extruder stack (S54), scrap storage bin vents (V56 and V57) and fluff storage silo vents (V42 - V46, V48, V49, and V64 – V66) shall not exceed the process weight limit as determined by the specified equation.

The hopper emissions (HE) variable included in the formula set forth in Condition 57 is simply the hopper vent emissions rate times the hours of operation of the hopper. The hopper vent emissions rate is based on testing conducted in 2004 and approved by DEQ.

Periodic Monitoring

The requirements to measure continuously and to record daily the blowing agent input rate to the E-4 line as specified in Condition 11 of the minor NSR permit dated December 20, 2013 have been included in the permit and have not been changed because they meet Part 70 requirements.

The fabric filter monitoring requirements in Conditions 9 and 10 of the minor NSR permit dated December 20, 2013 have been modified as described below to meet Part 70 requirements (but are substantively unchanged from the existing Title V permit).

The permit requires operation of a fabric filter for each fluff storage silo (ES-42 - ES-46, ES-48 and ES-49) and scrap storage bin (ES-56 and ES-57) to demonstrate compliance with the particulate matter and visible emission requirements. A properly operating fabric filter can achieve compliance with the process weight rate emissions limit. Also, if the fabric filters are operating properly, compliance with the 20 percent opacity limit for each fluff storage silo (ES-42 - ES-46, ES-48 and ES-49) and scrap storage bin (ES-56 and ES-57) can be achieved since there should be no visible emissions from these units. This is the case because the fabric filters eliminate the particulates which are the source of the visible emissions. Therefore, if visible emissions are seen from a fluff storage silo vent (V42 - V46, V48 and V49) or scrap storage bin vent (V56 and V57) it can be reasonably assumed that there is a problem with the fabric filter. The permit contains a requirement for the permittee to conduct weekly inspections of each fluff storage silo vent (V42 - V46, V48 and V49) and scrap storage bin vent (V56 and V57). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across each fabric filter (C42 - C46, C48, C49, C56 and C57). If during the inspection visible emissions are observed, a visible emission evaluation (VEE) of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed 20 percent, the VEE shall be conducted for a total of 60 minutes.

The permit requires operation of a fabric filter for the fluff storage silos (ES-64 - ES-66) to demonstrate compliance with the particulate matter and visible emission requirements. A properly operating fabric filter can achieve compliance with the process weight rate emissions limit. Also, if the fabric filters are operating properly, compliance with the five percent opacity limit for the fluff storage silos (ES-64 - ES-66) can be achieved since there should be no visible emissions from these units. This is the case because the fabric filters eliminate the particulates which are the source of the visible emissions. Therefore, if visible emissions are seen from a fluff storage silo vent (V64 - V66) it can be reasonably assumed that there is a problem with the fabric filter. The permit contains a requirement for the permittee to conduct weekly inspections of each fluff storage silo vent (V64 - V66). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across each fabric filter (C64 - C66). If during the inspection visible emissions are observed, a visible emission evaluation (VEE) of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed five percent, the VEE shall be conducted for a total of 60 minutes.

The weekly inspections will satisfy the periodic monitoring requirement for the visible emission limitations. Frequent checks for visible emissions will limit malfunctions of the fabric filters. As long as the fabric filters are operating properly, there is little likelihood of violating the visible emission limitation. The fabric filters will limit the amount of particulates that are emitted thereby limiting visible emissions.

The permit also requires each fabric filter (C42 - C46, C48, C49, C56, C57, C64 - C66) to be equipped with a device to continuously measure the differential pressure drop across the fabric filter. The device shall be installed in an accessible location and shall, to the extent practicable, be maintained by the permittee such that it is in proper working order at all times. Fabric filters are designed to operate at a relatively constant pressure drop. Monitoring pressure drop provides a means of detecting a change in operation that could lead to an increase in emissions. An increase in pressure drop can indicate that the cleaning cycle is not frequent enough, cleaning equipment is damaged, the bags are becoming inefficient, or the airflow has increased. A decrease in pressure drop may indicate broken or loose bags, but this is also indicated by the presence of visible emissions, as discussed above. A pressure drop across the fabric filter also serves to indicate that there is airflow through the control device. The permit requires the control monitoring device used to continuously measure the differential pressure drop across the fabric filters (C42 - C46, C48, C49, C56, C57, C64 - C66) to be observed by the permittee with a frequency of not less than once per week.

The permittee will maintain material throughput records for the E-4 line to demonstrate compliance with the particulate matter limitation. The particulate matter limitation for each emission unit listed in the table below was determined by the equation $E = 4.10P^{0.67}$, where E is the emission limit in lbs/hr and P is the process weight rate in tons/hr. The maximum estimated

emission rates were calculated based on stack testing and engineering calculations conducted by the permittee to develop standardized emission factors applicable to their specialized industry. As shown in the table below, there is reasonable assurance that violations of the emission limitations will not occur because these limits can be met with no controls. Process weight limit calculations are provided in Attachment G.

Emission Unit	Pollutant	Limitation (lb/hr)	Maximum Estimated Emission Rate (lb/hr)
Extrusion Line E-4	PM/PM-10	3.68	0.1
Reclaim Extruders (ES-54 and ES-55)	PM/PM-10	5.38	0.14

Finally, at least once during the term of the permit, the permittee shall conduct performance tests to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in to calculate warehouse VOC emissions from the E-4 line. The facility currently uses data collected in 2011, and under the permit it must update this data once during the upcoming permit cycle.

Compliance Assurance Monitoring

Scrap material generated on the E-1, E-2, and E-4 lines is recovered by reclaim extruders R-1 and R-2 (ES-54 and ES-55). The pollutant specific emissions unit (PSEU) includes the fluff storage silos (ES-42 - ES-46, ES-48, ES-49 and ES-64 - ES-66), reclaim extruder die (ES-54) and reclaim extruder vent (ES-54 and ES-55) in the recycling process of scrap material. The PSEU has the potential to emit more than 100 tons per year of uncontrolled VOC emissions. The regenerative thermal oxidizer (RTO) is used to reduce VOC emissions. Therefore, since the PSEU has uncontrolled emissions greater than or equal to 100 tons per year; is subject to emission limitations (reclaim only for E-1; process and reclaim combined for E-2 and E-4); and has a control device to meet that limit (the RTO), the RTO is subject to 40 CFR Part 64, Compliance Assurance Monitoring. Please see the CAM discussion above for the E-1 line for a complete discussion of this topic.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the following recordkeeping requirements drawn from Condition 61 of the minor NSR permit dated December 20, 2013:

- Results of performance testing of the percentage of VOC retained in finished product (v) and Warehouse VOC Loss rate (V_{WRE}) for each product family type.

- Monthly and annual throughput of blowing agent VOC (in tons) for the E-4 line.
- Average hourly throughput of blowing agent VOC (in tons) for the E-4 line. Average hourly throughput shall be calculated once each 24-hour period.
- Monthly and annual Process and Reclaim VOC emissions (in tons) from the E-4 line.
- Monthly and annual Inside Warehouse Storage VOC emissions (in tons) from the E-4 line.
- Monthly and annual uncontrolled VOC emissions (in tons) from the E-4 line.
- Monthly and annual VOC emissions from the RTO controlling the E-4 line.
- Monthly and annual VOC input to the RTO controlling the E-4 Line. VOC input to RTO shall be calculated using methods approved by DEQ. The VOC input to the RTO is based on the formulas provided in the application for the NSR permit. These formulas are based on the average VOC content and the amount of various scrap materials processed, and they are included in the emissions calculations spreadsheet that has been approved by DEQ pursuant to the NSR permit.
- Monthly and annual finished product (tons) from the E-4 lines.
- Monthly and annual finished product sent to the inside warehouse storage area (in tons) from the E-4 line.
- Monthly and annual finished product sent to the outside storage pad (in tons) from the E-4 line.
- Inside warehouse storage time for the finished product (in days) for each product family type from the E-4 line. Storage time shall be calculated using methods approved by DEQ.
- Monthly and annual scrap production (tons) from the E-4 line (extrusion and thermoforming).
- Monthly and annual throughput of reclaim polystyrene pellets (RPP) from reclaim extruders R-1 (ES-54) and R-2 (ES-55).
- Monthly and annual VOC emissions (in tons) from reclaim extruders R-1 (ES-54) and R-2 (ES-55).

- Monthly and annual throughput of laminate products from extrusion laminator systems (ES-29, ES-29a, ES-30 and ES-30a).

- Monthly and annual VOC emissions (in tons) from extrusion laminator systems (ES-29, ES-29a, ES-30 and ES-30a).

- Calibration of the monitoring device for the flow meter as required in Condition 72.

- Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

The recordkeeping requirements in Condition 61 of the minor NSR permit dated December 20, 2013 have been supplemented as follows to meet Part 70 requirements:

- Monthly material throughput, in pounds, for the E-4 line.

- Inspection records as required by Conditions 70 and 71, including the date and time of the inspections and corrective action(s) taken.

- Operation and control device monitoring records for the fabric filters (C42 - C46, C48, C49, C56, C57, and C64 – C66) as required by Condition 71.

Testing

Condition 74 of the permit includes the performance tests required by Condition 60 of the minor NSR permit dated December 20, 2013 to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in Conditions 57 and 58 to calculate VOC emissions from the E-4 line. This testing must be conducted at least once during the permit term (between June 2015 and June 2020).

DEQ and EPA have the authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard, pursuant to Condition 75.

Reporting

The only reporting requirement contained in the minor NSR permit dated December 20, 2013 is the notification for facility or control equipment malfunction set forth in Condition 68. The permit includes the same requirements in Condition 129 (the General Conditions). The permit also requires all semi-annual and annual reporting that are standard in Title V permits.

Streamlined Requirements

There are no streamlined requirements in this section of the permit.

E-6 Line, Insulation Board

Limitations

The following limitations are state BACT and/or other applicable requirements from the minor NSR permit dated December 20, 2013. A copy of the permit is enclosed as Attachment C.

Condition 5:	Particulate emissions from each fluff storage silo (ES-50 and ES-51) and reclaimed resin pellet storage silo (ES-60) shall be controlled by a fabric filter.
Condition 12:	The throughput of VOC (blowing agent) to the E-6 line shall not exceed 121.5 lb/hr and 226.7 tpy.
Condition 13:	VOC emissions shall not exceed the following limits: - E-6 Process and Reclaim Emissions: 98.8 tpy - E-6 Inside Warehouse Storage Emissions: 17.0 tpy
Condition 14:	Process and Reclaim VOC emissions from the E-6 line shall be calculated by mass balance as specified by the formula provided.
Condition 15:	Inside Warehouse Storage VOC emissions from the E-6 line shall be calculated by mass balance as specified by the formula provided.
Condition 16:	The throughput of blowing agent HFC-134a to the E-6 Line shall not exceed 811.1 tons per year.
Condition 17:	The finished product sent to the inside warehouse storage area shall not exceed more than 10,030 tpy of finished product from the E-6 line.
Condition 18:	The throughput of virgin polystyrene resin to the E-6 line shall not exceed 20,060 tpy.
Condition 19:	Particulate emissions from material handling including polystyrene storage silos (ES-1, ES-2, ES-3, ES-4, ES-9, ES-10, ES-14, ES-47, ES-59, ES-60, ES-60a and ES-60b), vacuum transfer blower systems (ES-17 and ES-18), roll and scrap grinders (ES-33a) and

fluff storage silos (ES-50 and ES-51), shall not exceed the following limits:

- PM	0.67 lbs/hr	0.39 tpy
- PM-10	0.05 lbs/hr	0.06 tpy

Condition 20: The production of reclaim polystyrene pellets (RPP) shall not exceed more than 14,892 tpy from the two reclaim extruders serving the E-6 line (R-4 and R-6) (ES-52 and ES-53).

Condition 21: VOC emissions (excluding blowing agent VOC) from reclaim extruders R-4 and R-6 (ES-52 and ES-53), shall not exceed 0.36 lbs/hr and 1.56 tpy.

Condition 22: Visible emissions from the fluff storage silos (ES-50 and ES-51) and the reclaimed resin pellet storage silo (ES-60) shall not exceed five percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).

Condition 23: Visible emissions from the foam extruder (ES-24), extrusion laminator (S25) and reclaim extruder stack (S52) shall not exceed ten percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80, New Source Standard for Visible Emissions
9 VAC 5-40-260, Existing Source Standard for Particulate Matter (ACQR 1-6)

The following conditions in the Title V permit were established pursuant to these Codes:

Condition 88: Visible emissions from the E-6 foam extruder (ES-24), extrusion laminator (S25) and reclaim extruder stack (S52) shall not exceed 10 percent opacity.

Condition 89: Particulate emissions from the E-6 foam extruder (ES-24), extrusion laminator stack (S25), and reclaim extruder stack (S52) shall not exceed the process weight limit as determined by the specified equation.

Periodic Monitoring

The requirements to measure continuously and to record daily the blowing agent input rate to the

E-6 line as specified in Condition 11 of the minor NSR permit dated December 20, 2013 have been included in the permit and have not been changed because they meet Part 70 requirements.

The fabric filter monitoring requirements in Conditions 9 and 10 of the minor NSR permit dated December 20, 2013 have been modified as described below to meet Part 70 requirements (but are substantively unchanged from the existing Title V permit).

The permit requires operation of a fabric filter for the fluff storage silos (ES-50 and ES-51) to demonstrate compliance with the particulate matter and visible emission requirements. A properly operating fabric filter can achieve compliance with the particulate matter emission limits established as BACT in the 6/2/09 permit. Also, if the fabric filter is operating properly, compliance with the five percent opacity limit for the fluff storage silos (ES-50 and ES-51) can be achieved since there should be no visible emissions from these units. This is the case because the fabric filter eliminates the particulates which are the source of the visible emissions. Therefore, if visible emissions are seen from the fluff storage silo vents (V50 and V51) it can be reasonably assumed that there is a problem with the fabric filter. The permit contains a requirement for the permittee to conduct weekly inspections of the fluff storage silo vents (V50 and V51). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across the fabric filters (C50 and C51). If during the inspection visible emissions are observed, a visible emission evaluation (VEE) of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed 5%, the VEE shall be conducted for a total of 60 minutes. All observations, VEE results, and corrective actions taken shall be recorded.

The weekly inspections will satisfy the periodic monitoring requirement for the visible emission limitations. Frequent checks for visible emissions will limit malfunctions of the fabric filters. As long as the fabric filters are operating properly, there is little likelihood of violating the visible emission limitation. The fabric filters will limit the amount of particulates that are emitted thereby limiting visible emissions.

The permit requires the fabric filters (C50 and C51) to be equipped with a device to continuously measure the differential pressure drop across the fabric filter. The monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations. The monitoring device shall be provided with adequate access for inspection and shall be in operation when the fabric filter is operating. Fabric filters are designed to operate at a relatively constant pressure drop. Monitoring pressure drop provides a means of detecting a change in operation that could lead to an increase in emissions. An increase in pressure drop can indicate that the cleaning cycle is not frequent enough, cleaning equipment is damaged, the bags are becoming inefficient, or the airflow has increased. A decrease in pressure drop may indicate broken or loose bags, but this is also indicated by the presence of visible emissions, as discussed above. A

pressure drop across the fabric filter also serves to indicate that there is airflow through the control device. The permit also requires the control monitoring device used to continuously measure the differential pressure drop across the fabric filters (C50 and C51) to be observed by the permittee with a frequency of not less than once per week. The permittee shall keep a log of the observations from the control monitoring devices.

The permittee will maintain material throughput records for the E-6 line to demonstrate compliance with the particulate matter limitation. The particulate matter limitation for each emission unit listed in the table below was determined by the equation $E = 4.10P^{0.67}$, where E is the emission limit in lbs/hr and P is the process weight rate in tons/hr. The maximum estimated emission rates were calculated based on stack testing and engineering calculations conducted by the permittee to develop standardized emission factors applicable to their specialized industry. As shown in the table below, there is reasonable assurance that violations of the emission limitations will not occur because these limits can be met with no controls. Process weight limit calculations are provided in Attachment G.

Emission Unit	Pollutant	Limitation (lb/hr)	Maximum Estimated Emission Rate (lb/hr)
Extrusion Line E-6	PM/PM-10	8.07	0.44
Reclaim Extruders R-4 and R-6 (ES-52 and ES-53)	PM/PM-10	4.76	0.1

Finally, at least once during the term of the permit, the permittee shall conduct performance tests to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in to calculate warehouse VOC emissions from the E-6 line. The facility currently uses data collected in 2010, and under the permit it must update this data once during the upcoming permit cycle.

Compliance Assurance Monitoring

In contrast to the E-1, E-2, and E-4 lines, CAM does not apply to the E-6 line because a control device is not required under the permit to meet the VOC emission limits established in the permit for these lines. While control devices are required to meet the particulate matter emission limits applicable to the E-6 line, CAM does not apply because uncontrolled emissions are less than 100 tpy.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required

by the permit. These records include the following recordkeeping requirements drawn from Condition 61 of the minor NSR permit dated December 20, 2013:

- Results of performance testing of the percentage of VOC and HFC-134a retained in finished product (v) and Warehouse VOC Loss rate (V_{WRE}) for each product family type.
- Monthly and annual throughput of blowing agent VOC (in tons) for the E-6 line.
- Average hourly throughput of blowing agent VOC (in tons) for the E-6 line. Average hourly throughput shall be calculated once each 24-hour period.
- Monthly and annual Process and Reclaim VOC emissions (in tons) from the E-6 line.
- Monthly and annual throughput of blowing agent HFC-134a to the E-6 line.
- Monthly and annual emissions of HFC-134a from E-6 line (including Process, Reclaim, and Inside Warehouse Storage emissions).
- Monthly and annual Inside Warehouse Storage VOC emissions (in tons) from the E-6 line.
- Monthly and annual finished product (tons) from the E-6 line.
- Monthly and annual finished product sent to the inside warehouse storage area (in tons) from the E-6 line.
- Monthly and annual finished product sent to the outside storage pad (in tons) from the E-6 line.
- Inside warehouse storage time for the finished product (in days) for each product family type from the E-6 line. Storage time shall be calculated using methods approved by DEQ.
- Monthly and annual throughput of virgin polystyrene resin to the E-6 line.
- Monthly and annual throughput of reclaim polystyrene pellets (RPP) from reclaim extruders R-4 (ES-52) and R-6 (ES-53).
- Monthly and annual VOC emissions (in tons) from reclaim extruders R-4 (ES-52) and R-6 (ES-53).

- Particulate emission calculations from material handling on the E-6 line, including polystyrene storage silos (ES-1, ES-2, ES-3, ES-4, ES-9, ES-10, ES-14, ES-47, ES-59, ES-60, ES-60a and ES-60b), vacuum transfer blower systems (ES-17 and ES-18), roll and scrap grinders (ES-33a) and fluff storage silos (ES-50 and ES-51) using methods approved by DEQ to verify compliance with the lbs/hr and ton/yr emissions limitations in Condition IV.A.16.

- Calibration of the monitoring device for the flow meter as required in Condition 93.

- Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

The recordkeeping requirements in Condition 61 of the minor NSR permit dated December 20, 2013 have been supplemented as follows to meet Part 70 requirements:

- Monthly material throughput, in pounds, for the E-6 line.

- Inspection records as required by Conditions 91 and 92, including the date and time of the inspections and corrective action(s) taken.

- Operation and control device monitoring records for the fabric filters (C50 and C51) as required by Condition 91.

Testing

Condition 95 of the permit includes the performance tests required by Condition 60 of the minor NSR permit dated December 20, 2013 to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in Conditions 78 and 79 to calculate VOC emissions from the E-6 line. This testing must be conducted at least once during the permit term (between June 2015 and June 2020).

DEQ and EPA have the authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard, pursuant to Condition 96.

Reporting

The initial notification requirements set forth in Condition 62 of the minor NSR permit dated December 20, 2013 have been satisfied and therefore are not included in the Title V permit.

The only reporting requirement contained in the minor NSR permit dated December 20, 2013 is the notification for facility or control equipment malfunction set forth in Condition 68. The

permit includes the same requirements in Condition 129 (the General Conditions). The permit also requires all semiannual and annual reporting that are standard in Title V permits.

Streamlined Requirements

There are no streamlined requirements in this section of the permit.

Facility-Wide Conditions

Limitations

The following limitations are state BACT and/or other applicable requirements from the minor NSR permit issued on December 20, 2013. A copy of the permit is enclosed as Attachment C.

Condition 3:	Each blowing agent storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) shall be equipped with a control method that will remove, destroy, or prevent the discharge into the atmosphere of at least 60 percent by weight of VOC emissions during the filling of the tanks.
Condition 4:	Each blowing agent storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) shall be a pressure tank maintaining working pressure sufficient at all times to prevent vapor loss to the atmosphere, or be designed and equipped with one of the following vapor control systems: (a) filling of the storage tank through the use of a submerged fill pipe, or (b) Any system of equal or greater control efficiency to the system in (a).
Condition 52:	Volatile organic compound (VOC) emissions from the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) shall be controlled by the use of inks which meet the definition of low solvent ink, as applied and as stated in 9 VAC 5-40-5070 C.
Condition 53:	Requirements for minimizing VOC emissions from cleanup, washup and disposal.
Condition 54:	The throughput of VOC to the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) shall be no more than the following amounts, calculated monthly as the sum of each consecutive 12 month period.

E-1 and E-2 (combined) (ES-115 and ES-67)	2.0 tpy
E-4 (ES-117)	1.0 tpy

E-6 (ES-116)	1.0 tpy
Housewrap (ES-76)	1.5 tpy

Condition 55: The application of organic hazardous air pollutants (HAPs) on the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76 shall be no more than 200 kilograms (440 pounds) per month, for every month.

Condition 56: VOC emissions from the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) shall be no more than the following amounts, calculated monthly as the sum of each consecutive 12 month period.

E-1 and E-2 (combined) (ES-115 and ES-67)	2.0 tpy
E-4 (ES-117)	1.0 tpy
E-6 (ES-116)	1.0 tpy
Housewrap (ES-76)	1.5 tpy

Condition 57: Visible emissions from the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) shall not exceed 10 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).

Condition 58: Except as specified in this permit, the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) are to be operated in compliance with the federal requirements under 40 CFR 63, Subpart KK.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5 Chapter 40, Article 25, Emissions Standards for Volatile Organic Compound Storage and Transfer Operations
9 VAC 5 Chapter 40, Article 36, Emission Standards for Flexographic, Packaging Rotogravure, and Publication Rotogravure Printing Lines
9 VAC 5-40-80, Existing Source Standard for Visible Emissions
9 VAC 5-50-80, New Source Standard for Visible Emissions

The following conditions in the Title V permit were established pursuant to these Codes:

Condition 106: Visible emissions from each storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30

percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).

EPA promulgated amendments to 40 CFR 63, Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)), on March 3, 2010 (75 Fed. Reg. 9648) that are applicable to existing emergency stationary compression ignition (CI) RICE located at major sources. These regulations were applied to the two diesel engines for the sprinkler systems, ES-119 and ES-120, during the previous permit cycle because they were manufactured in 1979 and 1984, respectively; are each 345 horsepower; are used for emergency purposes only; and are located at a major source of HAP. Condition 108 incorporates these requirements into the permit, which specify schedules for oil changes and inspections of the air cleaner, hoses, and belts.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Condition 61 of the minor NSR permit dated December 20, 2013 have been modified to meet Part 70 requirements.

The permit requires the permittee to determine compliance with the facility's organic HAPs limit by calculating the monthly total organic hazardous air pollutants applied on the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) using the following equation:

$$E_{hap} = \sum_{i=1}^{n} M_{mat} W_{hap}$$

Where:

E_{hap}	=	the total HAPs usage, in pounds
M_{mat}	=	the total mass, in pounds, of material as applied during the calendar month
W_{hap}	=	the total weight fraction of HAPs contained in the material, i, as applied

Although the emissions of hazardous air pollutants from the facility's printing operations are below major source thresholds, the facility is subject to 40 CFR 63, Subpart KK, National Emission Standards for the Printing and Publishing Industry (printing and publishing MACT) because it is a major stationary source of a hazardous air pollutant due to non-printing operations. The facility will apply not more than 200 kg per month of organic hazardous air pollutants on product on the flexographic printers. Therefore, it is only subject to the recordkeeping requirements for the printing and publishing MACT and 9 VAC 5 Chapter 60.

The visible emission limits for each blowing agent storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) are based on the applicable requirements contained in 9 VAC 5-40-80

and 9 VAC 5-50-80. However, each storage tank is not a source of visible emissions. The volatile organic compound stored in each storage tank does not result in visible emissions. Therefore, no monitoring is required for these storage tanks (ES-110, ES-114, ES-121, and ES-122).

Subpart ZZZZ requires the permittee to develop a maintenance plan for ES-119 and ES-120 that provides to the extent practicable for the maintenance and operation of each engine in a manner consistent with good air pollution control practice for minimizing emissions. This is included in Condition 111.

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

- MSDS or VOC Data Sheets showing VOC and hazardous air pollutant (HAP) content of each blowing agent used.
- Annual throughput of VOC (in tons) to the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76), calculated monthly as the sum of each consecutive twelve (12) month period.
- Annual VOC emissions (in tons) for the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76), calculated monthly as the sum of each consecutive 12-month period.
- The total mass (in pounds) and organic hazardous air pollutants content of each material applied on the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) during each month.
- Material Safety Data Sheets (MSDS) or other vendor information showing the VOC content, HAP content, water content and solids content of each material applied on the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76).
- Records demonstrating the inks used in the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) meet the definition of compliant ink in 9 VAC 5-40-5070.
- The volatile organic compound stored in each storage tank (ES-110, ES-114, ES-121, and ES-122) and its vapor pressure in pounds per square inch under actual storage and filling conditions.
- Records certifying the design of and control method for each storage tank that contains VOCs (ES-110, ES-114, ES-121, and ES-122).

- Records of the maintenance conducted on the diesel engines for the sprinkler system (ES-119 and ES-120) in order to demonstrate that each engine is operated and maintained according to the maintenance plan required by Condition 111.

- Records of the hours of operation of the diesel engines for the sprinkler system (ES-119 and ES-120) that are recorded on a non-resettable hour meter. The permittee must document how many hours are spent for emergency operation, including what classified the operation as emergency, and how many hours are spent for non-emergency operation. If either engine is used for demand response operation, the permittee must keep records of the notification of the emergency situation, and the time each engine was operated as part of demand response.

- Air pollution control equipment training provided and all scheduled and non-scheduled maintenance as required by Condition 109.

Testing

The permit includes the requirement in Condition 59 of the minor NSR permit dated December 20, 2013, that the facility shall test, at the request of the DEQ, to determine if inks used at the facility meet the definition of compliant ink as stated in 9 VAC 5-40-5070.

DEQ and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

Even after the recent changes in blowing agents to eliminate the use of ethyl chloride, the reporting requirements for the Organic Liquid Distribution (OLD) Maximum Achievable Control Technology (MACT) (40 CFR 63, Subpart EEEE) continue to apply to the VOC blowing agent storage tank ES-110 under EPA's "once in, always in" policy because the new blowing agent stored in this tank contains up to three percent methanol, which is a HAP. See EPA applicability determination letter dated January 8, 2010, which is included as Attachment D. Condition 116 of the permit includes the applicable reporting requirements from Subpart EEEE.

Streamlined Requirements

9 VAC 5-40-5080 A, Standard for Volatile Organic Compounds, has been streamlined because the existing permit requirement that VOC emissions from the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) be controlled by the use of inks which meet the definition of low solvent ink, as applied and as stated in 9 VAC 5-40-5070 C, is as stringent as this standard.

The visible emission limitation in 9 VAC 5-40-80 (Existing Source Standard for Visible Emissions), as specified in Rule 4-36, has not been included for the flexographic printers (ES-67,

ES-115, ES-116, ES-117, and ES-76) because the permit limit of ten percent (10%) opacity is more stringent than the regulatory limit of 20 percent opacity, including one six-minute period in any one hour not to exceed 60 percent opacity.

The visible emission limitation in 9 VAC 5-50-80 (New Source Standard for Visible Emissions) has not been included for the flexographic printers (ES-67, ES-115, ES-116, ES-117, and ES-76) because the permit limit of 10 percent opacity is more stringent than the regulatory limit of 20 percent opacity, including one six-minute period in any one hour not to exceed 30 percent opacity.

The visible emission limitation in 9 VAC 5-40-80 (Existing Source Standard for Visible Emissions) for the storage tanks (ES-110, ES-114, ES-121, and ES-122) has been streamlined. 9 VAC 5-50-80 (New Source Standard for Visible Emissions), which is more stringent, was determined to be applicable because the construction dates for the storage tanks (ES-110, ES-114, ES-121, and ES-122) are after March 17, 1972.

The permittee has voluntarily accepted a monthly total organic hazardous air pollutants limit of 200 kg applied on the flexographic printers which allows streamlining of the requirements of 40 CFR 63, Subpart KK, specifically 40 CFR 63.821(b)(2). This limit, in combination with the recordkeeping requirement to maintain the total mass (in pounds) and organic hazardous air pollutants content of each material applied on the flexographic printers will ensure not more than 400 kg per month of organic hazardous air pollutants is applied on product, thus satisfying MACT requirements. Compliance with this limit will be shown using the following equation:

$$E_{hap} = \sum_{i=1}^{n} M_{mat} W_{hap}$$

Where:

E_{hap} = the total HAPs usage, in pounds
M_{mat} = the total mass, in pounds, of material as applied during the calendar month
W_{hap} = the total weight fraction of HAPs contained in the material, i, as applied

As a result, based on the limit, even if the MSDS were in error by 100 percent, the permittee would not exceed 400 kg per month of organic hazardous air pollutants applied on product. The permittee will rely on the material supplier to provide them VOC and HAP content information for the materials purchased.

The requirement to calculate the monthly total organic hazardous air pollutants applied on the flexographic printers and the recordkeeping requirement to maintain the total mass and organic hazardous air pollutants content of each material applied on the flexographic printers will provide reasonable assurance for compliance with the monthly limit and the MACT, which is the underlying applicable requirement, and satisfy the periodic monitoring requirements.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

STATE-ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Code has specific requirements only enforceable by the State and has been identified as applicable by the applicant:

9 VAC 5-60-320, Standard for Toxic Pollutants

The following limitations are state-only requirements from the minor NSR permit dated December 20, 2013. A copy of the permit is enclosed as Attachment C.

Condition 74:	The throughput of methanol to the facility shall not exceed 13.8 lbs/hr and 50.3 tons/yr, calculated monthly as the sum of each consecutive 12-month period. Methanol throughput shall be calculated as indicated in the provided equation.
Condition 75:	Methanol emissions from the facility shall not exceed 13.8 lbs/hr and 50.3 tons/yr.
Condition 76:	Methanol emissions from the facility shall be calculated by mass balance as specified by the formula provided.

The following recordkeeping and monitoring is a state-only requirement from the minor NSR permit dated December 20, 2013.

Condition 77:	The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with DEQ. These records shall include, but are not limited to, the average hourly, monthly and annual throughput (in tons) of methanol used; the average hourly, monthly and annual emissions (in tons) of methanol; and Material Safety Data Sheets (MSDS) or other vendor information showing the methanol content for each blowing agent used. These records shall be available on site for inspection by the DEQ and shall be current for the most recent five years.

Under 9 VAC 5-80-300, inclusion of these requirements in the Title V permit is voluntary. The permittee has requested these requirements be incorporated into the Title V permit for the facility.

FUTURE APPLICABLE REQUIREMENTS

No future applicable requirements have been identified for this facility.

INAPPLICABLE REQUIREMENTS

An inapplicable requirement previously identified by the applicant includes 40 CFR 60 Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. This regulation is not applicable to any of the storage tanks at the facility constructed or modified after 1984 (ES-110, ES-112, ES-113, ES-114, ES-118, ES-121, ES-122, and ES-127) because each tank is below the applicability capacity of 75 m^3 (19,812.9 gallons) and/or does not contain VOCs.

While the diesel engines for the sprinkler system (ES-119 and ES-120) are subject to the expanded RICE MACT (40 CFR 63, Subpart ZZZZ), they are not subject to the NSPS for stationary compression ignition internal combustion engines (40 CFR 60, Subpart IIII) because both engines were manufactured well before the applicability dates set forth in 40 CFR 60.4200(a).

COMPLIANCE PLAN

Kingspan has not been found to be in violation of any applicable requirements. Therefore, no compliance plan is included in the application or in the permit.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110. A complete table of insignificant emission units is provided in the permit, starting on page 49.

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality.

PUBLIC PARTICIPATION

A public notice regarding the draft permit was published in The Winchester Star, Winchester,

Virginia, on April 3, 2015, announcing a 30-day public comment period. EPA, West Virginia, Pennsylvania, and Maryland were sent a copy of the public notice in a letter dated April 2, 2015. All persons on the Title V mailing list were also sent a copy of the public notice in a letter dated April 2, 2015.

The public comment period extended from April 4, 2015 through May 4, 2015. No comments were received from either the public or the affected states.

EPA was sent a copy of the permit as a proposed permit on April 2, 2015 for a 45-day review period. EPA's review period began on the same day as the public comment period (April 4), and it closed on May 18, 2015. DEQ did not receive any comments from EPA.

ATTACHMENTS

Attachment A – PSD Applicability Determinations from DEQ and USEPA
Attachment B – 2014 Annual Emissions
Attachment C – December 20, 2013 Minor NSR Permit
Attachment D – EPA applicability determination letter dated January 8, 2010 for OLD MACT
Attachment E – Compliance Assurance Monitoring (CAM) Plan for the Regenerative Thermal Oxidizer (RTO) (ES-75)
Attachment F – Table of VOC Emission Limits
Attachment G – Process Weight Rule Calculations

Attachment A

PSD Applicability Determinations from DEQ and USEPA

Attachment B

2014 Annual Emissions

Attachment C

December 20, 2013 Minor NSR Permit

Attachment D

EPA applicability determination letter dated January 8, 2010 for OLD MACT

Attachment E

Compliance Assurance Monitoring (CAM) Plan for the Regenerative Thermal Oxidizer (RTO) (ES-75)

Attachment F

Table of VOC Emission Limits

Attachment G

Process Weight Rule Calculations